FOREIGN CAPITAL FLOWS AND ECONOMIC DEVELOPMENT IN AFRICA

THE IMPACT OF BRICS VERSUS OECD

EDITED BY EVELYN WAMBOYE
& ESUBALEW ALEHEGN TIRUNEH

Foreign Capital Flows and Economic Development in Africa

Evelyn Wamboye • Esubalew Alehegn Tiruneh
Editors

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To the People of Africa and friends of Africa who strive to make the continent prosperous

Contents

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PART I

Introduction

CHAPTER 1

Exploring the Nature, Motives, and Implications of Foreign Capital in Africa

Evelyn Wamboye and Esubalew Alehegn Tiruneh

Introduction

Understanding the nexus between foreign capital flows and economic development in Africa continues to excite and challenge many policy makers and academicians. Notwithstanding the lack of consensus in the existing literature on the effectiveness of foreign capital in Africa, new players have emerged on the foreign capital market with new funding policies, and the once stagnant continent is now making development progress. Moreover, Africa has been undergoing notable changes since early 2000, which have impacted many aspects of the macroeconomy, calling for a renewed look at the foreign capital-economic development relationship. For example: (1) the rapid proliferation of mobile cellular technology across the continent that has brought with it not only increased information access and flow but also financial inclusiveness, (2) improvement in the quality of governance and leadership, (3) general improvement in infrastructure and human capital development, (4) a shift in economic policy towards market orientation, (5) financial market liberalization, (6) blossoming partnerships with emerging economies [Brazil, Russia, India, China, and South Africa (BRICS)],

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and (7) the debt relief initiatives in the once heavily indebted poor countries. All these changes have widened the economic policy space of African countries and, in turn, potentially shifted the way foreign capital impacts development on the continent.

Africa, like many developing regions, has long suffered from savings and foreign exchange gaps, which has contributed to its low rate of capital accumulation and lagging development. In search of ways to boost the domestic capital stock, a number of scholars have recommended increasing financial flow from external sources. For example, some scholars have advocated for a reasonable and sustained flow of development aid in order to help these countries meet and surpass that threshold necessary for the takeoff into self-sustained growth.[1] Others have embraced the debt relief programs as an additional policy tool for tackling the poverty problem in these countries[2] and consequently, increasing the domestic savings rate. Proponents of the free market system have strongly pushed for integrating Africa into the global financial system in order to attract foreign direct investment (FDI) and other portfolio-type investments. In some countries in the region, such efforts have only resulted into greater volatility, with consequences for exchange rate instability and capital outflows.[3]

Against the above backdrop, this book provides a reference resource on the influence of foreign capital on Africa's economy. The novel contribution of the book lies in its attempt to answer a question that is yet to take root in development economics literature—how are BRICS contributing to Africa's economic development? The nature, motives, and implications of foreign capital from conventional sources (developed countries) are analyzed and compared to those from nonconventional sources (BRICS) that have gained prominence in recent years.

Divided into six parts, the book identifies and explicates current issues in ways that question the status quo and offers policy inputs for a transformed and thriving Africa. Part 2 evaluates the motives and implications of the growing Chinese engagement in Africa. Part 3 provides an understanding of the dynamics of BRICS' relative to OECD[4] member countries' investment contributions to Africa's development. The politics of land, land grab (investment in land), and the puzzle of inclusive development is delved in part 4, while part 5 explores the issues of foreign R&D spillovers, trade linkages, and economic development in Africa. Part 6 revisits aid implications on the social sector, growth, and structural change in Africa. Finally,

the questions related to remittances, debt, resource management, and economic development are addressed in part 7.

Africa's Growth Phenomenon

Africa has, since the turn of the millennium, become a promising continent. Emerging from the lost decades of the 1980s and 1990s—which had been characterized by dismissal growth rates, hunger, malnutrition, diseases, political instability, and inter-ethnic warring among other things—the continent has blossomed into a beacon of hope and opportunity for its citizens and investors. Notwithstanding variations between regions and countries, there have been notable changes in overall gross domestic product (GDP) growth rate, governance, and other determinants of development. For example, GDP growth rate more than doubled from roughly two percent in the 1980s and 1990s to over five percent between 2001 and 2014 (Fig. 1.1). In context, the turnaround in growth was unprecedented, surpassing the world's average (4 percent) and Latin America and the Caribbean (3 percent) during the 2001–2014 period (AEO 2015). The only region that has been performing better than Africa is the emerging and developing Asia, which grew at a rate of eight percent between 2001 and 2014.

The heterogeneity of African economies is often masked in the aggregate numbers. The economies vary in terms of their natural resources endowment, macroeconomic policies, and political and social stability. These

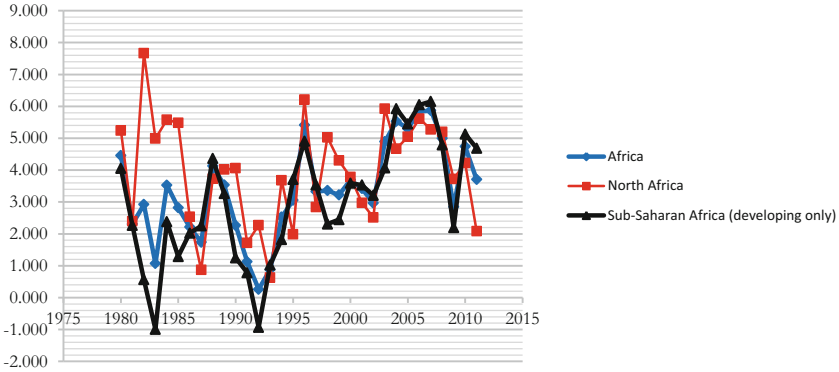

Fig. 1.1 GDP growth (annual percent). (*Source*: Authors calculations based on African Development Indicators database (2016))

variations in turn differentially impact individual countries' macroeconomic performance. Between 2006 and 2016, for example, East African economies consistently had the highest growth rates as measured by real output, followed by West and Central African economies (Table 1.1). The Southern African economies, especially South Africa, performed relatively poor, largely due to the shocks from the 2008 world financial crises. North Africa was also negatively impacted by the Arab Spring uprisings in Tunisia, Libya, and Egypt and, more recently, the security threats from terror groups such as Al-Qaeda in the Islamic Maghreb (AQIM) and Islamic State of Iraq and the Levant (ISIL).

The key question is: what has been driving Africa's spectacular performance? One possible answer lies in Africa's comparative advantage—the abundance of natural resource and raw material export. Any improvement in the commodity prices on the world market often works in Africa's favor. For example, during the 2000s, the world demand of oil and minerals increased, fueled by growth in emerging economies, especially China. This positively impacted incomes in countries with extractive sectors, including Nigeria, Angola, Chad, Equatorial Guinea, Sierra Leone, Zambia, Ghana, Mozambique, and Tanzania. In fact these countries saw a jump in their growth rate to 6–8 percent between 2001 and 2014 (AEO 2015).

The second factor is the relative improvement in the political stability of many of the countries in the region. For long Africa has been known for its political instability and ethnic divide: with stateless countries such as Somalia; civil wars and military coups in Angola, Sudan, Sierra Leone, Burundi, Djibouti, Niger, Guinea Bissau, Democratic Republic of Congo, and Central African Republic; and genocide in Rwanda. Other countries that have

Table 1.1 Real GDP growth by African regions

Region	*2006–2010*	*2011*	*2012*	*2013*	*2014 (e)*	*2015 (p)*	*2016 (p)*
East	7.10	5.90	4.20	4.70	7.10	5.60	6.70
West	6.40	5.00	5.10	5.70	6.00	5.00	6.10
Central	4.10	4.70	5.50	4.10	5.60	5.50	5.80
Southern	4.20	3.90	3.40	3.60	2.70	3.10	3.50
North	4.70	−0.3	10.50	1.60	1.70	4.50	4.40
Africa	5.20	2.80	6.70	3.50	6.00	5.00	6.10

Source: Extracted from Table 1.4, AEO (2015), chapter 1, based on data from Statistics Department, African Development Bank
Note: (e) estimates; (p) projections

been relatively stable in the region have had to live under some form of autocratic regimes. All these might have negatively impacted the development and effective functioning of key institutions in these countries, which are necessary for meaningful long-run economic development and growth (North 1991; Robinson et al. 2005; Acemoglu and Robinson 2008, 2012).

Political stability in Africa measured by improvement in different indicators of governance (safety and security, the rule of law, political participation, human rights, public sector management, the business environment, and social inclusion) has experienced some positive changes since 2001. The most noticeable aspects are gains in political participation with countries such as Kenya and Tunisia implementing new constitutions and many other countries having peaceful and credible elections with smooth transitions (AEO 2005). Overall, comparing governance changes since the 1970s, there were 4 democratic and 36 autocratic regimes in Africa in 1972. By 2013, the number of democracies had increased to 24, while that of autocracies had declined to 5 countries. The remaining 22 countries had hybrid regimes.

Improvement in macroeconomic policies (lower inflation and fiscal prudence), liberalization of the financial sector, proliferation of ICTs (especially mobile cellular technology), and debt relief in heavily indebted poor countries have also collectively helped to strengthen macroeconomic stability and support growth in Africa (AEO 2015; UNECA 2015). Moreover, human capital development has improved since the early 2000s, with many countries increasing the number of public universities and others (including Kenya, Lesotho, Malawi, and Uganda) instituting free primary education. Despite the progress, Africa still lags other developing regions in human capital development. For example, by 2014, only 33 percent of the countries had achieved medium[5] to high[6] levels of human development. The remaining 35 countries had human development categorized as low (with an index below 0.55) (AEO 2015).

As noted in the foregoing examples, Africa has made progress in macroeconomic indicators with observable impact on national income and growth. However, major challenges still exist in ensuring sustainable economic growth and development. For example, the recent outbreak in Ebola in the West African region and the length of time it took to contain it reveals the weaknesses in the healthcare management and education, not only in the region but in Africa in general. The threat from terror activities and the resulting implications on foreign direct investment and tourism industry

also pose challenges for development and growth. Notwithstanding negligible improvement in key governance aspects (safety and security, the rule of law, human rights, public sector management, the business environment, and social inclusion) and undiversified export base, perhaps the biggest bottleneck for Africa is in the area of infrastructure development, especially roads and electricity (AEO 2015).

Infrastructure access is necessary to accelerate and sustain economic growth. While energy supply in Africa has increased, it has not matched the demand, especially in sub-Saharan Africa (SSA). For example, as of 2012, only 8 of the 52 countries in Africa had electricity access rate of between 85 (South Africa) and 100 (Algeria, Egypt, Libya, Mauritius, Morocco, Seychelles, and Tunisia) percent. Six countries (Botswana, Cameroon, Gabon, Ghana, Senegal, and Sao Tome and Principe) had an access rate between 51 and 75 percent, while over 50 percent of the population in the remaining 75 percent of the countries did not have access to electricity. In countries such as Chad, Liberia, Malawi, Sierra Leone, South Sudan, Central African Republic, and Democratic Republic of Congo, 90 percent of its population does not have electricity access (AEO 2015). Lack of access to and outage of power severely constrains performance of business, especially the manufacturing sector, which requires reliable and cost-effective form of energy in order to function effectively.

Chinese Growing Engagement in Africa: Motives and Implications

The presence of China in Africa is as visible as the grandiose projects it is engaged in the region. From the Cape Agulhas (South Africa) in the South to Ras ben Sakka (Tunisia) in the North, and the horn of Africa in the East to Cap Vert (Senegal) in the West, one would hardly drive 100 miles without seeing signs written in Mandarin at construction sites of railroads, ports, government buildings, and real estate. The China-Africa partnership covers a broad spectrum of engagements at the national and sectoral levels in areas of aid, loans, trade, investment, and other geostrategic arrangements. Projects such as AidData at the College of William and Mary and the China-Africa Research Initiative at Johns Hopkins University in the United States are good examples of how scholars are increasingly becoming interested in understanding the scope, motives, and implications

of China's engagement in Africa. Part 2 of this book explores the China question in Chaps. 2, 3, and 4.

Carmody and Murphy in their chapter on 'The impact of China and South Africa in Urban Africa' cast a new perspective on China's role in Africa. Chapter 2 is timely in a sense that Africa is now one of the world's most rapidly urbanizing continents, and this trend is expected to continue (UN 2014). Using Zambia and Tanzania as case studies, the chapter demonstrates the ways in which China and South Africa are transforming the character and function of Africa's urban industries and consumer markets. The authors show that the scale (urbanization) and scope (localization) of these transformations are manifested in a new phase of urbanization, one characterized by a dual-fold dynamic of extraversion and intraversion, with the business-as-usual exploitation of commodity exports by BRICS-led investment on one hand and a flood of imports of BRICS-produced luxury and wage goods on the other.

Chapter 3 reviews the literature on potential economic and political implications of China's engagement in Africa. The author, van Dijk, profiles the motivations of Chinese companies that invest in Africa, the sectors in which they invest, and classifies these companies on whether they are state or private owned. The study finds that while there are some common motivations for Chinese companies to invest in Africa (e.g. cheap labor, raw material, and accessing the European Union and United States markets), others are unique to each host country.

The final chapter in part 2 identifies ways in which Chinese development finance could be used to foster transformative growth and development in Africa (Chap. 4). It emphasizes the need for African governments to play a forward-looking and proactive—rather than reactive—role in their partnership with China to ensure that the Chinese finance effectively addresses the Africa's development needs.

Understanding BRICS' versus OECD Countries' Investment in Africa

An important form of foreign capital that is expected to spur and sustain growth in Africa is FDI. Indeed, the share of net inflows of FDI in Africa's GDP has been increasing since the early 1990s (Fig. 1.2). As of 2014, a large proportion of FDI was in the services (48 percent), followed by primary (31 percent), and lastly, manufacturing (21 percent) sectors. The

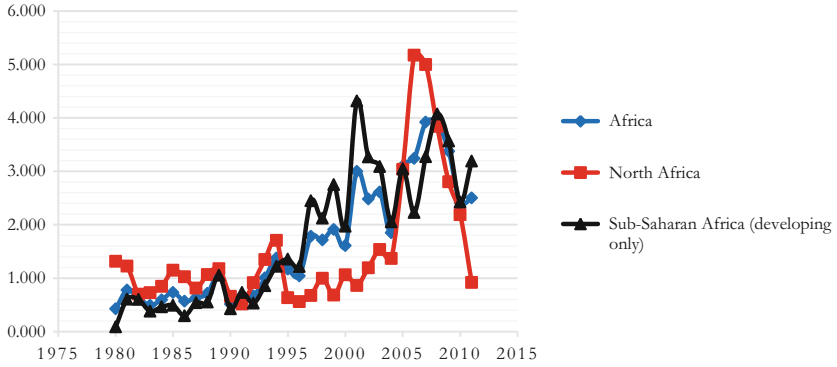

Fig. 1.2 Foreign direct investment, net inflows (percent of GDP) (*Source*: Authors calculations based on African Development Indicators database (2016))

shift to the services sector as the preferred destination of FDI has been happening, not just in Africa but worldwide for over ten years now (UNCTAD 2015). Liberalization of the financial sector, proliferation of ICTs, general tradability of the services across borders, and increase in global value chains in which the services sector plays an important role are some of the many factors that have led to an upward trend in FDI in the sector. Finance, transport, storage, and communication are Africa's two leading services subsectors in terms of inward FDI. For example, these two subsectors alone accounted for 82 and 77 percent of the Africa's inward FDI stock in services in 2001 and 2012, respectively (Table 1.2).

Most countries in Africa are still struggling to attract FDI into the manufacturing sector (AEO 2015). However, for those that have been successful, it has more than likely been in the form of greenfield investment. For example, in 2013, the value of announced greenfield projects in manufacturing was US$14,722 million, which increased to US$28,787 million in 2014 (UNCTAD 2015, Table A). This increase could be attributed to the growing involvement of emerging economies in Africa. Data from FDI markets (2015) provide evidence of an increasing share of China's and India's investment in Africa's total announced greenfield investment projects, which grew from two and four percent, respectively, in 2003–2008 period, to three and six percent in 2009–2014 period.

The relative increase in the flow of FDI to Africa, especially in sectors outside of natural resources, could also be attributed to emergence of new

Table 1.2 Africa's services FDI stock by industry, 2001 and 2012

Sector	*2001*		*2012*	
	Billions US$	*Percent of Africa's inward FDI stock in services*	*Billions US$*	*Percent of Africa's inward FDI stock in services*
Finance	24	62	91	56
Transport, storage, and communication	8	20	34	21
Business activities	2	5	14	9
Trade	3	8	12	8
Construction	2	4	4	3

Source: Extracted from Fig. 11.2, UNCTAD (2015) based on UNCTAD, FDI/MNE database (www.unctad.org/fdistatistics)
Note: Where 2012 numbers are unavailable, 2011 data are used

nontraditional foreign investors from emerging economies (BRICS), Middle Eastern countries, and a surge in intra-Africa investment (AEO 2015). Moreover, Africa's growing middle class and preferential trade access to regional blocs and some of the international markets are among the factors drawing investors to the region. For example, since 1980s, Africa's middle class has increased threefold, reaching 34.3 percent of the population (355 million people) in 2010, and is expect to reach 42 percent of the population in 2060 (1.1 billion people) (AEO 2015). Furthermore, comparing FDI flow to resource-and non-resource-rich countries, it is clear that other factors besides natural resources are attracting FDI to the continent. In particular, evidence shows that the proportion of FDI in the GDP of non-resource-rich countries increased from two in 2002 to four percent in 2014. On the other hand, that of resource-rich countries decreased from four to 1.5 percent within the same period (AEO 2015).

Part 3 explores in detail some of the aforementioned issues through a comparative discussion of developed and emerging countries' FDI effects in Africa. For example, in Chap. 5, Amendolagine, Coniglio, and Seric analyze the relative importance of traditional (OECD) versus new investors (BRICS) in Africa using microlevel data. They evaluate the similarities and differences of OECD's and BRICS' investment in Africa with respect to (1) propensity to generate linkages with domestic firms, (2) knowledge diffusion activities, and (3) effects on the labor market. Similarly, Chap. 6

provides empirical evidence on labor productivity growth and employment effects of BRICS' versus G7 countries' direct investment in selected African countries.

Also, Chap. 7 profiles trends in FDI inflows from BRICS and OECD countries and evaluate their impact on Africa's development. The authors find that although the OECD has historically and still remains the largest source of FDI to Africa, BRICS' FDI has been increasing in recent years. An interesting finding from Chaps. 6 and 7 is that relative to FDI from developed countries, FDI from BRICS is more effective in Africa in terms of its impact on different measures of development. This is surprising given that the size (measured by the value and number of projects) of OECD's FDI is larger than that of BRICS. The last chapter in part 3, Chap. 8, argues that cross-border capital flows, if harnessed and invested in sectors that they are most suited for, can provide relief for Africa's financial constraint.

The Politics of Land, Land Grab and the Development Puzzle

The issue of land in Africa is as old as the continent itself. From the geopolitical boundaries during the colonial period to the modern day right to ownership and use, many of Africa's intra-family, inter-ethnic, civil wars, and cross-border conflicts have been and continue to be in some ways influenced by the right of ownership and use of land and its resources (UNECA 2010). For example, in countries such as Kenya, Zimbabwe, and South Africa, the failure of the state to resolve historical claims arising from colonial expropriations compounded by unequal or unjust redistribution of land after independence remains a major source of conflict. In the mineral-rich countries of Angola, the Democratic Republic of Congo (DRC), Southern Sudan, Sierra Leone, and Liberia, conflicts over natural resources fueled by commercial interests from multinational corporations have led to unimaginable atrocities and human displacement. More recently, there have been and continue to be massive relocation of indigenous people from the Gambela and Benishangul-Gumuz regions of Ethiopia in the name of commercialization of farmlands. In other countries including Uganda, Rwanda, Burundi, Somalia, the Central African Republic, the Republic of Congo, and Ivory Coast, persistent conflicts stemming from access to land and natural resources have resulted into a large number of internally displaced people, creating additional problems of resettlement

and rehabilitation. Moreover, these conflicts have, in many countries, led to forced evictions and horrific atrocities, including genocide and sexually molesting women and children. Thus, the land problem in Africa is multifaceted, with economic, political, and social consequences.

Being predominantly an agrarian society, Africa's development and economic transformation is hinged upon its fertile lands, and ores and oil underneath. It is not surprising that the agriculture sector is the biggest employer in many African countries and that most of the economies in the region heavily rely on exports of the primary products (AEO 2015; UNECA 2010). Despite Africa's dependency on land, farming is characterized by small-scale farmers whose primary objective is output for household consumption. Furthermore, with the Sahara Desert in the north and Kalahari in the south, a relatively small portion of Africa's land is arable or potentially arable. For the portion of land that is suitable for farming, most of it has been ecologically damaged, thanks to erosive downpours and intermittent droughts, coupled with poor land management practices (UNECA 2010). Deforestation is rampant as most households depend on charcoal and firewood as the primary source of energy for cooking, and in communities where free-range livestock farming is the major economic activity, land cover has been negatively impacted. All those exacerbate the land problem in Africa.

It is, then, not surprising that Africa is one of the biggest food aid recipients in the world. Relative to other developing countries, its agricultural productivity is very low due to the use of inefficient technology and dependency on rainfall rather than using irrigation to mitigate the effects of dry seasons. Thus, agricultural land is underutilized in many countries in the region (especially in SSA). This has led to the second scramble for Africa's rich natural resources, but in this case, by invitation. Many governments in Africa, in search of ways to boost their GDP via foreign investment, have responded to the increasing global demand for biofuels, in addition to minerals and oil, by offering their lands for commercial farming and exploration of ores and oil.

The chapters in part 4 provide provoking insights into this 'new scramble' for Africa's rich and underutilized natural resource (land), with special attention to Ethiopia, a country that recently created history with its 'land for investment' in the lush farmlands of the Gambela and Benishangul-Gumuz regions.

In Chap. 9, Woldemariam gives an extensive account that spans over half a century on the concept of land, subsistence farming, and Ethiopia's

vulnerability to famine and how these factors have affected livelihoods in the country. The chapter underscores how farmers' mentality that favors subsistence farming, coupled with poor land policies and bad governance, has contributed to low agricultural productivity and Ethiopia's vulnerability to famine. Chapter 10 brings to light the controversial issue of foreign direct investment in farmland. Birara argues that land grab in the name of commercialization of farm lands (FDI in land) has negatively impacted the lives of many peasants in Ethiopia. He challenges the notion of developmental state and survival of the fittest model of Ethiopia's current government, which gives foreigners a golden deal to scramble for the fertile farmlands of Ethiopia.

Chapter 11 adopts a macro analysis and extends the discussions in the above-mentioned two chapters by examining some commonly held beliefs regarding large-scale land acquisitions in seven African countries (Ethiopia, Mali, Mozambique, Sierra Leone, Sudan, Tanzania, and Zambia). The chapter also discusses the role of agroecology as an alternative option for agricultural investment that promotes environmental preservation, social fairness, and economic viability.

International R&D Spillovers, Trade Linkages and Economic Development in Africa

As part of the outward-oriented development strategy, trade liberalization has been vigorously advocated for Africa, starting with the 1980s' World Bank and International Monetary Fund structural adjustment programs. Proponents of trade liberalization through reduction of tariffs and elimination of nontariff barriers cite the many beneficial effects of trade, including job creation through expansion of the tradable sector (with expected spillover effects to the non-tradable sector), increasing efficiency and productivity through competition, creating new markets, increasing consumers' standard of living through lower prices and a variety of goods, and being a conduit of foreign technology. All these in turn are expected to positively contribute to economic growth and development. Indeed, great civilizations and modern-day industrialization have largely depended on trade, whether it was by conquest or mutual exchange.

Despite trade's beneficial effects, Africa is still marginalized in the world trade, especially in manufacturing and services sectors. The continent's share in the global exports increased marginally from 4.99 percent in

1970 to 5.99 percent in 1980, after which it started declining (UNECA 2015). For example, in 2013 the share was only 3.3 percent. Africa's low participation in global trade could be attributed to its dependency on the primary sector and exports of unprocessed primary products (Table 1.3). The fact that unprocessed resource-based commodities accounted for 68 percent of Africa's total merchandise exports in 2013 and that these exports were dominated by oil-producing countries (US$330 billion) and South Africa (US$96 billion) (AEO 2015) points to Africa's rigid production structure that is not strategically responding to the changing global landscape and its development needs.

Perhaps, Africa's policy makers could learn from the growth miracles of the four Asian tigers (Hong Kong, Singapore, South Korea, and Taiwan). In the 1970s economic performance of Africa and its participation in international trade was better than, or at par with, some of these Asian countries. For example, Africa's share in global exports was higher than that of East Asian economies in 1970s and 1980s. But, by the 1990s, these economies had drastically increased their share in world trade from 2.25 percent in 1970 to 17.8 percent in 2010, with manufactures' exports constituting 67–80 percent of the region's merchandise export (AEO 2015). These and many other examples from developed countries suggest that trade and industrialization have a bidirectional relationship, whereby trade facilitates industrialization and vice versa. However, the extent of this relationship largely depends on the composition of exports and the significance of trade policy in a country's structure of production. The stark difference between the East Asian economies and African countries illustrates this point.

There are encouraging signs that economic and trade diversification is beginning to take hold in Africa, stimulated by increased FDI (especially from BRICS) and improvements in the business environment. There is also evidence of active engagement between countries on the continent in terms of investment and trade, especially in trade of manufactured goods. According to the 2015 African economic outlook report, intra-Africa exports of manufactured goods constituted nearly 40 percent, compared with just 13 percent of its exports to the rest of the world (AEO 2015). The composition of trading partners is also changing. For example, Asian countries' share in Africa's trade has been rising, from 13 percent in 2002 to 22 percent in 2011. On the contrary, manufactured goods exports (and trade in general) from Europe to Africa fell from 32 percent of Africa's total in 2002 to 23 percent in 2011. At the country level, China has overtaken

Table 1.3 Financial flows to Africa (current US$, billion), 2005–2015

	Type of flow					*Classification of African countries by income*		
	Remittance	*FDI*	*Portfolio investment*	*ODA*	*Total*	*Low-income countries*	*Lower middle-income countries*	*Upper middle-income countries*
2005	33.3	33.8	6.3	35.8	109.2	21.8	61.7	23.2
2006	37.3	35.4	22.5	44.6	139.7	22.8	78.4	35.6
2007	44	52.8	14.4	3.5	150.6	29.5	84.1	33.2
2008	48	66.4	−24.6	45.2	135	36.5	81.8	11.9
2009	45.2	55.1	−0.3	47.9	147.9	36.9	69.4	35.9
2010	51.9	46	21.5	48	167.3	39.5	94.7	28.1
2011	55.7	49.8	6.8	51.8	164	47.5	84.9	26.5
2012	61.2	49.7	25.7	51.3	187.9	47.9	109.1	25.6
2013	60.6	54.2	21.5	55.8	192	49.7	111.9	26
2014(e)	61.8	49.4	13.5	56.3	181.1	52.3	96.3	26.9
2015(p)	64.6	55.2	18.4	54.9	193	54.2	105.2	26.6

Sources: Table 2.1, AEO (2015), chapter 2, based on OECD/DAC, World Bank, IMF, and *African Economic Outlook* data
Note: ODA estimates (e) and projections (p) are based on the real increase of Country Programmable Aid (CPA) in OECD (2014b). The forecast for remittances is based on the projected rate of growth according to the World Bank. (This table excludes loans from commercial banks, official loans, and trade credits)

the United States as Africa's largest single trading partner starting in 2009, which is reflective of the increasing importance of BRICS (especially China) in Africa. Sino-African trade increased from US$166 billion in 2011 to US$210 billion in 2013—more than 2.5 times the value of United States-Africa trade (AEO 2015).

Part 4 discusses the relevance of trade in Africa's long-term development strategy. In Chap. 12 the authors explore how international trade serves as a conduit of foreign knowledge transfer to Africa, while Chap. 13 evaluates the presence of complementarity between trade and foreign aid in Africa's bilateral relationships with the EU and China. In Chap. 14, the trade-growth nexus is revisited in light of BRICS' increasing engagement in Africa. The findings from the analysis in these three chapters suggest that (1) African countries that import and receive development aid (technical and nontechnical) from advanced countries experience an increase in labor productivity, implying that trade and aid are transmitters of foreign R&D (Chap. 12); (2) trade-aid relationship is real, especially for the Africa-China relationship, where trade influences the flow of aid (Chap. 13); and (3) the changing trade linkages (with BRICS increasingly expanding their trade partnerships in Africa) have had significant growth effects in SSA (Chap. 14).

Revisiting Aid Effectiveness and Aid Anatomy in Africa

Many Africa's low-income countries heavily rely on foreign aid to finance their budgets. This is not surprising given that 69, 85, and 69 percent of least developed countries (LDCs), heavily indebted poor countries (HIPCs), and low-income food-deficit countries (LIFDC), respectively, are in Africa (particularly, sub-Saharan Africa). In addition, approximately 87 percent of Africa's LDCs are also HIPCs and LIFDC. Given that LDCs represent the poorest of the poor, producing less than two percent of the world's GDP, and contributing only one percent of global trade in goods, it means that majority of African countries still require some form of foreign aid. Unfortunately, the trend in total, bilateral, and multilateral official development assistance (ODA) shows a continuous decline since the early 1990s (Fig. 1.3). This is more pronounced in the North African region compared to SSA, which experienced a slight reversal in the declining trend between 2001 and 2006.

There are a number of factors that could explain the declining flow of ODA to African countries. Since majority of aid is from OECD member

countries, the decline could be a reflection of their changing aid policies and increasing fiscal austerity in some of the countries. Also the debt relief initiatives could be a contributing factor, whereby participating creditor nations might have used the same budget for debt relief that otherwise would have been used for ODA. In addition, the increasing financial strain from war on terror that many OECD member countries are facing could be

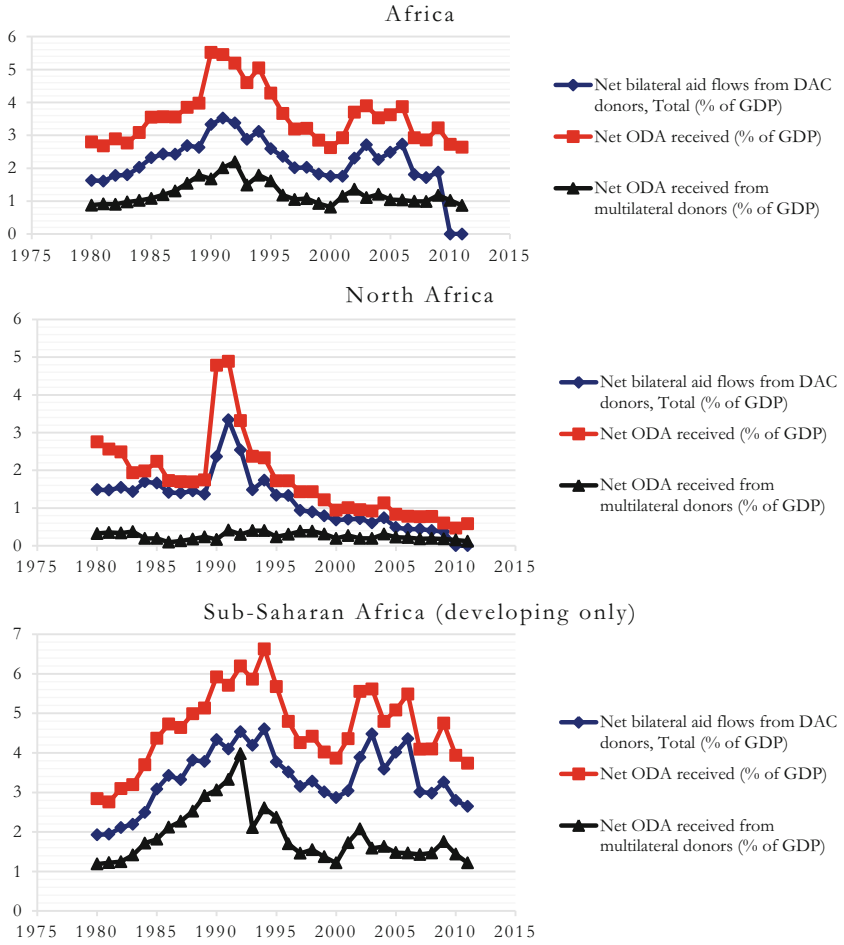

Fig. 1.3 Trend in aid flows to Africa, 1980–2011 (*Source*: Authors calculations based on African development indicators database (2016))

coming at the expense of poor African countries. AEO (2015) report attests to some of these speculations, stating, for example, that foreign aid to developing countries fell in 2012 mainly due to bilateral aid budget cuts in DAC[7] member countries. In the case for Africa, the report indicates that a reduction in DAC member countries' bilateral aid reflects a reduction in grants, with countries such as France lowering its ODA net disbursements to SSA by 33 percent due to lower levels of debt relief compared to 2012. Also, a 2014 DAC survey on donors' forward spending plans reveals a gradual shift in overall regional allocation priorities toward middle-income countries in Asia, reflecting a shift from grants to soft loans (AEO 2015). In fact, more than 66 percent of SSA countries are projected to receive less aid in 2017 compared to 2014 (OECD 2014a).

These trends raise important policy concerns related to the relevance of (1) the quantity of ODA in closing the savings gap and boosting investment; (2) policies, institutions, and country-specific development strategies in ensuring effectiveness of the limited funds; (3) ODA as a channel of research and development spillover from developed countries; and (4) the role of non-OECD member countries in supplementing the declining flows from OECD member countries. Indeed, non-OECD member countries are increasingly becoming relevant in African countries in many aspects of international engagements including foreign aid. Countries such as China have been increasing their financing commitments to Africa at an alarming rate. For example, its contributions quadrupled in a span of six years, increasing from US$5 billion in 2006 to US$20 billion in 2012 (UN 2014).

Chapters in part 6 provide in-depth insights on foreign aid issues raised above. Chapter 15 examines the impact of foreign aid on economic growth in African countries. The authors categorize the countries on the basis of their legal origin (French and British) and evaluate whether the quantity and quality of aid has differential effects on growth across the two groups of countries. In this context, the chapter uses legal origin as a proxy for quality of governance and institutions given the influence the British common law and French civil law have had on African countries.

In Chap. 16, Diao assesses the relationship between economic growth, structural change, and foreign aid inflows using Rwanda as a case study. The analysis reveals that the differential impact of the levels of foreign aid inflows on Rwanda's economic growth is modest, but the composition of growth differs significantly between tradable and non-tradable sectors. The last chapter in this part (Chap. 17) profiles bilateral and multilateral aid flows to Ethiopia between 1960 and 2014. In addition to evaluating the dynamics

of these flows over time, Lemi provides the changes across sectors and political regimes.

Remittances, Debt, Resource Management, and Economic Development in Africa

Remittances represent the single largest source of international financial flows to Africa and they continue to grow (AEO 2015, 2014). They have overtaken ODA and FDI. The surge in remittances is attributed in part to increased migration from Africa to middle-income non-OECD countries. Per capita remittances for the region were estimated at US$56 in 2013–2014 compared to US$20 in 2003–2004 period, with countries such as Egypt, Tunisia, Lesotho, and Cabo Verde receiving more than US$200 per person in 2014 (AEO 2015). Remittances accounted for approximately 30 percent of total external financial inflows in 2005, and by 2014, the share had increased to 34 percent (Table 1.4).

Remittances are a unique form of external financial flow because they come at the cost of emigration. Hence, the effect of remittances versus the cost of emigration is not direct and obvious both in literature and practice. Most of the literature has focused on the effect of remittances on poverty and financial development, not showing how remittances affect the variables that directly enter into a production function (e.g. physical and human capital and total factor productivity) so as to reduce poverty. Woldemariam and Yiheyis review empirical literature on remittances' impact on economic development in Africa in Chap. 18. The chapter describes the importance of remittance relative to ODA and FDI in the continent and outlines the channels through which remittances influence economic development. The evidence suggests that remittances have the potential to alleviate poverty and improve living conditions in Africa but may worsen income inequality.

On the other hand, Chaps. 19 and 20 evaluate the impact of debt relief and debt sustainability in Africa, respectively. In the early 1990s, the majority of low-income countries (LICs), especially those in SSA, were experiencing excessive levels of external debt (ranging from 200 percent to more than 1500 percent of exports) and debt-servicing obligations. A combination of factors had caused a dramatic rise in external liabilities since the mid-1970s. A lack of diversification in their export base, poor public resource

Table 1.4 Africa's top 10 merchandise exports and imports to the world (US$ billion), 2011–2013

Exports				*Imports*			
Product	*2011*	*2012*	*2013*	*Product*	*2011*	*2012*	*2013*
Mineral fuels, oils, distillation products, etc.	346.8	392.6	340.9	Mineral fuels, oils, distillation products, etc.	85.3	95.9	94.3
Pearls, precious stones, metals, coins, etc.	44.8	46.4	32.4	Machinery, nuclear tractors, broilers, etc.	65.2	64.9	69.3
Ores, slag, and ash	23.3	20.1	24.2	Vehicles other than railway, tramway	44.8	52.1	48.8
Electrical, electronic equipment	11.7	10.6	11.5	Electrical, electronic equipment	42.3	40.3	43.7
Vehicles other than railway, tramway	9.1	9.8	11.4	Cereals	27.3	25.9	22.7
Copper and articles thereof	11.8	11.8	11.2	Plastics and articles thereof	17.7	18	19.8
Machinery, nuclear tractors, broilers, etc.	9.1	8.9	9.3	Iron and steel	17.1	18.9	19.1
Cocoa and cocoa preparations	8.6	10.1	8.7	Ships, boats, and other floating structures	24.5	16.5	18.5
Iron and steel	10.8	8.9	8.6	Articles of iron or steel	16.4	16.1	16.9
Ships, boats, and other floating structures	7.3	6.7	7.9	Pharmaceutical products	12	13.2	15.4

Source: Tables 1.4 and 1.5 in UNECA (2015) based on WTO database 2014

management, and other poor macroeconomic policies left these countries financially depleted and in urgent need of external help.

In the hope of financing their development, these countries borrowed heavily from foreign countries as commodity prices were booming, but when the world demand slumped in the early 1980s and then again in the early 1990s, their debt-servicing capacity was severely diminished. Furthermore, lack of sound macroeconomic policies and of careful management of the currency composition of debt coupled with political instability increased financing needs and failed to restore the capacity to service debt (Brooks et al. 1998).

In recent years, the aforementioned underlying factors that led to excessive levels of external debt have reversed or improved in most countries in Africa. For example, many countries are currently enjoying political stability

with free and fair election increasingly becoming the norm, the export base (especially in non-resource-rich countries) has slightly diversified, macroeconomic management has improved, and macroeconomic policies have become more stable with favorable terms of trade enhancing their international trade and, hence, foreign exchange earnings (AEO 2014; UNECA 2013). Furthermore, the recent heavily indebted poor countries (HIPCs) and multilateral debt relief programs through the World Bank's debt relief initiatives have lessened the heavily indebted poor countries' debt burdens (Fig. 1.4), mitigating the debt overhang and crowding out effects (Wamboye and Tochkov 2015).

Chapter 19 evaluates how external debt service after the adoption of the World Bank and IMF debt relief initiatives have affected economic development in Africa. The authors explore the role of debt relief initiatives in mitigating the effects of debt on sustained and inclusive growth in Africa's resource and non-resource exporting heavily indebted poor countries. In Chap. 20, Megersa and Cassimon provide a comparative assessment of the contribution of OECD member countries versus BRIC to the evolution of SSA's foreign debt sustainability. They find that external demand for SSA's goods and services by OECD member countries and BRIC helps to lower debt-to-exports, debt service-to-exports, and debt-to-GDP ratios and growth.

Chapter 21 analyzes public revenue management in Democratic Republic of Congo. It evaluates the conflicting decisions that many governments in Africa face on revenue allocation between a 'spend today' strategy and a 'save now-spend tomorrow' approach; with the estimation results revealing that proper management of sovereign fund could contribute significantly to macroeconomic stability in the country.

Conclusion

The analysis used in this book is multifaceted. For example, some chapters employ an exploratory approach to provide trends, and distribution of foreign capital in Africa across sectors, and different political regimes. Others evaluate the strategic motives of investors, donors, and policy makers in recipient countries, while some look into the implications of this foreign capital on Africa's economic development. Overall, this book offers hard-headed prognosis on the state of Africa's foreign capital (including FDI in land) and how to facilitate efficient policies necessary for meaningful, sustained, and inclusive development. The topics explored in this book by

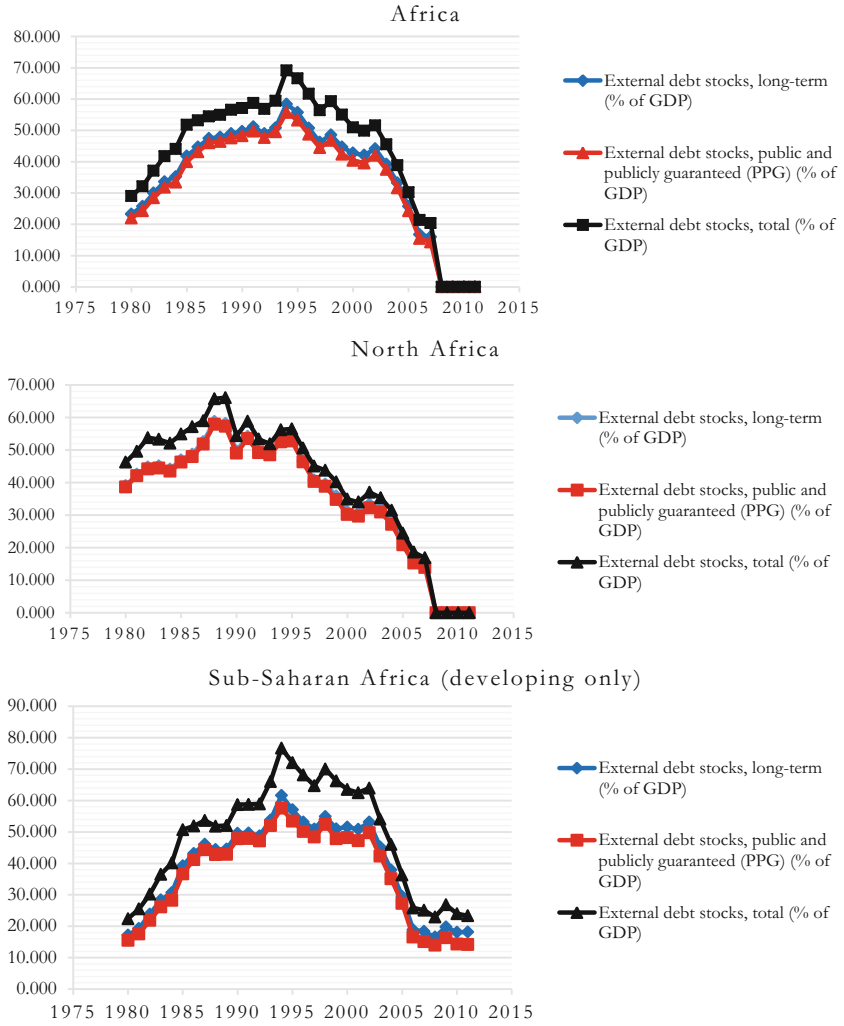

Fig. 1.4 Trend in Africa's External Debt Stock, 1980–2011 (*Source*: Authors calculations based on African Development Indicators database (2016))

experts in their respective fields have particular resonance with, and relevance to, the changes currently taking place in Africa. It provides a very interesting read to academicians, policy makers, and practitioners.

Notes

1. Sachs (2005), IMF and World Bank (2005), UNDP (2005).
2. Heller (2005), Bird and Milne (2003).
3. Ajayi and Ndikumana (2015), Ndikumana and Boyce (2011a, 2011b), Boyce and Ndikumana (2010), Arezki et al. (2012).
4. OECD stands for Organization for Economic Co-operation and Development.
5. The medium achievers with a human development index of between 0.55 and 0.7 include Botswana, Cabo Verde, Congo, Egypt, Equatorial Guinea, Gabon, Ghana, Morocco, Namibia, Sao Tome and Principe, South Africa, and Zambia.
6. Those with high human development index of above 0.7 are Algeria, Libya, Mauritius, Seychelles, and Tunisia.
7. DAC stands for Development Assistance Committee.

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PART II

Chinese Growing Engagement in Africa: Motives and Implications

CHAPTER 2

The Impact of China and South Africa in Urban Africa

Pádraig Carmody and James T. Murphy

Introduction

There has been much written over the last few years about the "new scramble for Africa" as emerging and established powers and their companies seek increased access to strategic natural resources, and also markets, on the continent (Carmody 2011). This scramble has also involved African companies, particularly those from South Africa and more recently Nigeria. The current round of renewed interest by external and internal powers, like its precursor, is marked by cooperation in addition to competition. In particular, there is an increasingly close alignment between the interests of South African and Chinese governments and some companies. This is allowing power to be projected across borders in novel ways, creating new forms of "geo-governance", which may be more durable than their colonial precursors and even that of the "high" neoliberal era of the 1980s and 1990s.

While characteristics of this emergent geopolitics have been documented in the literature (Carmody 2013; Mohan 2013), as well as its implications

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for industry and extractive sectors (Kaplinsky and Morris 2008; Chakrabarty 2016), less is known about how the BRICS (Brazil, Russia, India, China, and South Africa) are influencing the form and functioning of urban areas. This is significant in part because Africa is now the world's most rapidly urbanizing continent and because cities are viewed by many as essential drivers of long-term development (Njoh 2003; World Bank 2009). As trade and investment relationships between the BRICS and African countries expand and deepen, it is crucial to understand how these are influencing the possibility for the kinds of urbanization (scale) and localization (scope) economies commonly associated with industrial and economic transformation.

In order to assess how the rise of the BRICS powers is shaping cities and industries in Africa, this chapter examines their influence on production and consumption activities. Conceptualizing these activities as being embedded in socio-technical regimes—stabilized patterns of production and consumption governed by/through firms, markets, investors, and commodity flows—we describe the ways in which two BRICS countries are reshaping regimes and transforming the character and function of African urban areas. The scale and scope of these transformations are manifest in what we describe as a new phase of urbanization in the region; one characterized by a dual-fold dynamic of extraversion and intraversion as the business-as-usual exploitation of commodity exports is coupled with a flood of imports of BRICS-produced luxury and wage goods. The net result is that African cities are becoming sites for the coordination of flows of raw materials into BRICS economies while serving as centers for the consumption and distribution of BRICS exports.

The remainder of the chapter is organized in four parts. First, we outline the dynamics of BRICS-led geo-governance in the region, focusing specifically on the activities of China and South Africa. The section that follows argues that this influence is enabling a new phase of urbanization across the region, driven particularly by Chinese and South African trade and investment relations. Next, we describe how these relations are manifesting themselves within production and consumption regimes in Tanzania and Zambia; two contexts that typify the BRICS impact in sub-Saharan Africa today. The chapter concludes with a brief discussion of the challenges facing African cities in an age of BRICS-led geo-governance.

South Africa and China in Africa: A New Age of Geo-governance?

In 2010 South Africa joined the BRICS grouping at China's invitation.[1] There has been a substantial debate about why South Africa should have been asked to join, when other, bigger economies (e.g., Indonesia, Turkey) were not. Some commentators have argued that given South Africa's regional importance, geopolitics trumped economics (Moghalu 2013), but this neglects the ways in which there are also economic complementarities between China and South Africa.

In the latter stages of *apartheid*, big South African conglomerates were largely prohibited by sanctions and domestic capital controls from investing in the rest of Africa, even as they dominated their home economy. The market capitalization of the Johannesburg stock exchange was equivalent to roughly 254% of GDP in 2007 (Federal Reserve Bank of St. Louis 2015), as compared to less than 100% for Brazil, for example (World Bank 2015). This "bottling up" of capital is one of the reasons South African corporates have aggressively sought to expand into Africa and further overseas.

South Africa is now China's largest trading partner on the continent, and its largest single trade partner. There has also been substantial investment by Chinese companies in South Africa. For example, in 2007 the Industrial and Commercial Bank of China, which is now the largest company in the world, bought a multi-billion-dollar stake in the South African Standard Bank, which has an extensive branch network across the continent. This was the largest single foreign investment in South African history. The intermingling of South African- and Chinese-originating capital also has its analogue in coordination between their respective states.

According to an official at the South African Department of International Relations and Cooperation, all of the BRICS have an interest in the African market, but they should be entering it in a "coordinated way" rather than "trampling each other" (interview with Dr. Sookal, August 13, 2014, Pretoria). The desire to achieve such coordination means that the South African and Chinese governments are very attentive to their bilateral relations. For example, when the Dalai Lama wanted to visit South Africa in 2011 and, again in 2014, to attend a Nobel Peace Summit, the South African authorities refused to grant him a visa (The Guardian 2014). Likewise, when there was a widespread concern in South Africa about the impacts of Chinese clothing and textile imports on the industries there, the Chinese government agreed to "voluntary export restraints" of these commodities (Mandigora 2006). This

(temporary) concession demonstrates the importance with which the Chinese government views South Africa.

The emergence of China-South Africa alliance is the result of a number of geopolitical and economic factors that have accompanied the rise of the BRICS. In their pronouncements, the BRICS powers often talk of the need for "win-win" globalization. Rather than being a fundamental break with Western-led globalization, this can be seen as sharing important similarities with it. The so-called free trade, promoted through the structural adjustment programs of the World Bank and International Monetary Fund in the 1980s and 1990s, was meant to bring about mutual benefits. Current BRICS-led or inflected geo-governance in Africa arguably replicates some of the features of earlier rounds of globalization through the competitive displacement of local businesses and the extraction of value from local economies. There is, however, a particular and distinctive discourse which accompanies the current structures.

While much is debated, China's economy is not neoliberal and its foreign aid strategies belie the business-as-usual development policies of the Washington Consensus. The government retains substantial ownership, and arguably control, of key sectors of the economy such as natural resource companies and the financial sector. This facilitates mobilization of domestic resources for domestic investment, outward investment, and the overseas sourcing of critical natural resources to fuel China's economy. One of the main distinguishing features of China's, and the other BRICS, involvement in Africa, is their shared policies of "noninterference", both in the political affairs of African states and in relation to their economic policies. China and the other BRICS further claim to be agnostic about economic policy, favoring a flex or mixed economy approach.

Contrary to the dictums of neoliberalism, this has arguably created policy space for more interventionist states in the governance of African economies. There is some evidence of this as Zambia recently renationalized its railways and the national phone company which it had previously sold to private investors. However, the economy remains largely structured along neoliberal lines, with an emphasis on "free trade" and attracting foreign investment. The interplay between status quo neoliberalism and the emerging influence of the BRICS on African economies results in increasingly hybridized political economies marked by simultaneity of state- and market-driven development initiatives. Moreover, the forms of market and investment access that China and South Africa, and other powers, continue to achieve are creating new

tensions and forms of resistance in places like Zambia where there have been extensive labor unrest and sometimes "anti-Chinese" riots.

Despite the tensions, the BRICS—but especially China—sustain an increasing influence over policy making and planning activities throughout Africa. Chinese power is derived in part from its leaders' ability to play a two-level game. At one level, China is an important member of the World Bank, International Monetary Fund, and the World Trade Organization and can be seen to be promoting external neoliberalization through these institutions (see contributions in Bond and Garcia 2015). This is because Chinese and (some) South African corporations benefit from neoliberal economic regimes and global and regional structures of governance that are favorable to deeper penetration by corporate capital. Further towing the free trade line, Chinese foreign policy officials say that they will never accept restrictions on China's foreign trade. These governance strategies facilitate continued resource, market, and investment access for Chinese companies in Africa and beyond.

On another level, China strives to present and construct a counterpole to Western power, its officials arguing that their aid, trade, and investment relations do not come with conditionalities. This is attractive to and for African political elites, given the history of Western domination on the continent and the policy of noninterference which China and the BRICS implement. Incumbent political leaders are free from conditionalities aimed at promoting democracy and/or multiparty systems, and thus better able to maintain their positions and obstruct the movements of opposition parties (Tull 2006; Carmody 2011; Mohan 2015). Moreover, African elites are able to benefit as a result of Chinese trade and investment relations, particularly in extractive and construction sectors, thus further consolidating governance practices and ensuring that the working classes and poor remain unable to influence their constitution and direction (Tan-Mullins et al. 2010). All told, China's two-level strategy enables it to gain legitimacy within the context of current global governance arrangements and in relation to the political-economic priorities of the powers that are within African countries.

Importantly, however, China's influence throughout the continent is not being achieved unilaterally but through alliances and partnerships with African leaders. South Africa is playing a particularly significant role in this regard as it maintains what we consider a hand-in-glove relationship with China. For example, for the first time since its foundation in 2002, the African Union now has a South African chairperson, and the new African

Union headquarters in Addis Ababa was built and gifted to the organization by the Chinese government. According to a researcher at the South African Institute of International Affairs, South Africa often serves as an "echo" of China in debates about African development (interview with Chris Wood, Johannesburg, August 13, 2014). While South African government ministers sometimes rail against imperialism, current governance arrangements facilitate the deepening penetration of South African and Chinese corporate and human capital into the region, from which value is extracted. Paradoxically, railing against (Western) imperialism may be a form of soft power projection which allows easier access to markets and investment opportunities for South African companies.

Through this geo-governance alliance, China and South Africa are helping to reshape the form and functions of African cities, creating new structural inequalities that raise critical questions as to whether the region can truly "rise" and converge economically with the West. Whereas urban concentrations were meant to provide the basis for widespread, sustained, and long-term growth and industrial diversification/specialization (e.g., World Bank 2009), we find that African cities are instead serving as mediators through which the BRICS' power is articulated and consolidated in the region and beyond. This is occurring through a combination of classical forms of extraverted trade and investment relations, and through what we describe below as "intraversion", a process through which consumption in African cities is increasingly being determined and shaped by an expanding BRICS-led flow of imported commodities into local markets. Beyond facilitating the consolidation of control over markets for wage and luxury goods, intraversion is sustained through several trade and investment channels and by exploitative labor regimes and supply-chain management practices in countries like China. Before detailing the drivers and implications of these dynamics, we briefly trace the historical evolution of African cities since the colonial age, arguing that they are now experiencing a qualitatively distinct period as a result of BRICS-led geo-governance.

Urban Forms and Functions in Africa: A Brief History

African cities have been shaped and structured by a number of morphological processes since the colonial era. Generally speaking, three phases mark their evolution since the early twentieth century. The colonial phase was characterized typically by some preservation of indigenous urban centers and by the establishment of new capitals from which the colonial powers

could exert control and express their cultural identities through architecture and urban form (Winters 1982). Segregation between Africans, nonwhite populations, and white colonists was the norm, and the central parts of cities were organized into tightly controlled residential, commercial, and production spaces meant to reflect the order and modernity of the extant power. The residences and markets available to African populations were often externalized to areas beyond the direct control of colonial urban planners, with rural communities being poorly linked up to the urban system (Rayfield 1974).

As African countries achieved independence, a second phase of urbanization began as African states sought to replace colonial urban forms with distinctly African and modern ones (Winters 1982). During this period, typically from the 1960s to mid-1980s, urban populations grew rapidly as colonial barriers to internal migration fell and states invested in infrastructure aimed at modernizing cities, industries, and spatially integrating towns in line with the tenets of central place theory (Mabogunje 1976), at times building new cities (e.g., Dodoma, Abuja) as centers of government power. Cities were viewed as powerful symbols of progress and, in some cases, the power of individual autocrats and/or ruling political parties (Winters 1982). During this period, African states sought to achieve greater autonomy and autarky, in part through import-substitution industrialization strategies, and major cities were privileged as sites for accumulation. Because most economies still relied on rurally-based productive and extractive sectors as key sources of foreign exchange, these sectors and foreign aid were relied upon to pay for urban modernization. Although this so-called urban bias facilitated the upgrading of some infrastructure and subsidized state-owned industrial enterprises, it ultimately failed to reposition or significantly empower most African economies within the world system (Lipton 1977).

The energy and economic crises of the 1970s and early 1980s were a major reason why so-called urban bias strategies failed to create the urbanization and localization economies needed to spur industrial development in many African countries. In response to the collapse of global Fordism, the rise of East Asia and the paradigm shift to flexible specialization, export-oriented industrialization supplanted import-substitution strategies, spurred on by the Washington Consensus and its promotion of neoliberal policies. As structural adjustment programs became the primary tool for economic development in the region, priorities shifted from the establishment of nascent domestic industries to an emphasis on sectors where African countries could sustain comparative advantages in export markets.

The net result was that state-sponsored investments in cities declined; state-owned enterprises were divested from, downsized, and/or eliminated entirely; and industrial policy was supplanted by a reliance on market forces and private capital to achieve economic transformation.

These policy shifts led to a third phase of urban development in Africa; one marked by several key trends which persist today. Specifically, African cities became nodes in networks of global trade flows—centers for the logistical and financial management of exports (esp. minerals, petroleum, and cash crops) and the coordination of inflows of imported goods. Foreign direct investment (FDI) flowed into production and extraction activities in rural areas, trade barriers fell, and imported goods became more common in domestic markets as structural adjustment policies took hold. Cities consequently became less able to generate formal employment and urban informal sectors expanded dramatically to meet the livelihood needs of rapidly increasing populations (Riddell 1997; Briggs and Yeboah 2001). Austerity measures and a decline in foreign aid meant that there was less public investment in the built environments of most cities. Aging infrastructure (e.g., roads, schools, hospitals, power systems) fell increasingly into disrepair, and access to social services and access to basic services and utilities became more splintered along class lines (Graham and Marvin 2001; Linehan 2008). Moreover, labor markets became increasingly polarized between a small group of public- and private-sector elites able to benefit from the increased flows of finance and commodities, and a massive pool of less-skilled workers and recent migrants with livelihoods that are, by and large, confined to low-value production and commercial activities (Wuyts 2001; Murphy 2007).

The urban conditions brought on by neoliberalism have, by and large, persisted in most African cities since the 1990s. As populations have increased dramatically over the past decade, urban infrastructure has been further taxed, while investment in it has remained woefully inadequate (Fox 2014). The net result has been a decoupling between the expansion of the size of cities and the rate of industrial growth. African economies are not "rising" (growing) on the basis of the scale and scope economies commonly associated with urban transitions (see World Bank 2009), but instead through growth in the (liberalized) exportation of extracted commodities produced in rural areas (see Ferguson 2006). When coupled with enhanced and increased flows of cheap imported (wage) goods into the region, the result has been a decline in domestic (formal and informal) manufacturing and an increase in livelihoods supported through commercial trade

(UNCTAD 2012). These trends raise important questions about whether African economies can develop and distribute the benefits of growth in the absence of a large-scale manufacturing base.

While the trends have been consistent since the 1980s, recent studies have highlighted qualitative changes to the ways in which African cities are developing, spurred on in large part by investment and trade relations with BRICS economies such as China, India, and South Africa (Lyons and Brown 2010; Carmody 2013; Chen and Myers 2013). It is within African cities that these capital and commodity flows are having some of their most profound effects. Investments in ports, highways, railways, telecommunications, and special economic zones (SEZs) are transforming the built environments of many African cities, enabling new forms of articulation with global markets and capital/commodity flows. Moreover, the migration of citizens from the BRICS—particularly China—is reshaping the production and consumption characteristics of cities and qualitatively altering the look and feel of urban environments.

Such flows and relations are not simply determined by the logics of capital. They are outcomes, in part, of the new era of BRICS-led geo-governance in the region. As Mohan (2013, 1263) notes, with a particular emphasis on China's impact, the impress of the BRICS in urban Africa is driven by "spatially complex state-capital dynamics" manifest in inward capital flows into strategic extractive sectors, the creation of SEZs, housing and other forms of infrastructure investment, and the mass migration of people (workers, entrepreneurs, advisors) into Africa. As we argue below, the resulting assemblage of actors, materials, and power relations is enabling a new phase of urban change in Africa: one that raises key questions as to whether it will lead to generative forms of urban development or sustain the patterns of extraversion and dependency that have defined much of the region's positionality in the world system for decades.

In order to assess the impacts of South Africa and China on urban Africa today, we elucidate both the channels through which the geo-governance of cities is occurring, and their subsequent implications. With respect to channels, we identify a number of pathways that enable finance, people, commodities, and, ultimately, political influence flow into African cities from the BRICS. These flows are enabling dramatic transformations, manifest principally in changes to urban production systems and consumption practices.

We argue that the governance of these systems, practices, and structures occurs through production and consumption regimes. These are not regimes in the sense of urban regime theory per se (e.g., see Stone 1993, 2015; Davies

2002), although they can be related, but rather socio-technical regimes—dynamically stable arrangements that govern socio-technical systems (e.g., industry, consumer markets, energy) and guide their evolution over time and in space (Geels 2004; Geels and Schot 2007; Smith et al. 2009). Regimes operate through mutually understood conventions, rules, routines, and meanings, technologically mediated practices, and power relations and structures that promote particular interests (e.g., the state, private sector, civil society), guide a socio-technical system's evolution, and sanction or marginalize actors or places which may be at odds with, or irrelevant to, the demands/desires of the powers that be. By analyzing the constitutive features of socio-technical regimes, and tracing their evolution over time, one can assess the scope, directionality, and drivers of structural change in cities and regions.

The remainder of the chapter examines two regimes that determine many urban forms and functions in Africa—production and consumption—and describes ongoing changes to these in an age of BRICS-led geo-governance in the region. In each case we find that China and South Africa, in particular, are reshaping the structure and dynamics of production and consumption regimes in ways that support what we describe as a simultaneous dynamic of extraversion and intraversion. BRICS-led investments in production regimes are enabling long-standing patterns of resource and capital extraction (i.e., extraversion) from Africa to China and South Africa to continue. At the same time, intraversion—the inward flow of commodities from the BRICS into mass markets in Africa—is occurring through three channels: the migration of entrepreneurs and small business owners from China (especially) into African cities, the articulation of middle- and higher-income Africans into value chains governed by lead firms based in the BRICS, and the rapid growth of smaller-scale international trade activities that link mass consumers in Africa to producers based in BRICS economies. The net results are consumption regimes where imported goods are favored or are more affordable, declines in the domestic production of wage goods, and the increasing prevalence of petty trade as a livelihood strategy. Despite the rate and scale of urban growth, manufacturing industries have not emerged with any significance, thus raising questions about African economies can achieve widespread development solely through commodity extraction and commercial activities. Given the absence of cities able to foster industrialization effectively, we need to ask whether African economies can truly "rise" in the coming decades.

The BRICS' Influence on Urban Production and Consumption Regimes

Robert Cox (1987) argued that economic production was a source of state power. This is certainly true, but the realization of power is partly dependent on the capture of value through the process of exchange. It is often held in international relations that dominance in economic production is a major source of state power. However, power flows also through the imperative and necessity to realize profits from production through the circulation and exchange of goods and services. Cities, as centers of consumption, production, and exchange, are thus key nodes wherein the outcome of such power relations is most evident. As the power and influence of China and South Africa increases across the subcontinent, the morphology of African cities and economies are being transformed through significant and long-lasting changes to the production and consumption regimes that support the functioning of cities and their connections to the global economy. Each subsection below describes regime changes playing out in many cities, drawing principally on evidence from Tanzania and Zambia.

Production Regimes

Our analysis of production regimes focuses on two sectors in two countries. We first examine changes to a typical extractive sector and focusing on copper mining in Zambia. While the first case is not explicitly urban, it does highlight the extraverted nature of the relationship between the BRICS and Africa, and the limited contributions that extractive industries are making to economic development. The second case, that of wood products and furnishing with specific emphasis on Dar es Salaam, demonstrates how trade, investment, and migration flows to/from the BRICS are further marginalizing Africa's industrial capacity through a dynamic of downgrading and (neo) intermediation. Both cases demonstrate that production regimes in Africa are increasingly unable to generate the surpluses needed to support endogenous industrial development and, consequently, the economies of scope and scale that might empower African cities in the global economy.

For many/most African economies, production is dependent fundamentally on access to natural resources, such as copper in the case of Zambia. Natural resources are foundational to the geographically embedded accumulation of capital, whereas the opening up of new markets is needed to alleviate the problem of overaccumulation of capital. These twin imperatives

find expression in the geopolitical and economic strategies of the BRICS and other powers. Unfortunately, this has limited the space for domestic value creation and capture in countries such as Zambia. With the recent dramatic downturn in copper prices and subsequent fall in the value of its currency, some interview respondents felt that Zambia's economy was "collapsing". Coupled with the phenomenon of "load shedding" (electricity black or brown outs), Zambia is increasingly seen as a precarious economy that belies the status it once held as a shining light of or exemplar for the "Africa Rising" discourse.

Much of this precarity is a direct result of the neoliberal reforms promoted by the World Bank and the International Monetary Fund which started in the 1980s, and structural changes that have led to an increasingly foreign-dominated and highly dependent economy. For a variety of reasons, including the cost advantages which Chinese commodities have as a result of that country's sophisticated trade and industrial policy, Chinese and South African companies have been some of the biggest beneficiaries of the economic opening that these policies facilitated. Foreign domination of the economy is not just evident through investment but also through the circulation of commodities and the extraction of natural resources. This particular modality of geo-governance is facilitated both by the global trade and capital regimes and the (in) formal alliance between South Africa and China, which is expressed most concretely through the BRICS coordination mechanism. The net result is a continued, and arguably sped up, flow of raw materials and natural resources out of countries like Zambia and into urban production regimes in the BRICS; extraversion but with emerging economies as increasingly significant extractors of surplus value.

As Duffy (2005) observed in the case of Madagascar's precious gems exports, extraverted relations such as these can help to create extractive enclaves that manifest themselves as sites of production (e.g., copper mines) in rural areas and consumption in African cities (e.g., upscale shopping malls). Even in cases, for example, in Botswana, where extractive sectors are growing and seemingly stable, significant questions remain as to whether production regimes can translate medium-term resource rents into long-term development that reduces poverty and distributes the benefits of growth across society (Hillbom 2008). In the age of neoliberalism, the effective integration of extractive enclaves and SEZs into wider and more distributive processes of urban and industrial development (e.g., through their support of agglomeration economies) has remained elusive in most places (see Phelps et al. 2015). If widespread national development

is to occur in Africa, cities need to serve as centers for upgrading and diversification; developing in part through the surplus capital generated in extractive and/or primary commodity export sectors. At the present, however, BRICS-led governance does not hold much promise for industrial diversification, upgrading, and/or greater value capture domestically, in the Zambian case or many others across the continent.

Beyond primary commodity sectors, the BRICS are also directly and indirectly transforming production activities in the cities of sub-Saharan Africa. There are three primary drivers of, or channels, through which these changes are occurring (see also Bräutigam and Tang 2014). First, imports from China and other BRICS are flooding into African consumer markets, facilitated both by foreign importers/traders and by Africans who travel abroad to source manufactured retail and intermediate goods. Second, Chinese (esp.) entrepreneurs who migrate to Africa are establishing small- and medium-scale enterprises producing goods for domestic markets, many of which are based in urban and peri-urban areas and which source goods/inputs from manufacturers in the BRICS. Third, Chinese and South African transnationals are investing in joint ventures and sole ownership opportunities within newly established SEZs in the region. The result of these influences has been the decline in indigenously owned and operated factories in light industry sectors (e.g., wood products, metal working, textiles), an increasing reliance on imported (low cost) wage goods, and the further marginalization of microenterprises in the urban informal sector.

Recent research in the wood products and furniture manufacturing sector in Dar es Salaam, Tanzania, highlights the effects that these developments are having on production regimes (Murphy and Carmody 2015). To begin with, there are few, if any, large-scale, African-owned firms in the city. While some firms are operated as formal enterprises, these are small-to-medium-scale and manufacture products for sale in (primarily) niche markets. While niche markets can be relatively lucrative in terms of the value added to the products sold in them, they are tiny in comparison to the mainstream domestic market and unlikely to provide significant growth opportunities in export markets. As such, differentiation enables these firms to remain relatively protected from the impacts of the BRICS but unable to transform the economic landscape through large-scale forms of industrial upgrading.

In contrast to differentiated enterprises, the vast majority of wood product manufacturing firms in Dar es Salaam are micro-scale enterprises that are often operated as associations or groups of *mafundi* (woodworkers) who

make low-quality and cheap products for the local market. While these firms have traditionally been protected from imports and foreign investors in domestic markets, they are increasingly facing direct competition from cheap imported goods, coming principally from China and other parts of Asia. The result has been a dynamic of quality downgrading due to hypercompetitive, price-based competition as imports become affordable to even the poorest consumers. Moreover, because imported furnishings and wood products are often preferred by consumers and deemed to be higher quality, by some, due to their design attributes (e.g., finishing, detailing, and upholstery), local production regimes have been put into direct competition with imports. Specifically, many manufacturers no longer produce wood-only furnishings, using Tanzanian timber products, and now instead use imported materials such as multi-density fiber board, faux leather, textiles, and paints/varnishes in order to build "Chinese-like" furnishings. Even so, these firms remain at a significant disadvantage with respect to quality control given the machinery and expertise available to Chinese competitors. Worse still, the comparative advantage that local manufacturers maintained through their use of Tanzanian hard and softwoods, and their ability to work with these materials, is fading given the kinds of furnishings demanded by most consumers and the rising costs of unprocessed timber products, as the demand for these from countries like China has increased significantly. The downgrading of production regimes in urban Africa thus has a direct parallel in the sustenance and upgrading of industries in the BRICS.

To summarize, the struggle to compete as small-scale manufacturers in urban Tanzania has meant that the production regime is evolving in two ways. First, firms that have the resources, market access, and design/production capabilities strive to differentiate themselves from mass markets and develop higher-value niche products that demand higher prices and which remain somewhat immune to BRICS-driven competition. Second, and much more commonly, small-scale manufacturers that cannot access or adjust to the demands of market niches are increasingly giving up on the production side of the industry, shifting instead into the resale of imported wood products. In doing so, these manufacturers are becoming second- or third-tier intermediaries in value chains emanating from overseas, particularly China. As Lyons and Brown (2010) observe, the shift to mercantilism is further squeezing local manufacturing and is unlikely to do much to address pressing distributional concerns.

The impacts of the BRICS on production regimes in urban Africa are thus emblematic of the extraversion/introversion processes described above. Investments in, and the prioritization of, primary commodity extraction (e.g., Zambian copper, Tanzanian hardwoods) continue to be a sustained form of geo-governance, resulting in a dynamic of extraversion that does relatively little to support distributive development in African cities. What is worse today than in the prior neoliberal phase is that extraversion is occurring in lockstep with what we describe as intraversion as commodities produced in the BRICS or by BRICS transnationals in Africa are beginning to dominate mass consumer markets. The prospects for genuinely African industrial regimes thus seem slim at the present, raising key questions about whether or not the region's economies can truly "rise" in the absence of a manufacturing base.

Consumption Regimes

As the discussion on production regimes highlights, mass consumer markets for manufactured wage goods such as furniture are becoming controlled increasingly by Chinese and other countries' (e.g., South African) imports. Remarkably, the influence of the BRICS is extending into low-value domestic markets, effectively reshaping consumption practices even in informal market spaces. This trend is not simply due to prices, although these are crucial considerations, but it also stems from cultural changes and shifts in tastes and preferences. As cities become more cosmopolitan, diverse, and internationally connected, traditional types of wage and luxury goods are becoming less valued as the symbolic capital associated with imported goods increases. While the furniture market in Tanzania (described above) highlights the implications of such shifts for production regimes and their manifestation in mass consumer markets, such changes are also occurring through direct investments by BRICS-based transnational firms striving to establish footholds throughout African cities.

Investments by these firms are more visible, manifesting in "big-box" stores in upscale shopping malls and retail districts, and their impact is particularly significant in facilitating the intraversion of goods into middle- and upper-class markets. South African retailers have been particularly significant in this regard, spreading out across the continent in order to establish markets among those consumers benefiting the most from Africa's recent growth spurt. Interestingly, however, the supply chains that support these retailers go far beyond South Africa, organized in part through

networks of Chinese manufacturers and intermediaries. The case of Shoprite in Zambia demonstrates the reach and significance of the BRICS in urban consumption regimes and highlights the challenges that African firms and farmers face with respect to accessing and upgrading through ties to these value chains.

Shoprite, a South African-based company, is Africa's largest retailer by turnover, and recently, its Chief Executive, Whitey Basson, announced that it would open twice as many new stores across Africa in 2015 as it did in 2014. This and other South African retailers and companies, such as mobile telecommunications network (MTN), have major impacts on the countries in which they operate in Africa and also serve to help Chinese capital realize value. A recent fieldwork trip to Livingstone, a town bordering Zimbabwe in Southern Zambia, revealed an economy heavily dominated by South African corporates. For example, the Protea hotel[2] there is one of the biggest hotels in the town, and the landscape is littered with other South African companies such as Hungry Lion, Steers, MTN (which sells Chinese manufactures Huawei phones), and Ocean Basket. There are also two large Shoprite outlets in a town of approximately 200,000 people.

An interview with a manager in one of the Shoprite stores revealed that, aside from some vegetables and poultry supplies sourced locally, everything in the store was produced either in China or South Africa. This means that the South African and Chinese economies capture value from Zambia through the almost exclusive sale of their products in Shoprite. Additionally, profits flow back to largely South African shareholders in Shoprite from the sale of these products.

When asked about the level of competition in Livingstone, the manager in Shoprite said that there was also a Spar (another South African company) in the town, but they did not provide much competition. This theme of the monopolization of markets was echoed with managers of one of the Hungry Lion fast food outlets in the town, who said they were "dominating the market". However, one of these managers also noted that "the economy of Livingstone is not viable", as it is now based on tourism, which is small scale. As with Shoprite, much of Hungry Lion's inputs come from South Africa, benefitting that economy rather than Zambia's.

These South African corporates exert extensive competitive pressure on local businesses. For example, one of the managers from Spar who was interviewed had previously run his own retailing business but could not compete with Shoprite and Spar, so decided to close up shop and work for them. "If you can't beat them, join them", he said. Another small-scale

retailer who was interviewed noted that he was thinking of shutting down given monopolization of the market by Shoprite in particular. He noted that it was sometimes cheaper for him to buy mealie meal (a local staple food) from Shoprite for resale, rather than from the national milling company because of the bulk discounts which were available to Shoprite.

South African and Chinese companies are thus increasingly dominating Zambian consumer markets through their commodity sales, facilitated by the infrastructure provided by Shoprite, for example. An interview with a manager of the local branch of Stanbic (Standard Bank) also revealed that most loans to small- and medium-sized enterprises were going for trading. The local small-scale retailer who was interviewed argued that the local economy was now based largely on trade and that there was a need to "emphasize on local productivity". Trade is facilitated both through traditional, face-to-face business networks and by information-communication technologies (ICTs) which have enabled new forms of intermediation—(neo)intermediation—to emerge through websites, email exchanges, Skype calls, and the ability to easily exchange money transnationally (Murphy and Carmody 2015).

South African and Chinese (trans)national capitals, among others, are capturing value through the sale of commodities in Zambia through profit repatriation from direct investments and through money circuits, through loans from banks, for example. Additionally, flows of tourists and business travelers also generate profit for South African and Chinese-owned hotels in the town. Thus, many of the most profitable sectors of the economy are being dominated by foreign capital, which also exercises dominance in local markets, through commodity imports. As African consumer markets are taken over by imports, and (neo) intermediation (commerce) becomes increasingly dominant as a livelihood strategy, crucial questions remain with respect to the vulnerability and dependency of consumers as the production of wage goods is offshored to the BRICS and beyond. In this context, African cities' primary function is to serve as transactional nodes that transfer surplus capital abroad, rather than as incubators for the development of specialization and urbanization economies to foster industrialization and distribute its benefits more widely.

Conclusion

Through an analysis of emergent production and consumption regimes in African cities, this chapter has demonstrated the unique and highly significant impacts that the BRICS are having today. In contrast to prior versions

of neoliberalism, the new phase of urbanization is being driven by more than simply market-centric policies that sought to exploit comparative advantages related to the exportation of primary commodities. This dynamic of extraversion remains although it is qualitatively distinct given that an increasing amount of surplus value is being extracted into the BRICS, but especially China and South Africa. On top of this, imported goods produced or sourced by BRICS-based firms have flooded mass consumer markets, helping to redefine tastes and preferences while simultaneously crowding out local manufacturers through a process we describe as intraversion. The dual-fold process is reshaping urban structures (i.e., institutions, markets) in Africa such that cities function as sites within which BRICS economies can extend and deepen their geopolitical power through continued surplus value extraction.

As African cities grow further and their ties to the BRICS intensify, their development potential will hinge on the quality and nature of urban governance and the ways in which this shapes the evolution of production and consumption regimes. Sustainable and/or more distributive forms of urban development will require the local creation and capture of value through productive sectors and industries able to generate the spillovers and externalities that can sustain innovation and competitiveness for the long run. In order to achieve this, there needs to be a reconfiguration of current geo-governance arrangements, which are reinforcing the extra-/intraversion pairing in urban Africa. How can the neoliberal regime and accompanying BRICS geo-governance be challenged to allow for more just, sustainable, and distributive forms of urban development on the continent? Ultimately, this is a political question, even if its answer finds urban expression and form.

Notes

1. See http://en.brics2015.ru/ for information on the 7th BRICS summit held in Russia in 2015.
2. The Protea group was bought out by Marriot in 2014, but its operational headquarters is still in Cape Town.

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CHAPTER 3

China's Financial and Aid Flows into Africa and their Effects

Meine Pieter van Dijk

Introduction

China's development policy pays a lot of attention to which kind of investment to promote, at home and abroad. Every day we read in the newspapers about China's investments abroad. Companies are bought, new investments are made and deals agreed with big foreign companies. This is encouraged by the Chinese government, since China started the "go-out" or "go global" policy in 1998, which has recently been reemphasized by the Chinese president (China Daily, 24-9-2015).

We are talking at least about five different actors (the Chinese government, State-owned enterprises, Chinese private firms, the Chinese Embassy in the country concerned and Chinese people, who have moved to Africa), each having different objectives for their presence in Africa (Warmerdam and van Dijk 2013b). Given the number of actors in foreign investment, it is not always easy to understand China's strategy, but five motives keep coming back:

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- Assuring the supply of raw materials
- Controlling a larger part of the value chain
- Assuring markets for Chinese products
- Obtaining the necessary technology
- Cutthroat competition in China

Since the Forum on China-Africa Cooperation (FOCAC 2006) was established in 2000, economic and trade cooperation between China and Africa has entered a new era of increased interaction. The FOCAC is a regular meeting where the modalities of the partnership between China and Africa take shape. It produced the Beijing Action Plan 2007–2009. The results of the FOCAC, along with China's Africa Policy (from 2006), laid the foundation for strengthening the relationship between China and African countries in the future. To attract foreign direct investment (FDI), African countries should create an attractive investment climate. Few African countries have put the conditions in place in a systematic and convincing way to convince investors that this is the place to go, although the World Bank initiated structural adjustment programmes of the 1980s and 1990s tried to achieve that. There are a few exceptions, however. Botswana is a country receiving substantial FDI and enjoying stable economic growth. Most of the FDI goes into the mining sector and is probably also attracted because of the political stability and the infrastructure available in South Africa, the country to which Botswana as a landlocked country is linked. South Africa itself is an important destination for FDI for very much the same reasons: a good infrastructure and a stable government. Rwanda is probably an example of an African country which in a very systematic way tries to push itself as a destination for FDI, in particular in the IT sector.

Chinese investments are based on bilateral investment treaties (BITs) (Berger 2008). The Chinese government does not make a distinction between agreements on aid, trade and investment. They are often sold as a package, where each component reinforces the other (van Dijk 2009b). This also leads to some issues sometimes, such as what happens if business relations run into problems? Do you also stop aid?

China is also more and more participating in international peace keeping missions in Africa to legitimate a military presence in Africa, for example, in Mali and Sudan. However, China, through investing and providing aid, also legitimizes governments which in Western countries are considered not credible because the leaders have been in power for too long and have misused their power too often (e.g. Sudan and Zimbabwe; Ellis 2013).

In the literature, there are several debates concerning the increased presence of Chinese companies in Africa:

- It is not just China, but a series of new donors and investors (van Dijk 2009b).
- There are old and new issues, from analysing the presence of China (van Dijk 2014) to studying the benefits of Chinese companies (Warmerdam and van Dijk 2013a).
- The presence of China in Africa is now studied at a different level: What is the impact of Chinese enterprises in different African countries? (e.g. Bastholm and Kragelund 2009).
- The Chinese presence in Africa needs to be understood in a context of increased globalization (Dicken 2007) or as a characteristic of great power (Kennedy 1989).
- Globalization and localization in special China-Africa friendship zones: What insights provide a comparison with the special economic zones (SEZ) in China? (De Beule and van den Bulcke 2009).
- Are many Chinese enterprises in Africa part of the urban informal sector? (Warmerdam and van Dijk 2014).
- Are Chinese investments in Africa part of a coordinated strategy of the all-powerful Chinese government to obtain raw materials for China's industry? (Profundo 2013; Carmody 2012).

We will review some of the evidence but focus in particular on the role China's financial and aid flows to Africa (DAC 2013), which have grown substantially and show "a new presence in Africa" since 2000 (van Dijk, ed. 2009a). China's presence in Africa can be measured in terms of (van Dijk 2009b):

- The number of Chinese people living and working in Africa (Asche and Schüller 2008)
- The goods and services rendered to African countries (MOFCOM 2011)
- The Chinese aid going to Africa: grants, soft loans and debt relief (DAC 2013)
- The role of Chinese foreign direct investment in Africa (UNCTAD 2014)

- Other financial flows between China and Africa such as normal (commercial) loans and export credit facilities (Financial Times, different issues)

The rest of the chapter is structured as follows; section two provides data description and, section three, the literature review on China's financial and aid flows to Africa. The reasons for China's engagement in Africa are explained in section four, while section five looks into two case studies: Uganda and Ethiopia. Section six documents the effects of Chinese investment in Africa, and the conclusion is provided in section seven.

Data

This chapter uses data on financial flows accessed from different publications and websites. We also make use of data collected through interviews in various African countries and reported in Warmerdam and van Dijk (2014) and File and van Dijk (2014). However, it is important to note that data on financial flows from China are not always readily available, although case studies exist. For example, Bastholm and Kragelund (2009) and UNCTAD (2014) give an account of the problem of Chinese financial flows the same way as DAC report (OECD 2014), which contains a few pages on Chinese aid flows. There is no clear data concerning grants, soft loans and debt relief, Chinese FDI and of other financial flows between China and Africa.

Chinese Financial and Aid Flows

Brautigam (2010) situates the current relationship between China and Africa within a historical framework that goes back to the 1960s. Bucking the conventional wisdom that China's substantial increases in aid to the region are motivated by short-term commercial and strategic interests, Brautigam emphasizes that Chinese motivations are broader and longer term. China's presence in Africa is very visible. 2006 is sometimes mentioned as the year that China departed from its traditional foreign policy of keeping a low-key profile abroad. China requires imported raw materials and overseas markets for its final products. Assessing the consequences of China's presence in Africa is no easy task, given the lack of data and the large number of deals between the Chinese government and African countries. We only know these deals through press releases during the visit of a key

Table 3.1 Growth of China's outward FDI stock in selected African countries (2003–2010) (US$ millions)

Country	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Angola	0.3	0.5	8.8	37.2	78.5	68.9	195.5	351.8
Botswana	2.1	3.8	18.1	25.5	43.4	65.3	119.3	178.5
DRC (Congo)	0.2	15.7	25.1	37.6	104.4	134.1	397.4	630.9
Nigeria	32.0	75.6	94.1	630.3	35.6	795.9	1026.0	1210.9
South Africa	44.8	58.9	112.3	702.4	13.5	3048.6	2306.9	4153.0
Tanzania	7.5	53.8	62.0	110.9	104.4	190.2	281.8	307.5
Uganda	1.3	0.2	5.0	18.7	1.6	12.0	58.6	113.7
Zambia	143.7	147.8	160.3	429.4	131.6	651.3	844.0	943.7
Total	386.7	561.4	806.3	2591.6	7516.8	5816.3	6661.3	9707.3

Source: China MOFCOM (2011)

figure from China. Hence, we start with an analysis of the levels of involvement in different African countries.

Chinese enterprises often choose strategically (at least the government-controlled companies). Favourite countries in 2010 are South Africa (mining and banking industry), Nigeria (oil) and Zambia (copper) (Table 3.1). As noted in Table 3.1, Chinese FDI stock in Nigeria in 2010 stood at US$1.2 billion, South Africa 4.2 billion, and Zambia 0.9 billion. However, Chinese FDI stock in Uganda grew real fast between 2003 and 2010. A large portion of this can be attributed to the oil discovery in 2009. In fact, the growth rate from 2009 to 2010 was 94.13 per cent (it doubled in one year) and from 2008 to 2010 was almost a tenfold.

Also earlier stages of investments of Chinese companies were driven by a need for raw materials and serving a large consumer market, which is rapidly developing. Where Zaire, Nigeria and Mauritius ranked one, two and three in 1990, Sudan, Algeria and Zambia were in the top three in 2005.

Foreign direct investment (FDI) is often fiscal driven. Chinese investments are, for example, important in the Cayman Islands. The Financial Times (26-6-2015) estimated that China will be the biggest cross-border investor by the end of this decade, with global offshore assets tripling from the current level of US$6.4 trillion to nearly US$20 trillion by 2020. The journal also claimed that much of the total assets will be in the form of foreign exchange reserves and portfolio investment, but a growing share will come from Chinese direct investment. It noted that Chinese outbound FDI has gone from almost nothing to US$100 billion a year, but only detailed

figures over time are available for Chinese investments in Europe. As a percentage of GDP, the stock of investments is small compared to countries like the USA, Japan and Germany. The China Daily (16-9-2015) quoted a report produced by the Chinese unit of Earnest Young (EY accountants), which states that fast growth in Chinese investments will also be seen in Africa, Australia and Latin America, where infrastructure construction is the key target.

Worldwide 45 per cent of China's total outward FDI is attributable to private enterprises (Shen 2013). It was reported that by the end of 2011, 55 per cent of all Chinese FDI to Africa could be attributed to private enterprises, which had 923 registered projects on the continent (Shen 2013).

The Chinese way of providing development cooperation is linking it to investment and trade agreements (Warmerdam 2015). This leads to a number of issues to be considered as consequences of China's presence in Africa: the long-term effects, the effects on the competitiveness of African economies, the Chinese respect for local labour and environmental standards (van Dijk 2013), the role of Chinese labour in Africa and what Africa can learn from China.

Ajakaiye and Kaplinsky (2009) start their special issue on China in Africa pointing at the fact that limited research on this topic is available and that most research followed an economic approach. Three papers in the special issue deal with trade issues and only two with Chinese investments in Africa. Kaplinsky and Morris (2009) distinguish four types of Chinese investors in Africa: the Central state, the provincial state, investors incorporated in China and Sub-Saharan Africa (SSA) and investment vehicles incorporated in SSA. Pointing at the dynamics of China's outward FDI, they show that the investments go to certain countries and that the picture differs over time. We will first discuss why the Chinese companies invest in Africa and compare the evidence to what the theory predicts. Then two cases (Uganda and Ethiopia) will be presented in some detail before drawing general conclusions about the motives of China to invest in Africa.

Why China Invest in Africa? Theories Concerning FDI

We will first look at the theory about FDI to consider subsequently whether investments in Africa can be explained in that way. Using some case studies, we try to answer the questions why these investments and what can we say about the impact.

Foreign investment has increasingly been considered a contributor to economic growth (Granneman and van Dijk 2015). The interest in the topic of FDI and consequently the development of theoretical models that could explain the occurrence of FDI flows began in the 1960s, just when FDI flows started to rise (Jones and Wren 2006). At that time, however, there was no underlying theoretical model and FDI was explained on the basis of trade theories. As times passed, researchers have attempted to develop a comprehensive theoretical model for FDI. Most researchers built their models on one of the following theories: international trade theory (Ohlin 1933), product life cycle theory (Vernon 1966), the division of FDI (Caves 1971), the oligopolistic reaction hypothesis (Knickerbocker 1973), market imperfection theory (Hymer 1970), the internalizing theory (Buckley and Casson 1976) or the eclectic theory (Dunning 1980). Dunning's eclectic paradigm will be used as the underlying theory for this paper, since it is the most comprehensive theory which has also been used by other researchers, for example, Sun et al. (2002).

Dunning (1980: 1977) suggests that the drive for a firm to engage in FDI is determined by three conditions that are available to the investing firm compared to host country firms. These conditions are (1) ownership advantages, (2) location advantage and (3) internalization advantages, also known as the OLI tripod.

Warmerdam and van Dijk (2013a) found that the five most frequently mentioned motives to come to Africa were "(1) access to local market; (2) intense domestic competition; (3) transfer abroad of excessive domestic production capability; (4) entry into new foreign markets via exports from host; and (5) taking advantage of African regional or international trade agreements" (Gu 2009). This is in line with the theory of Dunning, although that theory had not been the framework for the data collection in Uganda.

Case Studies in Uganda and Ethiopia

The Case of Uganda

Warmerdam and van Dijk (2013a) interviewed almost 50 Chinese entrepreneurs in Uganda to find their characteristics and motivation to invest in that country and to determine which companies (state-owned or private) invest in which sector. Warmerdam and van Dijk (2013a) show that in Uganda China's investments can be in the service sector as well as in mining.

Investments in manufacturing are rare in Uganda. The survey concerned 42 Chinese firms in Kampala. Sixty-five per cent of these companies were privately owned companies, 21 per cent were Chinese state-owned enterprises and the remaining 14 per cent were mixed ownership companies. In mixed ownership companies, ownership consists of mixed state-owned and private-owned equity shares. However, Ugandans do not want Chinese retail traders in the country.

They found that the private enterprises were similarly motivated by the access to the market. Two wholesalers mentioned for example fierce domestic competition in China as the motivation for coming to Uganda.[1] As Gu (2009) found in her study of Chinese private investments in Ghana, Nigeria and Madagascar, in Uganda Warmerdam and van Dijk (2013a) also found that some investors were motivated by attractive Ugandan government policies. These included import tax exemptions on semimanufactures and tax waivers on a lot of construction materials.[2] None of the private enterprises in Uganda mentioned the transfer of excess domestic production capability abroad. However, this is likely because the largest private manufacturing investors in Uganda did not have parent companies in China. The only exception is Hisense. Hisense is a state-owned consumer electronics company. In Uganda it has formed a partnership with Zhang's Group. The partnership is currently still a small operation. It produces 300 TVs a day.[3] Hisense is using this assembly plant in order to gain access to the local market, with the potential for expansion as the market develops.

A small number of respondents also stated that they had come to Uganda through connections with friends and relatives. The manager of Dong Fang Development Company Limited had first worked for his uncle's textile wholesale business in Kenya.[4] As business developed, he decided to come to Uganda with his wife and his brother's family. The owner of Zhang's Group came to Uganda when his father was working there on a project.[5] He decided to stay and try to develop a business there. The owner of the Landy Industrial Complex had originally been a trader in Senegal, Cameroon and the DRC (Congo).[6] When business was slow there, one of his friends suggested that he came to Uganda to test the market. After failing to sell expensive, high-quality products, he switched to products more suited to the market. He has since developed from a trader into a large-scale investor. None of the private companies had come to Uganda through the encouragement of attractive Chinese government policies, although a small number had come on Chinese government projects and stayed to develop their own businesses. This number is rather small and is in stark contrast to the

picture painted in the literature (e.g. van Dijk 2009b) that the government is providing a large-scale support to Chinese companies, and many workers stay after Chinese government-funded projects are completed (Fig. 3.1).

Market potential and market access were mentioned as the main investment determinants for a vast majority of private companies. Ninety-two per cent of private enterprises were interested in the Kampala market. A further 58 per cent were interested in the Uganda market as a whole and 29 per cent were interested in the regional market (of neighbouring countries). A number of respondents described Uganda as a relatively central location from which they could service markets in South Sudan, DRC, Tanzania, Kenya and Rwanda. One respondent, in fact, stated that he had looked at the map of Africa and decided to come to Uganda because of its central location.[7] A number of respondents stated that traders and businessmen from neighbouring countries often came to Kampala to buy wholesale products that they then sold in their countries of origin. This was an additional motivation for locating in Kampala, rather than other cities in Uganda. The owner of Landy described how he had tried to invest in the DRC but found that poor infrastructure meant that he lacked efficient access to markets. He stated that by investing in Uganda, he could access the markets he had wanted to access in the DRC, as well as markets in other neighbouring countries. Other private enterprises reported that Uganda had a relatively stable investment climate, compared to neighbouring countries. Thus, by investing in Uganda, they could minimize their political risk

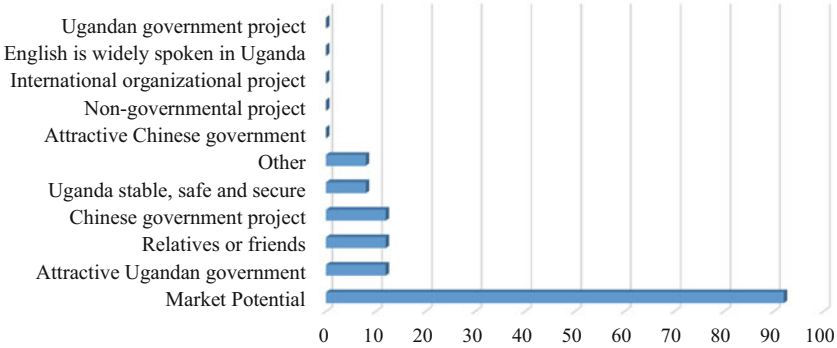

Fig. 3.1 Investment determinants for Chinese private enterprises in Kampala (per cent of respondents, respondents provided multiple answers) (*Source*: Warmerdam and van Dijk (2012))

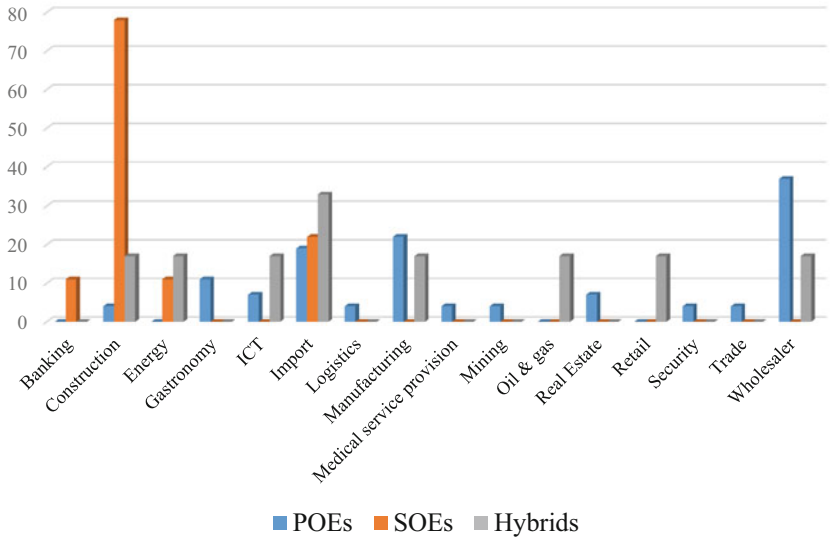

Fig. 3.2 Sector engagement of Chinese enterprises in Kampala, Uganda (per cent of total per ownership form) (*Source*: Warmerdam and van Dijk (2012))

but maximize their economic benefits by servicing neighbouring markets (Fig. 3.2).

The Uganda Investment Authority investor report found that two sectors saw particularly high levels of engagement in terms of the number of projects (UBS 2012). Manufacturing had the highest number of projects, accounting for 29.2 per cent of all investment projects in Uganda (UBS 2012). Wholesale and retail trade was the second largest sector, in terms of number of projects, accounting for 17.7 per cent (UBS 2012). Gastronomy, agriculture, ICT and construction, respectively, made up the remainder of the top six sectors, accounting for 9.3, 6.9, 6.3 and 6 per cent of the number of projects (UBS 2012). In terms of the average investment per project, ICT, mining and construction were the three largest sectors. The average ICT project had an investment of US$8.5 million, mining had US$6.4 million and the construction sector had an average investment of US$4.9 million (UBS 2012).

The Case of Ethiopia

According to File and van Dijk (2014), the relations between China and Ethiopia have shifted from simple government to government relations to business to business relations. The government to government relations have paved the way for Chinese companies to invest in Ethiopia. According to Ethiopia's Investment Authority, there were about 600 Chinese companies operating in Ethiopia with an investment capital of about US$2.2 billion in 2010. Some of these new FDI is coming through a Chinese special economic and trade cooperation zone (SEZ) for which Ethiopia is one of the seven qualifiers in Africa. It is located strategically between the capital Addis Ababa and the port of Djibouti, the major outlet for landlocked Ethiopia. China has promised to also build a better rail road connection between the two cities and in return it has received a huge area of land, build up with uniform production halls, like what we know as industrial estates in China. Some of these units will eventually be used for producing export products. The volume of trade between China and Ethiopia has now surpassed about 20 per cent of Ethiopia's total trade volume. This was zero before 2005. The new agreements with Ethiopia show that the Chinese are also interested to use cheap African labour and export to the European market from an African production base.

Uganda and Ethiopia both welcome Chinese investments, although they are also aware that they do not want Chinese retail traders (Uganda) or too many Chinese workers (Ethiopia). What is new is that in the case of Ethiopia, Chinese entrepreneurs are clearly using production in Africa to gain access to the European or American market. Three motives are mentioned. Firstly, they use Ethiopian raw materials (e.g. leather), which no longer needs to be shipped to China first. Secondly, Ethiopian labour is cheaper than Chinese labour, certainly given the wage increases during the last five years in China. Finally, China would benefit from the favourable trade arrangements Ethiopia has with the European Union (EU) and the United States (USA), and by being a least developed country, it can export to the EU and the USA at almost zero duty rates. In other countries, the Everything But Arms (EBA) agreement provides similar access to other countries (van Dijk 2009b).

Effects of Chinese Investments in Africa

The financial flows lead to the following issues:

1. The money available for aid (Chaponnière 2009) and for investments (Marysse and Geenen 2009) is not always clearly separated. The more

fundamental question is as follows: Is the Chinese money used for development purposes and does it benefit poor people as well?
2. African countries can try to use Chinese loans to avoid the conditionality of the World Bank and the IMF, but there is a fear of amassing unmanageable debt. Also the donor-constructed notion of accountability could be threatened and the question is as follows: Will African countries eventually be able and pay back all these loans?
3. What is the role of trade agreements (van Dijk 2009b) and bilateral investment treaties (BITs) in China's foreign policy (Berger 2008) in determining the conditions under which China brings finance into Africa?

Other effects of the Chinese investments in Africa are:

1. Because China shows respect for Africa (Ellis 2013), it has wiped out the Washington consensus, the neoliberal economic policy model which dominated the debate in developing countries in the 1980s and 1990s (van Dijk 2009b).
2. The European Union (EU) and the United States (USA) are losing influence in Africa. However, the risk exists that China will be sucked into more military interventions in Africa because of its negligence of human rights issues. However, African governments can also use China to gain leverage in their negotiations with the EU and the USA.
3. China has a preference for fragile states and sometimes works with countries that are very critical about the USA or the EU. It is important for China that a minimum of order is assured. Internationally, China's role in Sudan and Zimbabwe is not always appreciated.

From different case studies, we conclude that there are different levels of intervention in Africa.[8] At least four levels of intervention can be distinguished, taking the aid provided and the amount of Chinese Foreign Direct Investment (FDI) as criteria. Table 3.2 shows that aid is the instrument used in the first stages of involvement, while investments gradually start playing a more important role. This distinction leads to four levels of involvement and each time an example is given of a country, which fits in that category.

The table mentions two countries where China is deeply involved in the energy sector and where the assistance of the World Bank and the International Monetary Fund (IMF) is less important (Angola and Sudan).[9]

Table 3.2 Examples of Chinese involvement in Africa through aid and FDI

Degree of involvement	*Aid*	*Foreign direct investment*
1. China is hardly playing a role	Some aid is given, like in some smaller countries in West Africa	Not yet
2. Countries where China is building up political credit	More aid is provided, for example, in West Africa and Tanzania	Some local investments are starting
3. Because of historical reasons, lots of Chinese investments	Some aid, but less important than investments	Starting real FDI: for example, in Ethiopia, Zambia and South Africa
4. Deeply involved in at least one strategic sector, for example in energy	Some aid, but less important than other activities	Substantial investments and involvement: Angola and Sudan

Source: van Dijk (ed., 2009a: 206)

Secondly, there are countries mentioned in Table 3.2 that are under the dominant Western development model, the so-called Washington consensus, but which for historical reasons have a lot of Chinese investments (Zambia and South Africa). In the third place, there are countries where China is building up political credit and intends to become more active (West Africa and Tanzania). Finally, there are a number of countries where, currently, the Chinese hardly play an important role. In some of the smaller West African countries, for example, its role is limited to providing some development cooperation and exporting some basic cheap products from China.

We conclude from Table 3.2 the importance of historical relations (phase 3) and of specific raw materials (phase 4). Secondly, there is clearly an intervention strategy behind the activities, starting with aid, developing economic activities as the second step and finally, assuring the supply of raw materials and the sales of Chinese manufacturing products, which happen in stages 3 and 4. Aid, investments and trade mutually reinforce each other in the case of China (Asche and Schüller 2008).[10]

Conclusion

We note that Chinese investments are always strategic: They may serve a specific purpose. China is interested in a specific sector or technology or wants to assure the supply of raw materials or the market for Chinese

products. China has been very successful in Africa and will be remembered for its contribution to infrastructure development.

Most countries welcome Chinese investments, and very few have an explicit policy, for example, concerning the use of Chinese labour or the required use of local raw materials. The two case studies show that Uganda and Ethiopia both welcome Chinese investments, although they also put some conditions to Chinese investors and retail traders. Finally, it is new that in the case of Ethiopia, Chinese entrepreneurs are clearly using investments production in Africa to gain access to the European or American market.

Ellis (2013) provides an interesting perspective on the role of China in Africa. The country not only helped to improve the infrastructure but also contributed to Africa's renaissance or what Ellis calls the decolonization of the Western idea of supremacy. He notes that Africa has gained confidence to solve issues in its own way, sometimes informally and sometimes using unexpected resources such as the new presence of China, or the positive effects of infrastructure and economic integration. If peace can be kept, with the help of international and more and more continental organizations, Africa will be able to continue its current economic growth and even feed a rapidly increasing population, expected to go from one to two billion people between 2014 and 2030.

We can conclude that China has contributed to "booming Africa", supported by the fact that Africa has grown between five and six per cent continuously since 2000. According to the famous Blair report on Africa, one-third of this growth (two per cent) is due to China, partially because of the construction of infrastructure, partially through the FDI and aid and partially because the additional demand for raw materials caused the quantity sold and the average price of raw materials to grow, at least until 2007.

Notes

1. POEN-LC, 2012; POEN-LMF, 2012.
2. POEL-Landy, 2012; POEL-ZG, 2012, and POEL-NGHTTG, 2012.
3. POEL-ZG, 2012.
4. POEN-DFB, 2012.
5. POEL-ZG, 2012.
6. POEL-Landy, 2012.
7. POEN-WBBT, 2012.

8. For example, Kragelund (2007), Large (2007), Marysse and Geenen (2009) and Tegegne (2006).
9. Recently, Sudan is trying to come to terms with the IMF. Angola opted for a more attractive package offered by China.
10. Marysse and Geenen (2009) make a convincing case that the Sino-Congolese cooperation agreements cover "all economic relations between the two countries in one text": Chinese aid is part of a larger package of investments and trade deals.

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CHAPTER 4

Enhancing the Impact of Chinese Development Finance for Sustained Poverty Alleviation in Africa

Patrick N. Osakwe

Introduction

The new millennium began with two events of significance for Africa. The first is the resurgence of growth in Africa, after decades of low, and for some time negative, growth as well as pessimism regarding prospects for sustained

The motivation for this paper came from presentations made by the author at two seminars on African development issues and challenges. The first presentation on "Fostering China-Africa Cooperation for Development" was made at the World Expo in Shanghai, China, on 18 June 2010 and the second was a keynote lecture entitled "China and Africa: Opportunities and Challenges to Africa's Development", delivered at a workshop on "The Rise of Africa: Africa as a Growing International Power Bloc" organized by the Institute for Cultural Diplomacy, Berlin, Germany, from 9 to 11 December 2010. I thank participants at these meetings and the external reviewers of this manuscript for their comments and suggestions. The views expressed in this paper are those of the author and are not to be taken as the official views of the UNCTAD Secretariat or its member states.

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growth and development on the continent. The second event is the rise of Chinese economic engagement in Africa, which came as a surprise to most economists and development analysts and is undoubtedly one of the factors that contributed to the high and robust growth experienced by the continent in the past decade. China is certainly not new to Africa. It has a history of partnerships with African countries dating back to the late 1950s although at that time the focus was largely on political rather than economic cooperation. Since 2000, the focus of the relationship has been increasingly on economic cooperation as evidenced by the growing trade, aid, and foreign direct investment (FDI) flows between China and the continent.

Over the past decade, there has been an enormous increase in the number of studies on China's burgeoning relationship with Africa. Yet, not much is known about the precise magnitude of Chinese development finance in Africa apart from the fact that it has grown rapidly over the years. In addition, there are no comprehensive studies on the impact of these flows and on how to enhance their development effectiveness. It is against this backdrop that the present chapter attempts to shed some light on China's growing partnership with Africa with particular emphasis on how to enhance the impact of its development finance for sustained poverty reduction in the continent. The chapter is organized as follows: section one examines and analyses trends, patterns, and features of Chinese development finance in Africa, with a focus on aid, FDI, and debt. It also discusses fundamental differences between Chinese development finance and those of member states of the Organization for Economic Cooperation and Development (OECD). Section two assesses the impact of Chinese development finance in Africa and also highlights some of the emerging challenges associated with the new partnerships. Section three focuses on how to make Chinese development finance work better for Africa and identifies policy measures that should be taken by both China and African countries to achieve this objective. The final section contains some concluding remarks.

Trends, Nature, and Features of Chinese Development Finance in Africa

China's economic cooperation with Africa over the past decade has been mostly in the form of trade, debt, aid, and FDI flows. Trade has undoubtedly been the most dominant aspect of this relationship, with total

merchandise trade between both groups increasing from about US$9 billion in 2000 to US$187 billion in 2013 (a 20-fold increase). As a result of this rapid increase in trade between China and African countries, China was Africa's largest trading partner in 2013, accounting for 15.2 per cent of the continent's total trade in that year. This contrasts with the situation in 2000 when China accounted for only 3.3 per cent of Africa's total trade and the United States was the continent's largest trading partner with a trade share of 13.1 per cent.

In terms of the composition of trade, Figs. 4.1 and 4.2 show that Africa exports mostly primary products to China and imports manufactured

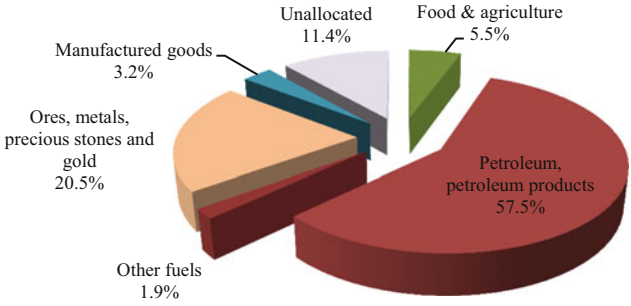

Fig. 4.1 Merchandise export of Africa to China, 2009–2013 (*Source*: UNCTAD database)

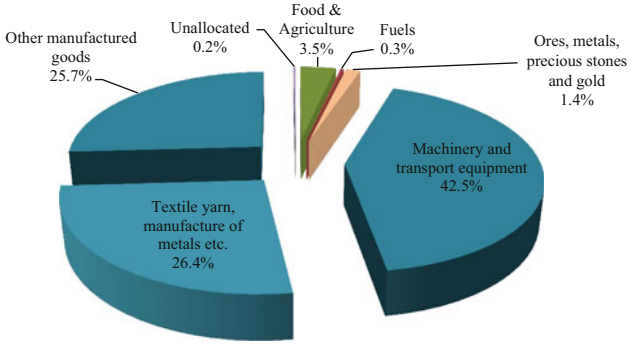

Fig. 4.2 Merchandise imports of Africa from China, 2009–2013 (*Source*: UNCTAD database)

goods, reflecting the fact that the continent is endowed with enormous natural resources with high export demand but also have very low levels of manufacturing development which makes African countries dependent on imports of manufactures. It should be noted that the share of manufactures in Africa's total merchandise trade with China is not only low but has also declined over the years. While manufactured goods accounted for 6.7 per cent of Africa's merchandise exports to China in the period 2000–2004, its share fell to 3.2 per cent in the period 2009–2013. In this context, the composition of Africa's trade with China is similar to the pattern of its trade with OECD countries in which Africa exports primary products and imports manufactured goods (UNCTAD 2010).

Another feature of Africa's trade with China, which has implications for capital flows and hence development finance, is that many countries on the continent have a trade deficit with China (Table 4.1). This fact is often not evident when one looks at aggregate data because at the continental level Africa actually has a trade surplus with China due largely to the huge exports from Angola to China. When Angola is excluded from the sample, Africa actually has a large and growing trade deficit with China. For example, Africa's trade deficit with China (excluding Angola) rose from US$1.9 billion in the period 2000–2004 to US$16.4 billion in the period 2009–2013. Furthermore, 38 African countries had a trade deficit with China in the period 2009–2013, and for many of them, this has been the case since 2000. It should be noted that out of the four large economies on the continent (Algeria, Egypt, Nigeria, and South Africa), only South Africa had a trade surplus with China over the period 2009–2013. The rest have a growing trade deficit with China. In Algeria, the deficit increased from US$0.3 billion in 2000–2004 to US$3.6 billion in the period 2009–2013. In Egypt, it increased from US$0.6 billion to US$5.1 billion, and in Nigeria, it increased from US$0.6 billion to US$8.1 billion over the same period. Interestingly, the deficit is not limited to oil-exporting or resource-rich countries. For example, Ethiopia had a deficit of US$0.2 billion in 2000–2004 and US$2 billion in 2009–2013. These growing trade imbalances represent capital outflows and should be of concern because they could result in higher indebtedness and job losses, with dire consequences for poverty reduction efforts. In this context, if present trends continue, the growing trade imbalance is likely to affect the sustainability of Africa's trade with China in the medium to long term.

China has also become a major source of aid, debt, and FDI flows to Africa although, in contrast to its trading relationship with the continent, it has been challenging to establish the exact magnitude and nature of these

Table 4.1 Merchandise trade balance with China (US$1000)

	2000–2004			*2009–2013*		
	Exports	*Imports*	*Trade balance*	*Exports*	*Imports*	*Trade balance*
Algeria	102,588	436,890	−334,302	1,799,922	5,377,065	−3,577,143
Angola	2,172,688	103,314	2,069,374	25,213,032	3,522,603	21,690,429
Benin	57,194	168,441	−111,247	203,727	722,788	−519,061
Botswana	766	17,767	−17,002	115,826	342,675	−226,849
Burkina Faso	22,777	21,507	1269	215,537	124,923	90,613
Burundi	531	4457	−3926	4951	53,691	−48,740
Cameroon	102,146	65,346	36,800	425,686	945,594	−519,908
Cabo Verde		3158		15	43,442	−43,427
Central African Republic	2074	1877	197	30,613	12,325	18,287
Chad	81,543	5967	75,576	301,052	207,539	93,514
Comoros	8	506	−497	68	21,305	−21,237
Congo	633,985	34,856	599,129	3,343,903	541,974	2,801,929
Côte d'Ivoire	28,130	91,680	−63,550	112,622	686,368	−573,746
Dem. Rep. of the Congo	40,666	31,721	8945	2,493,821	687,765	1,806,056
Djibouti	68	21,850	−21,781	286	128,315	−128,029
Egypt	105,671	668,982	−563,311	924,390	6,032,209	−5,107,819
Equatorial Guinea	530,833	7875	522,958	1,564,539	676,734	887,805
Eritrea	86	7318	−7232	996	106,970	−105,974
Ethiopia	6586	211,542	−204,956	277,075	2,264,757	−1,987,683
Gabon	230,295	8338	221,958	1,339,946	293,589	1,046,356
Gambia	127	35,909	−35,782	23,780	81,600	−57,820
Ghana	41,054	229,424	−188,370	577,793	2,868,978	−2,291,186
Guinea	7554	41,977	−34,423	25,967	235,229	−209,262
Guinea-Bissau	243	4486	−4243	1178	10,148	−8970
Kenya	6901	151,702	−144,800	44,072	1,863,999	−1,819,927
Lesotho	205	26,194	−25,989	8293	100,492	−92,199
Liberia	5930	7867	−1937	38,871	196,798	−157,927
Libya	100,479	111,480	−11,001	3,707,193	1,931,804	1,775,388

(*continued*)

Table 4.1 (continued)

	2000–2004			*2009–2013*		
	Exports	*Imports*	*Trade balance*	*Exports*	*Imports*	*Trade balance*
Madagascar	6975	123,493	−116,517	97,928	516,231	−418,303
Malawi	374	13,236	−12,863	38,839	206,738	−167,899
Mali	45,650	40,221	5430	336,284	344,160	−7875
Mauritania	8067	33,836	−25,770	1,049,059	321,160	727,899
Mauritius	5216	187,783	−182,567	8436	700,593	−692,157
Morocco	78,281	424,078	−345,797	341,052	2,902,470	−2,561,419
Mozambique	16,099	37,617	−21,518	249,389	598,981	−349,591
Namibia	18,182	26,126	−7944	232,137	410,586	−178,450
Niger	272	24,977	−24,705	36,507	423,518	−387,011
Nigeria	198,996	843,800	−644,804	1,382,175	9,492,600	−8,110,425
Rwanda	3283	4430	−1147	74,458	143,837	−69,379
Sao Tome and Principe	359	21	338	12	2272	−2260
Senegal	5988	62,279	−56,291	40,273	468,488	−428,215
Seychelles	45	3377	−3332	218	16,347	−16,129
Sierra Leone	132	7985	−7852	424,319	43,859	380,460
Somalia	3664	5420	−1756	9654	101,993	−92,339
South Africa	1,143,762	1,818,433	−674,671	18,942,379	15,196,854	3,745,526
Sudan				2,400,999	2,136,850	264,149
Sudan (...2011)	1,175,541	378,331	797,210	6,404,318	1,992,458	4,411,860
Swaziland	36,926	7983	28,942	72,228	84,899	−12,672
Togo	11,570	84,595	−73,025	69,224	590,042	−520,818
Tunisia	14,824	169,559	−154,736	56,708	1,395,173	−1,338,465
Uganda	3062	58,240	−55,178	42,191	516,944	−474,753
United Republic of Tanzania	20,956	127,044	−106,088	557,384	1,741,140	−1,183,756
Western Sahara		10,500	−10,500			
Zambia	42,865	40,125	2740	2,339,388	606,883	1,732,505
Zimbabwe	141,585	49,539	92,047	508,272	321,413	186,859
Total Africa	7,263,803	7,105,458	158,345	74,505,710	69,279,077	5,226,633
Total Africa (excluding Angola)	5,091,115	7,002,144	−1,911,029	49,292,678	65,756,474	−16,463,796

flows due largely to the fact that it does not provide detailed information on its development finance activities on the continent. One consequence of this fact is that researchers tend to use information from media reports and other unofficial sources to estimate the magnitude of Chinese development finance and this has generated widely different estimates of Chinese development finance in Africa. On aid flows, for example, some of the estimates range from US$1.2 billion per year by Brautigam (2011) to US$2.3 billion by Wang and Bio-Tchane (2008), US$2.8 billion by the OECD and US$18 billion by Lum et al. (2009). It is difficult to compare these estimates because they do not use a common definition of aid, and, in some cases, the geographical coverage differs. For example, the study by Wang and Bio-Tchane (2008) focuses on sub-Saharan Africa while the others focused on Africa. Furthermore, unlike other authors, Lum et al. (2009) includes aid and related activities (such as investment and export financing) which do not necessarily qualify as ODA based on the OECD-DAC definition.[1]

For ease of comparability with ODA from the DAC, the OECD estimate of Chinese aid which focuses on ODA-like flows is presented in Table 4.2.[2] It indicates that in monetary terms, China's ODA is small relative to the total ODA by the DAC countries. In 2013, for example, its ODA was about 10 per cent of total ODA by the DAC to Africa. Nevertheless, China's ODA is significant when compared to the bilateral ODA of individual DAC members. For example, among the top ten bilateral ODA donors to Africa over the period 2011–2013, China ranked fourth, ahead of DAC donors such as Germany, Japan, Canada, Sweden, and Norway (Fig. 4.3).

Although we do not know the exact magnitude of Chinese development finance to Africa, we do know that its aid is often linked to investment activities and is also a mix of concessional and non-concessional finance. Furthermore, grants, interest-free loans, concessional loans, and export credits have been the principal instruments of Chinese aid to Africa (Table 4.3). While grants and interest-free loans given for economic development purposes are classified as ODA based on the OECD-DAC definition, export credits are not and concessional loans neither except they have a grant element of at least 25 per cent. These facts imply that ODA figures for China are likely to understate the true magnitude of Chinese development finance to Africa because a large part of its support to the continent has been in the form of export credits which are excluded from ODA statistics. Over the past decade, China has been very active in provision of export finance in Africa mostly through the China Export-Import (Exim) Bank and the China Development Bank. The Exim Bank provides both concessional

Table 4.2 Official development assistance to Africa by donor (US$ billion)

Year	*Total ODA to Africa*	*OECD-DAC*	*China*
2000	15.5	10.4	
2001	16.8	10.2	
2002	21.4	13.4	
2003	27.4	19.2	
2004	30	19.4	
2005	35.8	24.7	
2006	44.6	31.7	
2007	39.5	24.6	
2008	45.2	27.4	
2009	48	28.2	
2010	47.9	29.4	2.56
2011	51.7	32.7	2.78
2012	51.3	30.5	3.11
2013	55.9	29.4	3.01

Source: OECD database 2015

and non-concessional finance while the China Development Bank provides financing at commercial rates. In 2007, China also established the China-Africa Development Fund to facilitate investment by Chinese companies in Africa. The fund operates independently and has the China Development Bank as a major shareholder. Over the past decade, the three financial institutions identified above have been the main channels through which China supported investment and export finance in Africa. According to a statement by Chinese Vice Foreign Minister (Zhang Ming) on 9 December 2014 in South Africa, China's commercial loans to Africa exceed US$50 billion. It is widely acknowledged that these loans have been extensively used by China to fund infrastructure projects in Africa. Chinese lending for infrastructure in Africa increased from around US$500 million in 2001 to US$13.4 billion in 2013. Some of the loans extended recently by China to African infrastructure projects include the US$3.8 billion lent to Kenya in August 2013 for the construction of the 485 km Nairobi-Mombasa railway and the US$3.3 billion contributed in October 2013 for the construction of a railway linking Ethiopia and Djibouti. It is interesting to note that in 2013, 74 per cent of Chinese lending for African infrastructure was for transport, 19 per cent for energy, 3.2 per cent for ICT, 2.7 per cent for water, and 0.7 per cent for multi-sector projects (ICA 2014). Furthermore, in 2013, China accounted for 30 per cent of public external financing commitments for

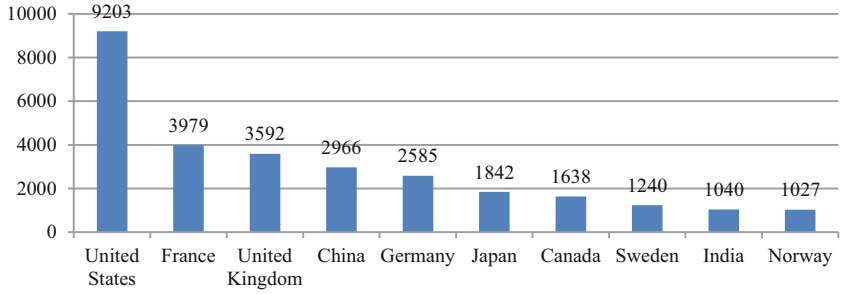

Fig. 4.3 Top ten bilateral ODA donors to Africa, 2011–2013 average (US$million) (*Source*: Computed based on information from OECD-DAC database 2015)

Africa's infrastructure while multilateral development banks accounted for around 21 per cent and the United States for 16 per cent (Table 4.4).

China also provides development finance to Africa in the form of FDI. As shown in Table 4.5, its outward FDI flows to Africa increased from US$317 million in 2004 to US$3.4 billion in 2013, while its outward FDI stock in Africa increased from US$900 to US$26.2 billion over the same period. Despite these increases, Africa accounts for a very small share of China's global outward FDI flows and stock. In 2013, for instance, it accounted for 3 per cent of China's global outward FDI flows and 4 per cent of its global outward FDI stock. Unfortunately, it is difficult to know the exact sectoral composition of Chinese FDI in Africa because China does not publish information on FDI to Africa by sector. Nevertheless, it is estimated that natural resources (particularly oil) account for a significant portion of its FDI in Africa (Hanauer and Morris 2014). Chinese FDI in Africa is also concentrated in a few countries. In 2013, for instance, seven countries (Algeria, Angola, Kenya, Nigeria, Tanzania, Zambia, and Zimbabwe) accounted for 54 per cent of total Chinese outward FDI flows to Africa and eight countries (Algeria, Angola, Democratic Republic of Congo, Nigeria, South Africa, Sudan, Zambia, and Zimbabwe) accounted for 61 per cent of its outward FDI stock in Africa. With an FDI stock of US$4.4 billion in 2013, representing 17 per cent of China's outward FDI stock in Africa, South Africa is the highest recipient of China's outward FDI stock in the continent. African countries are also increasingly showing interest in investing in China, although the paucity of data does not allow one to know the exact magnitude of these investments by country. Nevertheless, the limited data available indicates that there are significant FDI flows from Mauritius to China. In 2012, for instance, FDI flows from

Table 4.3 Chinese development finance pledges to Africa and their implementation status

Forum	*Venue/date*	*Commitments*	*Implementation status*
Summit and 6th Ministerial Conference of FOCAC	Johannesburg, South Africa, from 4 to 5 December 2015	Provide US$60 billion of funding support. US$5 billion will be in grants and interest-free loans, 35 billion in preferential loans and export credits, 5 billion in terms of additional capital for the China-Africa Development Fund, and 10 billion for the China-Africa Production Capacity Cooperation Fund	
5th Ministerial Conference of FOCAC	Beijing, China, from 19 to 20 July 2012	Gradually increase support to Africa to US$5 billion through the China-Africa Development Fund Provide a credit line of US$20 billion to Africa to support development of infrastructure, agriculture, manufacturing, and small and medium scale enterprises	
4th Ministerial Conference of FOCAC	Sharm El Sheikh, Egypt, from 8–-9 November 2009	Increase size of China-Africa Development Fund to US$3 billion to support expansion of investment from Chinese businesses in Africa	The first phase of the fund involving an investment of US$1 billion was completed and a second phase involving an increase of US$2 billion had been implemented as on July 2012
		Provide US$10 billion in preferential loans to African countries to support infrastructure and social development projects	By May 2012, China had approved concessional loans totalling US$11.3 billion for 92 projects, larger than the promised amount

(*continued*)

Table 4.3 (continued)

Forum	*Venue/date*	*Commitments*	*Implementation status*
		Support establishment of a special loan of US$1 billion by Chinese financial institutions for African SME development and growth	At the 5th FOCAC meeting, China indicated that the China Development Bank set up a special loan for the development of small and medium-sized businesses in Africa totalling US$1 billion, and US$966 million was also promised for 38 projects
		Cancel debt of interest-free government loans maturing at end of 2009 and owed by African HIPCs and LDCs with diplomatic ties with China	China cancelled interest-free government loans that have matured by the end of 2009 for all heavily indebted poor countries and least developed countries in Africa having diplomatic relations with China
Summit and 3rd Ministerial Conference of FOCAC	Beijing, China, from 3–5 November 2006	Support Chinese banks in setting up a China-Africa Development Fund (whose total amount will gradually reach US$5 billion) to support Chinese companies to invest in Africa Double size of development assistance by 2009 relative to 2006	The Chinese Government established the China-Africa Development Fund (launched in June 2007) with an initial investment of US$1 billion
		Provide US$3 billion in preferential loans and US$2 billion in preferential export buyers credit to African countries over 3 years	By September 2009, China had delivered to African countries US$2.647 billion of concessional loans to support 54 projects in 28 countries and US$2 billion in preferential export buyer's credit to support 11 projects in 10 countries

(*continued*)

Table 4.3 (continued)

Forum	*Venue/date*	*Commitments*	*Implementation status*
		Cancel government interest-free loans that had become due by the end of 2005 contracted by HIPCs and LDCs in Africa with diplomatic ties with China	As of November 2009, China had signed protocols on debt cancellation with 33 heavily indebted poor countries and least developed countries in Africa having diplomatic relations with China, writing off their debts of interest-free loans that matured at the end of 2005
2nd Ministerial Conference of FOCAC	Addis Ababa, Ethiopia from 15–16 December 2003		
1st Ministerial Conference of FOCAC	Beijing, China from 10 to 12 October 2000	Reduce or cancel debt amounting to 10 billion RMB Yuan owed by the heavily indebted poor countries and least developed countries in Africa in the coming two years	By June 2002, China had signed debt exemption protocols with 31 African states, cancelling 156 African debts with a total value of 10.5 billion RMB Yuan

Source: Compiled based on information from http://www.focac.org/eng/
Note: FOCAC is the Forum on China-Africa Cooperation

Mauritius to China were US$959 million. In addition, its FDI stock in China increased from US$4.4 billion in 2006 to US$11.5 billion in 2012.

A relevant question to pose at this point is how does Chinese development finance differ from those of OECD countries? China and OECD countries have similar strategic interests in Africa. They want access to markets and natural resources in Africa. They also seek Africa's support on global issues. Despite these similarities, China's approach to engaging with Africa differs markedly from those of OECD countries in a number of respects. It is well known that OECD countries tie access to development finance by African countries to preconditions on democracy, good governance, and human rights. In contrast, China does not impose these preconditions, reflecting the fact that its development finance is guided by the principles of equality, mutual interest, and non-interference in the affairs of a sovereign state. That said, China requires countries seeking access to

Table 4.4 Public external financing commitments for African infrastructure in 2013

Country/group	*Amount (US$ million)*	*Share of total (%)*
China	13,443	30.4
Japan	1515	3.4
India	761	1.7
South Korea	175	0.4
US	7008	15.9
Canada	147	0.3
France	2542	5.8
UK	1068	2.4
Germany	1031	2.3
Other countries	189	0.4
European Commission	1628	3.7
Arab Coordination Group	3296	7.5
Multilateral development banks	9175	20.8
Regional development banks	2183	4.9
Total	44,161	100

Source: Compiled based on information from ICA (2014)

finance to respect and abide by the "One China Policy" and its financing is often linked to access to natural resources and the procurement and use of inputs from China. Added to the fact that China does not impose policy conditions is the widely held view by African countries that Chinese development finance tends to be reliable and fast in the sense that it takes a relatively short time to negotiate and sign agreements with China in contrast with OECD countries (Hanauer and Morris 2014).

Another key difference between China's development finance and those of OECD countries is in the focus area. While OECD countries tend to finance activities in the social sectors, Chinese finance goes largely to infrastructure and natural resources (UNCTAD 2010). Furthermore, in contrast with OECD countries, Chinese aid is frequently used to finance highly visible projects such as the construction of airports, conference centres, parliament buildings, and football stadiums. Interestingly, for many of the projects financed through Chinese aid, African countries do not receive money directly. They negotiate the deals with China and the Chinese contractors selected to carry out the projects are paid directly by China (Hanauer and Morris 2014). This differs from the approach of OECD governments who tend to disburse money directly to recipient countries.

Table 4.5 China's outward FDI in Africa 2004–2013

	Flows		*Stock*	
Year	*Amount (US$ million)*	*Percentage of China's global outward flows*	*Amount (US$ million)*	*Percentage of China's global outward stock*
2004	317	5.8	900	2
2005	392	3.2	1595	2.8
2006	520	2.9	2557	3.4
2007	1574	5.9	4462	3.8
2008	5491	9.8	7804	4.2
2009	1439	2.5	9332	3.8
2010	2112	3.1	13,042	4.1
2011	3173	4.3	16,244	3.8
2012	2517	2.9	21,730	4.1
2013	3371	3.1	26,186	4

Source: Compiled using data from UNCTAD FDI/TNC database

State-owned enterprises (SOEs) have been the main actors in Chinese investments in Africa, while the OECD countries engagement has been primarily through private sector investments. However, since 2005, there has been a rapid increase in the activities of Chinese private enterprises in Africa. Most of these private firms are small and medium enterprises (SMEs), and they often start off by trading with Africa and, over time, decide to invest. A survey of Chinese private enterprises suggests that the top three motives for their decision to invest in Africa are access to local markets in Africa, intense competition in domestic markets in China, and the need to transfer excess domestic production capacity abroad. The survey also indicates that the main constraints faced by these enterprises in Africa are customs and trade regulations, poor infrastructure, weak macroeconomic management, and labour regulations (Gu 2009). Interestingly, when making decisions on whether to invest in Africa, Chinese private enterprises focus on the long-term opportunities they see in the continent as opposed to the short-term risks. Consequently, they do not attach as much importance to security, corruption, and governance issues in investment decisions in Africa as is the case with private enterprises from OECD countries.

OECD countries also have a different approach to development finance than China in the sense that they generally provide data and information to the public on the terms and magnitude of their development activities in

Africa. In contrast, China does not provide detailed information on its aid and investment activities in Africa by country and sector. The Global Campaign for Aid Transparency has developed an aid transparency index to assess the state of aid transparency in 68 donor organizations. In the 2014 index, China's Ministry of Commerce ranked 68 out of the 68 organizations included in the sample (Publish What You Fund 2014). This finding reflects the fact that there is very limited information on Chinese development finance activities. Notwithstanding this drawback, African leaders find China's approach to financing appealing because it is associated with faster disbursement, permits local ownership of programmes, and a large portion of Chinese aid is spent on projects and recipient countries rather than on staff and consultants from China. In addition, China seems to have established a good record of keeping promises made to African countries and this has enhanced its image and popularity on the continent.

Chinese Development Finance in Africa: Impact and Challenges

Assessing the impact of Chinese development finance in Africa is complicated by the fact that Africa is a heterogeneous continent made up of 54 countries and so the impact of Chinese development finance will differ depending on the country under consideration. Unfortunately, the paucity of reliable time series data prevents a systematic and robust empirical study on the impact of Chinese development finance at the country level. As a result of this data constraint, existing studies tend to focus on one or two aspects of the relationship as opposed to covering the three key dimensions (trade, aid, and investment). As should be expected, trade is the aspect of China's engagement that has received the most attention in existing studies due in part to the fact that it is the most dominant aspect of the partnership and also the area where there is more data on the partnership. One of the key conclusions from these studies is that China's growing engagement with Africa has had a positive impact on growth through largely the terms of trade channel. The rapid increase in the demand for commodities in China over the past two decades increased commodity prices and boosted export revenue in African countries, particularly those exporting oil, minerals, and metals. In addition to the terms of trade effect, rapid investment-led growth in China over the past decade has also boosted exports in Africa thereby relaxing the continents financing constraint. A study by Drummond and Liu

(2013) found that when domestic investment growth in China increases by 1 percentage point, export growth in Sub-Saharan Africa increases by 0.6 percentage points, reflecting the growing interdependence between China and Africa which has been observed since 2000.

China's engagement with Africa has enabled the continent to diversify its export markets thereby reducing its susceptibility to global shocks, particularly those emanating from OECD countries, which historically have been Africa's main trading partners. Over the past decade, China has emerged as Africa's largest trading partner and this development made it easier for the continent to weather the slowdown in OECD countries emanating from the global economic and financial crisis of 2008–2009. The impact of the crisis on Africa was less than what it would have been because China, like other Asian Drivers, was growing much faster than the OECD countries and so the impact of the recession in OECD countries on Africa was mitigated. In this context, Africa's new partnership with China made a positive contribution to growth on the continent.

African consumers have also benefitted from having access to cheaper consumer goods imported from China. Nevertheless, there is some evidence that in several African countries, producers of labour-intensive manufactured goods have lost market shares in key regional markets and some have had to close factories as a result of stiff competition resulting from imports of manufactured goods from China (Tang 2015; Sandrey and Edinger 2011; Oyejide et al. 2009). For instance, Onjala (2008) shows that in the period 2000–2005, Kenya's export of textiles and clothing to Uganda and Tanzania declined by 55 per cent due to competition from Chinese exports. Countries such as Ghana, Lesotho, Mauritius, Nigeria, South Africa, and Swaziland have also had to close textile plants and shed jobs because of competition from less-expensive Chinese imports (Hanauer and Morris 2014; Tsikata et al. 2008).

Another channel through which China's engagement in Africa has had an impact on growth is through FDI, particularly new investments that add to the existing capital stock as well as technology and skills transfer that enhance firm productivity in Africa. As indicated in the previous section, China has made massive investments in infrastructure in Africa over the past decade. According to a report on the FOCAC website dated 2 February 2015, China has completed 1046 projects in Africa, built 3530 km of highways and 2233 km of railways.[3] A large chunk of Chinese FDI in Africa has been in infrastructure and natural resources, but there are increasingly more investments in manufacturing as well. Poor infrastructure (energy,

transport, and telecommunications) is a major obstacle to development in Africa and so it is not surprising that China's activities in this area have contributed to growth on the continent. Several studies have been carried out to quantify the impact of China's investment in Africa. For instance, using a growth accounting framework, Whalley and Weisbrod (2012) provide evidence indicating that Chinese inward FDI contributed about one-half of a percentage point to Africa's pre-crisis growth surge. This result is consistent with findings of recent studies indicating that boosting investment is necessary to achieve sustained growth and development in Africa (UNCTAD 2014).

African countries have also benefitted from the rapid increase in Chinese development finance to the continent over the past two decades. Chinese aid and loans have been used to finance several development programmes and projects over the past two decades. In this regard, China has increased the sources of development finance available to Africa and in so doing relaxed its financing constraint and this has had a positive impact on growth.

In summary, existing studies on the impact of Chinese development finance in Africa suggest that Africa's growing partnership with China has had a positive impact on the continent through increases in the prices and quantities of commodities exported by Africa, higher FDI, access to cheaper consumer goods, diversification of export markets and broadening the sources of development finance available to the continent. Nevertheless, significant challenges remain. For instance, the evidence suggests that many African countries have a growing trade deficit with China. This is of concern for African countries because it represents significant capital outflows and so has negative consequences for domestic investment, employment creation and poverty reduction on the continent. As indicated in section one of this chapter, Africa exports commodities with very limited potential for employment creation and then imports manufactured goods (such as textiles) that have higher employment creation potential and could have formed the basis for creating more jobs on the continent. In this regard, the structure of Africa's trade with China is similar to those of OECD countries and is not conducive to promoting industrialization and sustained employment creation on the continent.

Another challenge arising from Africa's growing partnership with China has to do with the potential impact it might have on debt sustainability on the continent. It has been argued that the extensive use of loans in Chinese development finance in Africa, particularly in the context of declining commodity prices, will increase the continent's indebtedness and reduce

capacity to service and repay existing debt in the medium to long term, thereby making the continent more vulnerable to external shocks than in the past (UNCTAD 2010). Clearly, debt sustainability is an issue that African governments should pay attention to but there is no evidence that Chinese development financing has made Africa's debt less sustainable. On the contrary, Chinese loans are likely to have contributed to a reduction in debt ratios because China tends to finance non-productive investments through grants while loans are used mostly to finance productive investments that increase the recipient's capacity to repay debt (Mwase and Yang 2012). Therefore, Africa's response to concerns about debt sustainability should not be to reduce loans from China but to improve debt management, increase transparency in debt contract negotiations, and ensure that new loans are invested in activities that increase the capacity to produce tradable goods necessary to enhance the ability to service and repay debt.

It has also been argued that Chinese engagement in Africa has a negative impact on governance on the continent in the sense that it provides African governments with alternative sources of finance (with no policy conditions), thereby encouraging them to avoid undertaking difficult reforms. One major problem with this argument is that it wrongly assumes that the imposition of policy conditions by traditional donors resulted in better governance in Africa. More importantly, Africa had a governance problem even before the rise of China on the continent and there is no credible evidence indicating that the quality of governance on the continent today is worse than what it was before the rise of China at the dawn of the new millennium. Furthermore, the argument ignores the fact that there are other ways to promote governance than through the imposition of policy conditions. For instance, a society can also improve the quality of governance through fostering growth because as an economy develops more people become educated and demand more accountability from their governments, leading to better governance. In this context, by supporting economic growth in Africa, China is also promoting governance on the continent.

Concerns have also been expressed about the environmental impact of Chinese investments and their implications for sustainable development in Africa. For instance, in 2013, a Chinese mining company (Collum Coal Mining Industries) operating in Zambia was forced to close down by the government for not putting in place proper safety, health, and environmental measures. In 2010, campaign groups expressed concerns about the construction of the GIBE III dam on Ethiopia's Omo River with loans

from China. There has also been resistance to Chinese investments in other African countries (such as Gabon and Ghana) for environmental reasons (Cisse et al. 2014). Part of these concerns emanate from the perception that Chinese banks apply low environmental standards for foreign projects. But it is also a consequence of the fact that Chinese investments are heavily concentrated in areas (such as infrastructure, oil, and mining) often associated with high social and environmental risks. Not surprisingly, the Chinese government has responded quickly to these concerns. In 2012, the China Banking Regulatory Commission modified its credit guidelines to require banks to adhere to international practices and norms regarding the environmental impacts of overseas projects they finance. Furthermore, in February 2013, the Chinese Ministry of Commerce in conjunction with the Ministry of Environmental Protection released guidelines for environmental protection in foreign investment and cooperation that Chinese firms should follow. While the guidelines are non-binding, they do send very clear signals to Chinese investors that the government expects them to pay more attention to the environmental consequences of their overseas investment.

Making Chinese Development Finance Work Better for Africa

A key point to bear in mind in finding ways to make Chinese development finance work better for Africa is that the responsibility for Africa's development rests primarily with African countries and that China can only be expected to play a complementary rather than a lead role. In this context, there is the need for African governments to be forward-looking and proactive, rather than reactive in their relationship with China to ensure that it results in equitable development in the long term. They should be active in setting the agenda and pace of the partnership, and more generally, show more leadership in the partnership process. But to do this effectively, they have to be guided by a well-defined strategy and also integrate the partnership into their national and regional development plans to foster equitable development. China clearly has a strategy guiding its partnership with Africa but it is not clear that many African countries have one.[4] It is true that most African countries have a list of what they would like China to provide financing for. But having a wish list is not synonymous with having a coherent strategy, which entails having a vision, mapping out clear plans on how to realize the vision, and within this framework, identifying what role

China can play to make the vision a reality. Having a coherent strategy also requires putting in place a credible mechanism for monitoring and evaluation of the implementation of action plans associated with the strategy and, more importantly, making adjustments to plans when events dictate that current plans are not having the desired impact.

Against this backdrop, a key question for Africa is how to make Chinese development finance to have a catalytic effect not only on growth but also on employment and poverty reduction. In my view, this requires concerted efforts by both China and African countries to make Chinese development finance foster transformative development on the continent. History has shown that structural transformation and diversification are necessary for sustained growth and poverty reduction and so it would be desirable for China and African governments to gear Chinese development finance towards promoting transformative growth on the continent.[5] There are various ways that China can contribute to achieving this goal. First is to have a coherent approach to supporting industrialization in Africa. At the moment, some of its activities promote manufacturing development in Africa while others present challenges for manufacturing. For example, on the one hand, it has promoted manufacturing development through, among others, investments in domestic infrastructure, support for SMEs and setting up special economic zones in Africa.[6] On the other hand, it has growing trade deficits with many African countries which lead to significant capital outflows with negative consequences for industrial development, employment creation and poverty alleviation in Africa. In addition, several studies indicate that Chinese exports of labour-intensive manufactured goods to Africa have intensified competition facing local firms and made manufacturing development more challenging (Sandrey and Edinger 2011). There is the need for China to address this challenge, perhaps through facilitating joint ventures with local entrepreneurs as well as strengthening linkages between Chinese and African enterprises to promote technology and skills transfer and increase the competitiveness of local manufacturing firms. China should also make the special economic zones set up in Africa play a catalytic role in the continent by encouraging firms in the zones to source more inputs locally than in the past and by increasing local participation in their management.

Another way that China can promote transformative development in Africa is through directing more of its financing towards promoting peace and security and building regional (cross-border) infrastructure. Peace and security is a necessary condition for the development of a vibrant and

dynamic manufacturing base required to create more jobs to absorb the rapidly growing labour force in Africa. Insecurity creates uncertainty, increases risks and transactions costs, and discourages both local and foreign investment. Therefore, unlocking Africa's manufacturing potential requires addressing this challenge head-on and China can play a crucial role in this area through development financing. One might wonder why China should be concerned about insecurity in Africa. However, given its massive and growing investments in Africa, it is in its long-term interest to promote peace and security in the continent. Providing more support for cross-border infrastructure is also necessary to foster intra-African trade and promote transformative development given recent evidence indicating that the composition of intra-African trade tends to be skewed towards manufactures, in contrast with Africa's extra-regional trade which consists mostly of commodities. It is important to stress that China already provides some support to Africa on infrastructure and peace and security issues. The point being made here is that its support needs to be scaled up to have a dramatic and transformative effect on the continent. There are indications that China has indeed recognized the need to scale up its support to Africa on infrastructure and peace and security issues. In January 2015, ahead of the African Union (AU) summit held in Addis Ababa, Ethiopia, China, and the African Union signed a memorandum of understanding containing promises by China to develop cross-border infrastructure to link capitals across the continent. In addition, it is also beginning to play a more active role in supporting peace and security efforts in Africa as evidenced, for instance, by its enhanced involvement in UN and AU peacekeeping missions in Africa (Hanauer and Morris 2014). These efforts are welcome but should be scaled up and implemented in a systematic manner to enhance their impact. Part of China's interest in peace and security issues emanates from recognition of the links between security and development in Africa as well as the enormous resources necessary to address the continents security challenges. But it is also recognition by China that it is necessary to protect its massive and growing investments on the continent (Tower 2013).

China can also foster transformative and inclusive development in Africa by making it easier for Africans to invest in China. One of the issues emanating from an examination of recent FDI data, and which is a concern for African entrepreneurs, is that investment seems to be flowing from China to Africa but there is no significant flow from Africa to China due in part to barriers (language, regulatory, etc.) that make it difficult for African entrepreneurs to do business in China. There is the need for better

access to the Chinese market for African investors so that they can benefit and also learn from the experience of investing in a large and frontier market. Such learning will play a positive role in upgrading and diversification in Africa.

Undoubtedly, China is doing interesting and positive things in Africa. But the dearth of information on its relationship with the continent often fuels speculation and suspicion about the nature of the partnership which detracts attention away from the positive contributions it is making to Africa's development. It is against this backdrop that I believe it is in China's long-term interest to provide more information and data on its development finance activities in Africa than has been the case in the past. This will take away the current mystery surrounding the partnerships, allow a proper assessment of the impact of the partnerships and, more importantly, permit Africans to hold their governments accountable for the outcomes of the partnerships. Fortunately, there are signs that China is beginning to recognize the need to provide more information on its partnerships with Africa. For example, in April 2011, the State Council released the first white paper on China's foreign aid which contained an overview of its assistance over the period 1950–2009. This was followed by the second white paper which was published in July 2014 and focused on China's foreign aid for the period 2010–2012. The Ministry of Commerce also provides aggregate time series on China's outward FDI. In addition to providing some data on aid and FDI, China is also trying to provide a more positive image of its partnership with Africa through opening media houses in Africa and strengthening people to people exchanges. These efforts are welcome but there is the need for sectoral and country-specific details to provide a more complete picture of the nature of the partnerships.

African governments also have a role to play in providing information to the public on the nature of Chinese development finance in Africa. For instance, the AU could require all member states to submit to it on an annual basis a report of their development finance activities with China together with the status of implementation of the commitments. This will enable the AU to effectively monitor implementation of commitments and also facilitate an assessment of the impact of the partnerships. Currently, the main source of information on implementation of the commitments is the annual statement published by China during FOCAC meetings. There is the need for African countries to also provide their own assessment of the implementation of these commitments to make the review much more balanced than in the past.

Finally, African countries should pay more attention, than in the past, to the environmental impact of Chinese investments in Africa. In particular, there is the need for a Pan-African Investment Code to lay the parameters and guidelines for investment in Africa and send a clear signal to foreign investors that the continent will hold them accountable for any negative environmental impacts associated with their investments. China on its part can also contribute to promotion of environmental sustainability in Africa by strengthening existing mechanisms for monitoring the impact of its investments in Africa and assisting African governments to build capacity to assess and monitor the environmental impacts of foreign investments on the continent.

Concluding Remarks

Africa's economic partnership with China has grown rapidly over the past two decades. Trade is clearly the most significant dimension of this partnership, but there is also significant aid, debt, and FDI flows from China to Africa as well. While the new partnership has had a positive impact on growth on the continent, more needs to be done by both China and African governments to enhance the impact of Chinese development finance in Africa. Against this backdrop, this chapter identified ways in which Chinese development finance could be used to foster transformative growth for sustained poverty reduction in Africa. It argued that for this to happen, China has to adopt a more coherent approach to supporting manufacturing development on the continent than in the past and also direct more of its financing towards building regional infrastructure and promoting peace and security. The chapter also stressed that the responsibility for Africa's development rests primarily with African governments and that China can only play a supporting role. In this context, it underscored the need for African countries to be forward-looking and proactive, rather than reactive, in their partnership with China to ensure that their development needs and challenges are effectively addressed.

Notes

1. The OECD-DAC defines ODA as "grants or loans to developing countries that: (a) are undertaken by the official sector; (b) have the promotion of economic development and welfare as the main

objective; and (c) are at concessional financial terms, having a grant element of at least 25 percent".

2. Unfortunately, the OECD estimate of China's aid is available only for the period 2010 to 2013. That said, the estimate is close to what one should expect based on the foreign assistance data provided in China's recent white paper on Foreign Aid issued by the State Council in July 2014. It indicates that China provided US$14.4 billion in foreign assistance over the period 2010–2012 and that 51.8 percent (US$7.5 billion) went to Africa. This implies that on an annual average basis China provided about US$2.5 billion in aid per year to Africa over the period.
3. See http://www.focac.org/eng/zfgx/jmhz/t1234223.htm
4. While China does have a strategy on Africa, Sun (2014) argues that some domestic stakeholders in China are concerned that the current strategy focuses too much on commercial interests and less on other national interests (political, security and ideological).
5. For a discussion of how China can contribute to promoting transformation in Africa through providing ideas, opportunities, and development finance, see Lin and Wang (2014).
6. China is developing six special economic zones in Africa: the Zambia-China economic and trade cooperation zone in Chambishi; the Ethiopian Eastern Industrial Zone (near Dukem); the Mauritius Jinfei economic and trade cooperation zone in Riche Terre; the Nigeria-Ogun-Guangdong free trade zone in Igbessa; the China-Nigeria economic and trade cooperation zone in Lekki; and the Egypt Suez economic and trade cooperation zone. For a description of these zones examination of how they can contribute to structural transformation see Brautigam and Tang (2014).

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PART III

Understanding BRICS' versus OECD Countries' Investment in Africa

CHAPTER 5

Foreign Direct Investment and Structural Change in Africa: Does Origin of Investors Matter?

Vito Amendolagine, Nicola D. Coniglio, and Adnan Seric

Introduction

Foreign investments are a fundamental driver of modernization and structural transformation of developing countries' economies. The African continent after a long period of marginality in the global capital markets is now the new frontier for FDI inflows. Will FDI help African economies achieve higher levels of economic performance and increase the standard of living of its inhabitants? If we look at the experience of other developing countries, the answer is 'yes' if the surge of foreign investments is accompanied by the right policies which select the 'right' investments (those that maximize the positive benefits for the host-country economies). The institutional context

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is a fundamental element for enhancing the pro-development effects of FDI in Africa (Asiedu 2006). But also the type and the characteristics of the investors matter.

The goal of this chapter is twofold. First, we discuss the recent trends of FDI inflows in Africa and highlight the relative importance of South-South investment, in particular investment from BRICS countries. This macro-perspective allows us to highlight the growing importance of BRICS countries as investors in the African continent, but also to show that the Organization for Economic Co-operation and Development (OECD) investors are still the major players (although not uniformly across Africa). Second, we employ a micro-perspective using data collected by the UNIDO (see UNIDO 2012) on a large and representative sample of foreign and domestic firms in 19 Sub-Saharan African countries. We present novel analysis on the differences and similarities between OECD and BRICS countries with respect to (i) propensity to generate (backward) linkages with domestic firms, (ii) 'knowledge diffusion activities' (knowledge transfers and training to domestic supplier/buyers) and (iii) labor-market effects (employment, wages, demand for skilled workers).

We find evidence of significant differences across investors even after controlling for a rather comprehensive set of firm characteristics. Foreign investors from rich countries generate a higher share of linkages with domestic suppliers although we also document a higher propensity of firms from BRICS origin to sign long-term contractual arrangement with them (a proxy for more intense collaboration between domestic and foreign firms). This result seems to confirm some existing anecdotic evidence on the relative scarce linkages generated by some South-South investors such as Chinese (Ozawa and Bellak 2011; Amendolagine et al. 2013).

A rather large share of foreign investors directly engage in knowledge transfers, product and production processes upgrading and workforce training of local buyer/suppliers. Some differences between OECD and BRICS investors emerge but their magnitude is rather small. Knowledge transfers are slightly more likely to occur from BRICS investors, an evidence which confirms the importance of South-South FDI as a pro-development mechanism (Amighini and Sanfilippo 2014).

Our results highlight a substantially different effect of foreign firms from different origins with respect to labor-market outcomes. The overall demand for labor is larger for BRICS investors; in fact cheap labor is one of the most crucial drivers of investment projects in Africa for these firms (see Table A.5.1 in the appendix). Clearly, this result highlights an

important contribution of South-South investments in terms of generating employment opportunities. On the other hand, we find evidence that OECD investors pay substantially higher wages compared to both domestic and BRICS firms with similar characteristics. Another dimension of our analysis suggests that OECD investors deliver 'better jobs': the demand for highly qualified workers (white collars) is larger.

The rest of the chapter is organized as follows: in section 'The Changing Nature of Inward FDI in the African Continent', we describe the changing nature of FDI in Africa using aggregate data and highlighting the relative importance of OECD and BRICS investors across the continent. We also relate FDI inflows to the change in the Economic Complexity Index developed by a team of researchers at Harvard University.[1] In section 'Foreign Investors as Agents of Structural Change: A Firm-Level Approach', we shift to a micro-level approach using UNIDO firm-level data (UNIDO AIS 2010). Empirical analysis is conducted in order to shed lights on the differences between different investors in doing business in Africa. In section 'Conclusion', we discuss the origin of investment and its implications in terms of policy. Finally, we offer conclusion.

The Changing Nature of Inward FDI in the African Continent

African economies have become increasingly appealing to foreign investors in the last decades. In 2014, FDI inflows to Africa amounted to US$54 billion, approximately 4.4% of worldwide FDI inflows (UNCTAD 2015). Despite the current stagnant pattern due to the financial crisis, over the years 2000–2013, FDI inflows increased by almost six times, showing positive variations in all the subregions (Fig. 5.1A). In particular, Eastern Africa recorded the largest FDI inflows in this period (around 8.9 times larger), followed by the South (6.2) and the West (5.6).

In terms of stocks, inward FDI in Africa grew by 3.5 times between 2000 and 2013, rising from US$154 billion (2% of global FDI stocks) to US$687 billion (2.7% of total stocks). FDI instocks have been increasing in all African regions and, particularly, in the East (five times larger), North (4.3) and Central (3.6) African regions. With the exception of Angola and Burundi, which recorded negative growth rates of FDI instock between 2000 and 2013, all the other countries saw positive growth rates in that period. Countries reporting the highest growth rates are Somalia, where

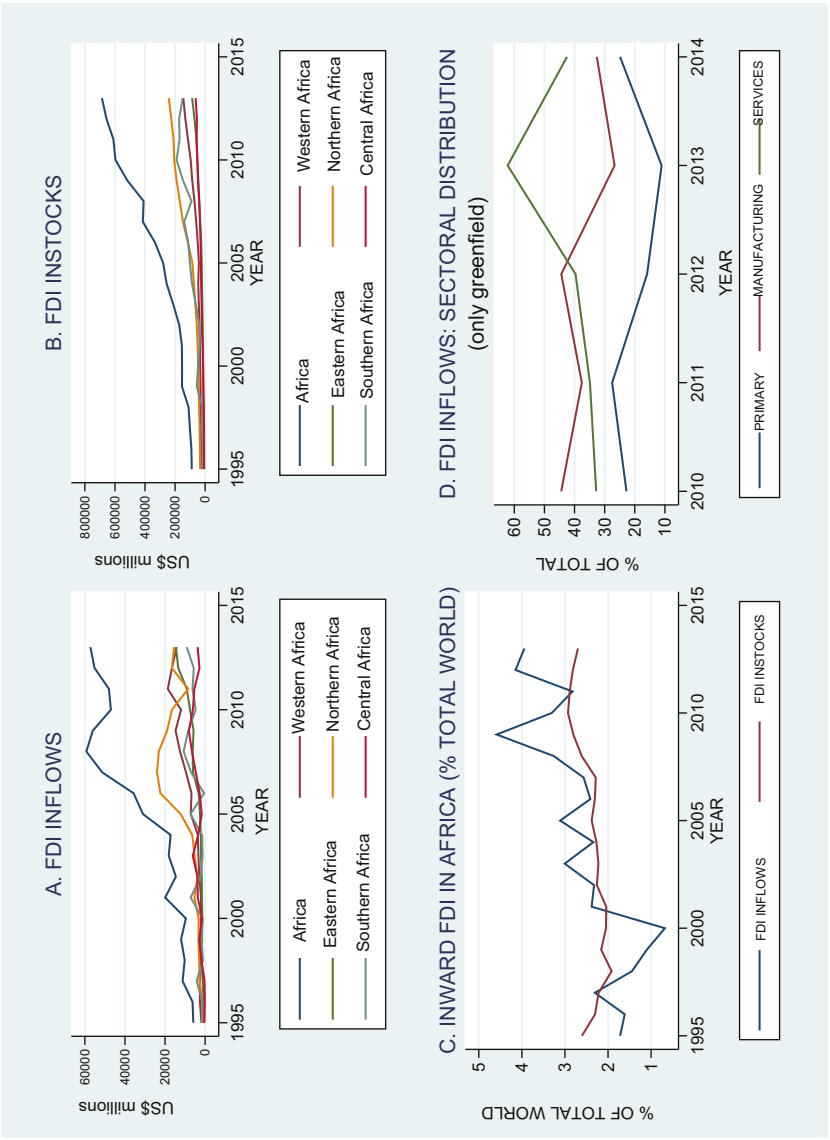

Fig. 5.1 FDI trends in Africa (*Source*: Authors' calculations based on UNCTAD database)

FDI instock rose by 240 times (from US$3.6 million to US$566 million), Niger (from US$45 million to US$5 billion), Burkina Faso (from US$27 million to US$1.4 billion) and Madagascar (from US$140 million to US$6.5 billion). The distribution of FDI instocks as a share of total African FDI instocks across the African continent changed between 2000 and 2013: with values raising from 29.6% to 35.2%, in the Northern economies, and 9.2% to 12.6% in the Eastern region. On the other hand, the relative shares of the Southern economies fell, decreasing from 30.8% to 21.8% within that period, while those in the Western and Central African economies remained unchanged.

Also the sectoral composition of FDI to Africa has changed over time, moving more and more from resource-seeking investment in the extractive industries to light manufacturing and, more recently, to services. This general trend which follows the FDI sectoral evolution experienced in other emerging and developing economies has been affected by the more recent financial crisis. In fact, looking at the value of announced greenfield projects[2] carried out between 2010 and 2014 (see Fig. 5.1.D), the fall of FDI in the manufacturing sector from US$39.5 billion (44% of the total) to US$28.7 billion (32% of the total for the last year available) is apparent. Specifically, the investments in the textile industry was 91.4% smaller (from US$23.2 billion to US$2 billion) and those in the motor vehicles industry, 38% smaller (from US$2.6 billion to US$1.6 billion).

On the contrary, food and beverages and nonmetallic mineral product industries showed small increases in inward investments (by, respectively, 11% and 5.7%). The value of greenfield investments in the service sector took a big jump from 32% of the aggregate value in 2000 to 42% in 2013. In an 'energy-hungry continent,' greenfield investments in the energy sector became two times larger (from US$5.4 billion to US$10.6 billion), while in the business services, they rose by 16% (from US$5.4 billion to US$6.3 billion) within the 2000–2013 period. Finally, the value of investments in the primary sectors increased, but to a lower extent with respect to those in the service sectors (from US$20.2 billion in 2000 to US$21.9 billion in 2013). At the macro-level, it is possible to argue that foreign investments are channeled more and more into relatively more modern sectors and in areas—like energy and banking—where capital accumulation is crucial for boosting structural change and development.

As previously highlighted, one peculiarity of FDI in Africa is the growing relevance of the so-called South-South investments. The recent financial crisis has reinforced the relative importance of investments from developing

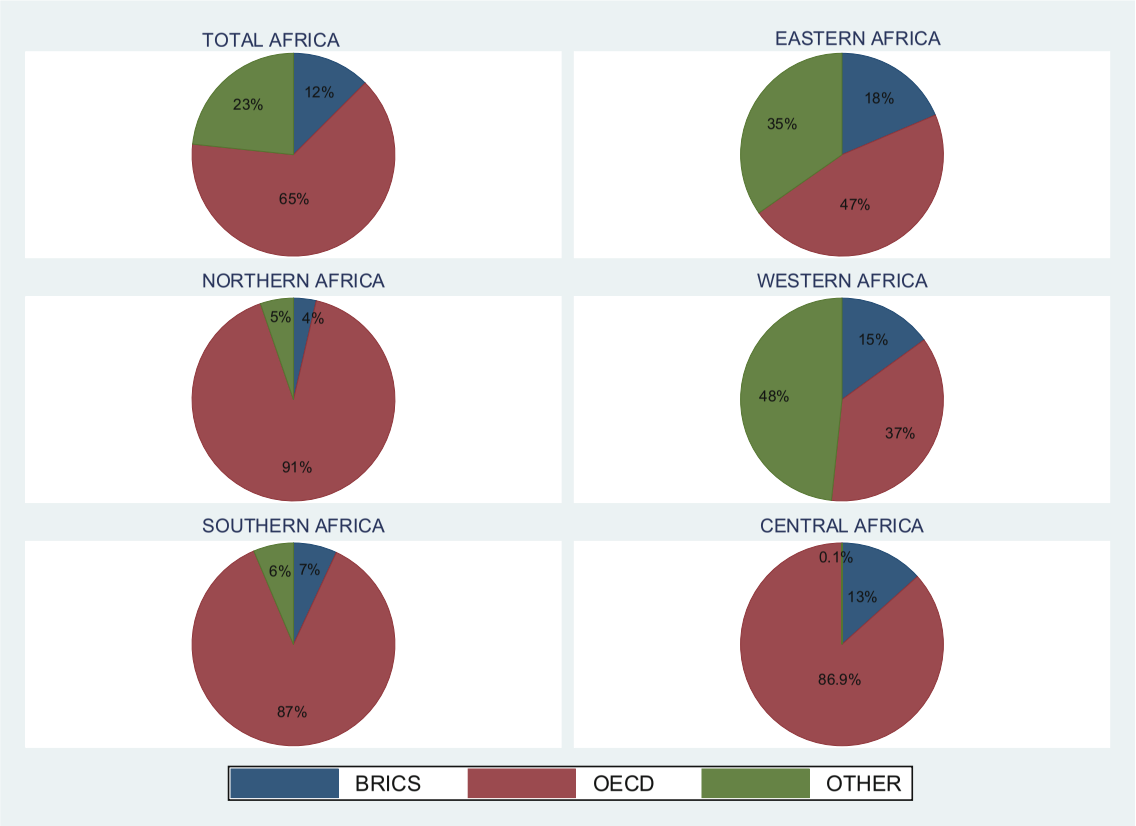

Fig. 5.2 The origin of foreign investors in Africa: OECD versus BRICS (*Source*: Authors' calculations based on UNCTAD database)

Table 5.1 Top ten destinations of FDI instocks by origin of the investors

% of total FDI instock in the country		*US$ million*	
OECD	*BRICS*	*OECD*	*BRICS*
Sao Tome and Principe (100)	Gambia (100)	South Africa (144,799)	Mauritius (33,431)
Capo Verde (100)	Namibia (100)	Mauritius (90,378)	Nigeria (13,450)
Côte d'Ivoire (98)	Sudan (99.83)	Morocco (36,942)	South Africa (5479)
Egypt (97.78)	Niger (98.90)	Egypt (34,416)	Namibia (4627)
Tunisia (97.50)	Sierra Leone (98.30)	Nigeria (26,434)	Mozambique (2639)
Cameroon (95.76)	Mauritania (95.50)	Angola (23,467)	Angola (2419)
Libya (95.52)	Eritrea (93.68)	Algeria (12,619)	Tanzania (2226)
Madagascar (93.89)	Zimbabwe (93.55)	Zambia (9016)	Zambia (2225)
Gabon (91.49)	Djibouti (93.16)	Mozambique (4685)	Zimbabwe (1780)
Angola (90.65)	Ethiopia (92.87)	Libya (4522)	Ghana (1396)

Source: Authors' elaborations on UNCTAD data

and emerging economies to Africa as developed countries—those, at least initially, more affected by the economic contraction—are decreasing their role as investors (see UNCTAD 2015).

Although decreasing, in absolute term, the role of investments from developed countries is still prominent. In 2012, FDI instocks from OECD countries represented 65% of the total and those from BRICS[3] amounted to only 12% (Fig. 5.2). Behind these aggregate figures, the importance of OECD and BRICS investors across different geographical areas is highly heterogeneous. More specifically, FDI instocks from OECD investors into the Northern Africa countries were 91% of the total FDI instocks in the region. Moreover, they were also prevalent in the South and in the Central regions, where they represented 87% of total FDI instocks in each of the regions. Turning to the country level, OECD investments are almost 100% of total FDI instocks in Sao Tome and Principe, Cabo Verde, Côte d'Ivoire, Egypt and Tunisia (Table 5.1). The largest FDI stocks from OECD economies are recorded in South Africa (US$144.8 billion), Mauritius (US$90.3 billion), Morocco (US$36.9 billion), Egypt (US$34.4 billion) and Nigeria (US$26.4 billion).

In the same year, FDI instocks from BRICS represented 18, 15 and 13% of the total FDI instock in East, West and Central African regions,

respectively. The lowest shares (4%) were registered in Northern Africa. In terms of FDI instocks, BRICS represented almost 100% of foreign investments in Gambia, Namibia, Niger, Sierra Leone and Sudan. On the other hand, the countries receiving the largest investment stocks in absolute terms from BRICS investors were Mauritius (US$33.4 billion), Nigeria (US$13.4 billion), South Africa (US$5.4 billion), Namibia (US$4.6 billion) and Mozambique (US$2.6 billion). While both OECD and BRICS firms have significantly invested in those African countries which attract the bulk of foreign direct investments (Angola, Mauritius, Mozambique, Nigeria, South Africa and Zambia), some origin area specificities emerge in FDI investments toward other African countries: for OECD investors, economies such as Algeria, Egypt, Libya and Morocco are important targets, while BRICS target countries such as Ghana, Namibia, Tanzania and Zimbabwe.

FDI and Economic Complexity

Do FDI contribute to the modernization and upgrade of the production capabilities in the destination countries? Does the origin of such investments matter? These are important, and at the same time complex questions that have inspired a great deal of research in the last decades. In order to shed some lights around these questions at the macro-level, we look at the relationship between inward FDI in Africa from OECD countries and BRICS, and the Economic Complexity Index, *henceforth ECI* (see Atlas of Economic Complexity provided by the Center for International Development at Harvard University). This index allows us to rank countries according to the *diversification* (that is how many different products they can produce) and the *ubiquity* (that is how many countries are able to make those products) of their export basket. Indeed, following the approach developed by the seminal work of Hausmann et al. (2007), the more complex the products produced in a given country, the more developed that country is expected to be.

In Fig. 5.3 we plot the growth rate of FDI instocks against the ECI-value growth rate for all African economies over five- (left panel) and ten (right panel)-year interval. A positive relationship is observed when higher FDI inflows are associated with an increase in the complexity of the production and export basket. The positive relationship between these two variables becomes more evident when a longer time period (ten-year lag) is considered. Inward FDI might affect, over sufficiently long time periods, the

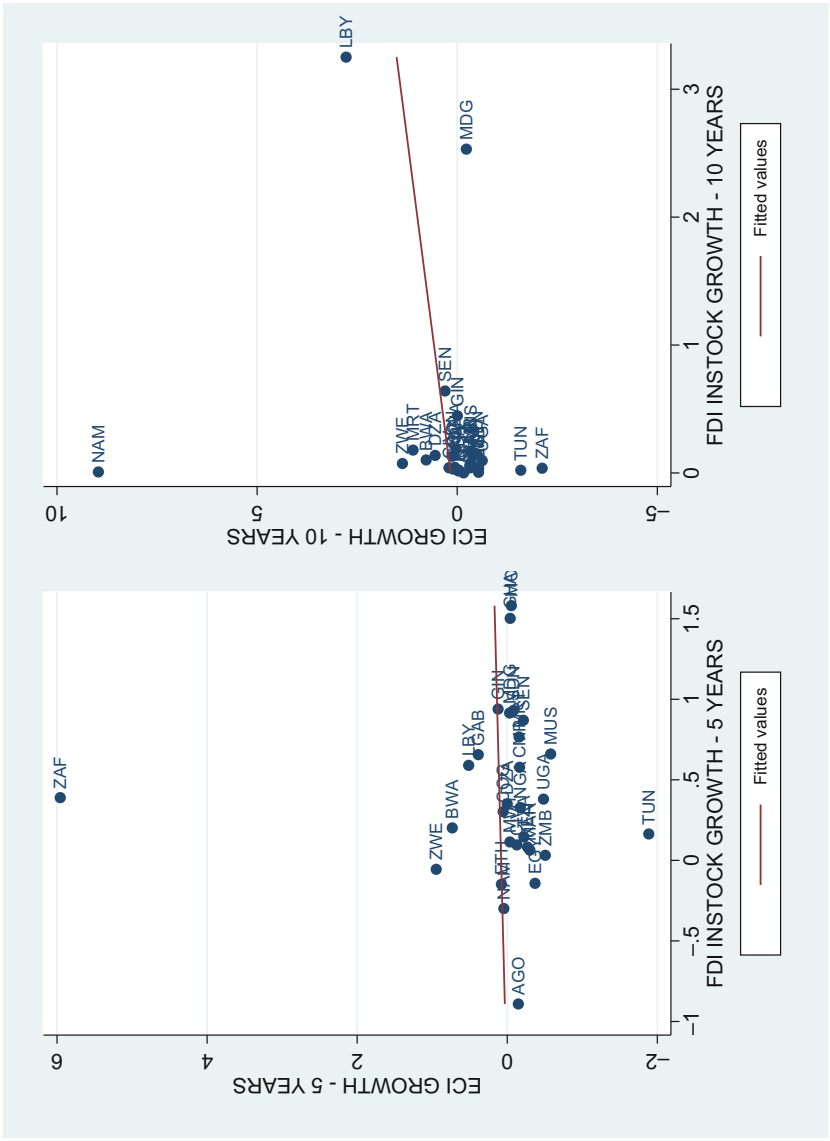

Fig. 5.3 FDI inflows and change in the Economic Complexity Index in Africa (*Source*: Authors' calculations on data from the Atlas of Economic Complexity and UNCTAD (last year 2012))

Table 5.2 Economic Complexity Index of selected African economies (year 2013)

Top ten values	*Bottom ten values*	*Top ten ten-year growths (in %)*
Tunisia (0.17)	Guinea (−2.07)	Namibia (1128.5)
South Africa (−0.09)	Mauritania (−1.93)	Libya (181)
Mauritius (−0.10)	Nigeria (−1.88)	Mauritania (142.9)
Egypt (−0.16)	Libya (−1.86)	Zimbabwe (109.3)
Zambia (−0.42)	Cameroon (−1.44)	Botswana (109)
Kenya (−0.43)	Gambia (−1.42)	Senegal (68.2)
Namibia (−0.44)	Ethiopia (−1.41)	Ethiopia (10.4)
Morocco (−.53)	Sudan (−1.38)	Côte d'Ivoire (10.2)
Botswana (−0.70)	Mozambique (−1.21)	Guinea (9.3)
Uganda (−0.65)	Congo (−1.19)	Nigeria (5.9)

Source: Authors' elaborations on the Atlas of Complexity data (Harvard University)

economic development level of destination countries by promoting the production of more complex goods and services.

The African countries with the higher Economic Complexity Index values in 2013 (Table 5.2) are mostly located in the Northern (Tunisia, Egypt and Morocco) or in the Southern (South Africa, Namibia and Botswana) part of the continent where OECD investors have the largest share of FDI instocks (see Fig. 5.2). At the first sight, BRICS investors have relatively larger share of FDI stocks in low-ECI African countries found in the East (Ethiopia and Mozambique), West (Guinea, Mauritania Nigeria) and in Central (Cameroon and Congo) regions.

However, a more systematic approach reveals a blurred relationship between the origin of investors and the complexity of production in destination countries. In Fig. 5.4, we plot the ECI values of all African countries against the ECI value of the foreign investors (weighted by their importance in the total FDI instocks). A U-shaped relationship between the two variables seems to emerge. We find that African countries with high ECI values are targeted by both investors from low-ECI values' countries (such as Botswana, Namibia and Tanzania) and investors from high ECI values (such as Egypt, Kenya and Morocco). Besides, a high ECI value of investors is found for African countries with a high production complexity (for instance, South Africa and Tunisia) and for those with the worst level of production complexity (as Libya). Clearly at the macro-level, some interesting features and differences between investors emerge, but the relevance of such differences in terms of economic development potential is better investigated using a micro-level perspective.

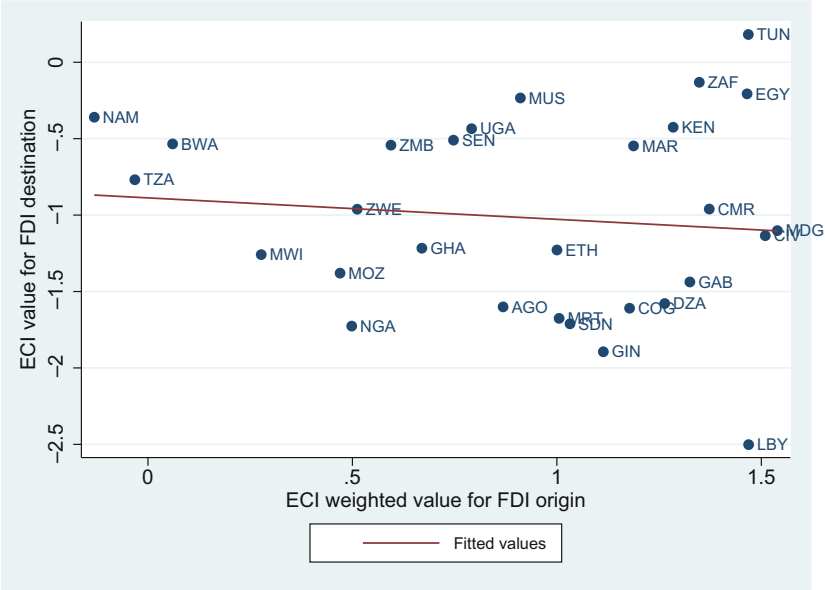

Fig. 5.4 Economic Complexity of origin and destination countries (*Source*: Authors' calculations on data from the Atlas of Economic Complexity Index and UNCTAD 2012)

Foreign Investors as Agents of Structural Change: A Firm-Level Approach

In the context of developing and capital-scarce countries, foreign firms might act as key drivers of structural change. Foreign investors affect the host economy through several channels. First, direct effects materialize through an increase in the endowments—and the relative productivities—of factors of production (capital, labor, technology). In this respect, the existing literature is rather unanimous in concluding that such effects are positive as multinational enterprises (henceforth MNEs) add to the stock of physical and human capital and often generate significant employment opportunities.[4]

Another important channel is related to the creation of forward and backward linkages with domestic firms (Amendolagine et al. 2013, Görg and Seric 2015). These linkages are fundamental ingredients of

FDI-induced structural change and production upgrading. Linkages boost the likelihood of spillovers and technological transfers between foreign and domestic firms. Although important, linkages are neither a necessary nor a sufficient condition for spillovers to materialize (Morrissey 2010). In fact, the 'quality' and intensity of linkages matter, and sometimes spillovers might be realized in the absence of linkages as domestic firms could 'learn by imitation' from foreign ones.

Finally, foreign firms might induce positive or negative effects by altering the competitive pressure in the host-country markets. Boly et al. (2015) show in the context of Sub-Saharan Africa the heterogeneous impact that foreign investors have on domestic firms. The author sheds light on the factors which make domestic firms 'winners' or 'losers' from FDI inflows. Recent research based on firm-level data has showed how the origin of foreign investors might matter for all the channels highlighted above.

In this section, we use a rich firm-level database (UNIDO AIS 2010)[5] which contains information on a large sample of foreign and domestic firms (around 7000) located in 19 Sub-Saharan African countries. Our goal is to highlight different 'behaviors' of foreign investors from OECD countries versus BRICS with respect to some of the above channels.[6]

Linkages Between Foreign and Domestic Firms

Backward and forward linkages generated by foreign firms can be a fundamental driver of production upgrading and economic development of host countries. In fact, FDI inflows do not only increase the endowment of capital but also improve the quality of the capital stock itself, by bringing new technologies and better management practices and connecting domestic economies to the global value chains (Görg and Greenway 2004). Through linkages, domestic companies might learn from foreign investors via direct and voluntary transfer of new knowledge and imitating new product/processes and managerial practices. The answer to the provocative question by Rodrik (2003) is: 'one dollar of FDI [..] worth no more (no less) than a dollar of any other kind of investment?' is likely to be 'no, it is not'.

The theoretical mechanism through which linkages can benefit host economies has been developed by Rodriguez-Clare (1996). In this study, the (positive) effects of foreign investments depend on propensity of MNEs to generate 'backward' linkages, where the latter are defined as the ratio of employment generated in suppliers of specialized inputs to labor directly

Table 5.3 The propensity of foreign investors to generate linkages with domestic supplier: evidence from Sub-Saharan Africa

	Origin of investors	*Mean value (%)*	*Median value (%)*	*s.d.(%)*	*Min*	*Max*
Backward Linkages (1)	*TOTAL*	15.5	0.0	24.1	0	99
	OECD	17.6	2.1	25.3	0	99
	BRICS	14.4	0.0	23.4	0	94
Long-term Suppliers' share (2)	*TOTAL*	45.3	40	38.8	0	100
	OECD	43	37.5	38.7	0	100
	BRICS	50.1	50	38.1	0	100

Source: Authors' elaborations on UNIDO AIS (2010) data
Note: (1) Backward linkages = value of locally sourced inputs over total costs (%); (2) long-term supplier share = % of local suppliers with a long-term contractual agreement

employed by the firm. If backward linkages generated by MNEs are larger than those established by domestic producers, then the host economy will start producing a larger variety of specialized inputs and, in turn, this will lead to larger productivity of local firms and higher wages for local workers ('forward linkages'). Positive effects are expected to be larger when MNEs produce relatively more sophisticated goods compared to domestic firms. In addition, it should be noted that an important role is played by the 'technological distance' between source and host countries as technological similarities would make technological transfers between foreign and domestic producers easier. Therefore, the country of origin of foreign investors is expected to matter in terms of propensity to generate upstream linkages with local producers and, indeed, this might be helpful for understanding the impact of FDI directed to the African economy.

In Table 5.3 we report the (unconditional) share of backward linkages generated by foreign investors in the 19 African countries covered by the Africa Investor Survey 2010 (UNIDO). The value of locally sourced inputs by foreign firms is on average 15.5% of total costs. Firms from OECD countries tend to source a higher share of inputs locally (17.6%) compared to those from BRICS (14.4%).

As a proxy for the 'density' of knowledge transfer between foreign and local firms, we consider the share of local suppliers with a long-term contractual agreement with foreign investors. In this respect we observe that approximately half of the local suppliers of BRICS investors are regulated by long-term contracts. The share of long-term partnership with local suppliers is lower for OECD investors.

The figures in Table 5.3 reveal some differences between the two groups of investors but do not take into account the micro-level differences across firms which contribute to explain the propensity of generating local linkages (size, sector, capital intensity, etc.). In order to assess whether differences still persist after controlling for firm-level characteristics, we perform an econometric exercise in the next section.

Determinants of Backward Linkages: An Econometric Analysis Using UNIDO African Investor Survey (2010)

We follow the study by Amendolagine et al. (2013) and shed light on the determinants of backward linkages to domestic suppliers established by affiliates of foreign firms in SSA. We estimate a two-limit Tobit econometric model which explains the *share of inputs that are locally sourced* (our dependent variable) by a highly representative sample of foreign and domestic firms.[7] Our empirical model is derived from a trans-log cost function where the dependent variable is the function of the costs of production inputs (wages and interest rate paid on capital) and the scale of production (value of total turnover). Besides these core control variables, our estimates include a set of firm-level characteristics (firm age and its square, capital intensity, local partnership, level of management authority, sector dummies, etc.), entry mode, diaspora investment and dummies identifying the OECD versus BRICS origin of the foreign investors. Table A.5.2 *in appendix 4* reports a description and summary statistics of the dependent and independent variables employed in the analysis. The results for the 19 Sub-Saharan African countries included in our sample[8] are reported in Table 5.4 (Panel A).

The age of the firm has a positive and significant effect on the size of locally sourced inputs, an effect that tends to weaken over time. We find evidence that more capital-intensive firms—and to a lower extent those with a more autonomous management—generate more backward linkages with the host country. The larger the technological level of the investor (i.e., the larger the share of skilled workers to total employment), the harder the chances to outsource intermediates from local suppliers, which are likely to be poorly endowed with human capital. Market-oriented foreign investors generate more backward linkages with domestic firms. As discussed in Kiyota et al. (2008), foreign firms which target the host-country market often strategically use local inputs in order to make their final goods more tailored to the taste/needs of domestic consumers. Positive effects are also driven by the presence of local partners.

Table 5.4 The determinants of the locally sourced inputs of foreign and domestic firms in Africa

	Panel (A)			*Panel (B)*		
	Backward linkages			*Long-run suppliers' share*		
	Dependent variables: share of local inputs' costs over total costs			*Dependent variables: share of suppliers with a long-term contract over total number of suppliers*		
Total sales	0.006	0.002	−0.001	0.010	0.011	0.010
	(0.009)	(0.009)	(0.009)	(0.015)	(0.015)	(0.015)
Firm age (in years)	0.005**	0.005**	0.004**	−0.00178	−0.002	(0.002)
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Firm age squared	−0.001**	−0.001**	−0.001*	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Capital intensity (capital-labor ratio)	0.022**	0.020**	0.018*	−0.041***	−0.046***	−0.045***
	(0.009)	(0.009)	(0.009)	(0.016)	(0.016)	(0.016)
Management autonomy	0.077**	0.043	0.043	−0.110*	−0.113*	−0.127**
	(0.034)	(0.035)	(0.035)	(0.060)	(0.0617)	(0.061)
Diaspora firm	0.099**	0.106**	0.104**	0.123	0.131	0.144*
	(0.047)	(0.047)	(0.047)	(0.082)	(0.0812)	(0.081)
OECD	0.083**	0.086**	0.087**	0.027	0.026	0.017
	(0.036)	(0.036)	(0.036)	(0.062)	(0.062)	(0.062)
BRICS	−0.010	−0.007	−0.020	0.155**	0.162**	0.170**
	(0.039)	(0.038)	(0.039)	(0.0667)	(0.066)	(0.066)
Greenfield		0.005	−0.003		−0.009	0.019
		(0.039)	(0.040)		(0.068)	(0.067)
Local partner		0.146***	0.149***		0.039	0.048
		(0.032)	(0.033)		(0.056)	(0.057)
Skill mix			−0.256**			0.139
			(0.104)			(0.17)
Local market			0.103***			−0.071
			(0.031)			(0.051)
Constant	−0.904**	−1.003***	−1.204***	0.365	0.344	0.346
	(0.377)	(0.376)	(0.382)	(0.23)	(0.242)	(0.252)
Industry dummy	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Factor prices (1)	*yes*	*yes*	*yes*	*no*	*no*	*no*
Observations	1070	1063	1036	986	977	952
Pseudo R-squared	0.051	0.068	0.086	0.010	0.012	0.015

Note: Standard errors in parentheses
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$
Tobit estimates
(1) Estimate with backward linkages as output also employs prices of alternative inputs (with respect to domestic intermediates, i.e., labor, capital and imported intermediates) as regressors (see Amendolagine et al. 2013)

Does the origin of the investor (still) matters—after controlling for all the covariates included in the analysis—in explaining the intensity of locally sourced inputs? Our analysis shows that foreign investors from OECD countries have significantly larger propensity to generate linkages to upstream local suppliers (Panel A), while BRICS investors have larger propensity to establish long-run linkages to local intermediate producers (Panel B). Therefore, on the one hand, high-income economies seem to be more likely to source intermediates locally; this might be at least partly explained by the relatively higher communication and transportation costs between headquarters and local subsidiaries in Africa.[9] On the other hand, we find that foreign investors from BRICS show, ceteris paribus, a larger propensity to establish long-run supplier relationships with local producers. This latter result points to the direction that even if the size of production linkages between BRICS investors and the African economy is smaller, the 'nature' of such linkages is more likely to generate (positive) spillover effects due to the longer duration of supplier relationships.

Forward Linkages

Production linkages between foreign firms and domestic buyers can boost the productivity level of the host economy by increasing the variety and the quality of inputs and, furthermore, by promoting technological transfers. These production linkages are known in the economic literature as 'forward linkages'.

Görg and Strobl (2002), in a study based on a sample of Irish manufacturing companies, showed that the presence of MNEs leads to smaller start-up size of domestic companies entering the markets, particularly within the modern sectors. Therefore, foreign investors increase market competition and, then, efficiency both in the final goods and in the intermediates markets. Furthermore, in Boly et al. (2015), it was found that relatively larger and more productive domestic companies, along with those with a downstream market orientation, had the highest probability to receive positive effects from the presence of foreign investors.

In terms of 'forward' linkages, companies with higher probabilities to benefit from foreign investors are those that will most likely adopt an 'imitation' strategy as a reaction to new foreign competitors, while those suffering negative effects from foreign competition will be likely to adopt a 'no-reaction' strategy. The entry of foreign firms in Africa is accelerating a Schumpeterian structural process which is likely to see the expansion of the

best domestic companies—those who seem to benefit from the entry of foreign firms—and a decline of the least productive producers, those who are negatively affected by new competitors and are not able to strategically react to the new market equilibrium.

Innovation, Workers' Training and Knowledge Transfers

Foreign firms have strong incentive to promote knowledge transfers and strengthen their domestic partners in order to enhance their productivity and the quality of their products. In other words, MNEs—in particular those with intensive backward and forward linkages—have often an active role in developing an effective and efficient local value chain in the host country. Do foreign firms engage actively in knowledge transfers to local firms in Africa? Using data from the abovementioned UNIDO AIS 2010, we report in Table 5.5 the shares of MNEs from OECD countries and BRIC, respectively, which actively enhance the development of knowledge base in the host country via the following channels: technology transfers to domestic suppliers/subcontractors, upgrade of their product quality, upgrade of their production efficiency and training of their workforce.

It is interesting to note that a larger share of BRICS investors is actively promoting technology transfers compared to OECD ones. This evidence supports the idea that the 'technology gap' between foreign and domestic producers is an important element in determining the 'absorptive capacity' of the host economy. A higher technological gap might reduce both the propensity to transfer and the capacity to absorb new knowledge. OECD investors in Africa, on the other hand, seem to be slightly more inclined to

Table 5.5 FDI and innovation support in local economy: OECD vs. BRICS

Channels used to support local suppliers	*% of foreign firms supporting local suppliers*		
	OECD	*BRICS*	*TOTAL*
Technology transfer	19.88	22.03	21.04
Product quality upgrade	44.82	43.25	45.53
Production efficiency upgrade	38.23	36.18	36.52
Workforce training	22.42	22.78	21.7
Total	100	100	100
(No. of firms)	(605)	(804)	(1409)

Source: Authors' calculations on database UNIDO AIS 2010

help local suppliers/buyers in improving the quality of their products and their production processes. No significant differences are observed with respect to the direct training to the workforce of domestic firms.

The Employment Effect of Foreign Investors: Where You Come from Matters!

While most of the existing literature on the effects of FDI in the host economy has been devoted to the 'holy grail' of finding evidence of spill-overs and technological transfers, to a large extent the policymakers in developing countries have been (and still are) mainly interested in the employment generation (and its quality) from foreign investors. In fact, policies are often tailored in order to maximize the labor-market impact of FDI in the host countries.

In this section we investigate, using the firm-level data contained in the UNIDO AIS 2010 survey, the main labor-market differences between investors originating from different areas. Summary statistics of the main variables employed are reported in Table A.5.3 in the appendix. The first two columns, Models 1–2, in Table 5.6, report estimates of the overall labor demand of domestic and foreign firms in 19 Sub-Saharan African countries (see *note 8*): (log of) the number of workers.[10] We estimate the model based on ordinary least squares (OLS) and by a fully robust MM estimator, a method designed to deal with outliers, which are a common problem of survey data.[11] Based on a theoretical labor demand equation, our model controls for the size of the firm (proxied with the log of total sales), factors' prices (wages and long-term interest rate), the age of the firm and the export propensity. Besides, we include country of destination and sector-fixed effects in order to capture the average differences in labor demand related to these two dimensions.

Foreign firms from BRICS are on average larger than domestic ones (by 17.8%), while those from OECD countries are approximately 11% larger. The higher demand of labor is mainly driven by Chinese and South-African investors. Model 2 suggests that, ceteris paribus, Chinese and South Africa's firms employ, respectively, 42.5% and 21% more workers compared to similar domestic ones. For these investors, the cost of labor represents one of the most important location factors. Note also that firms oriented to foreign markets are generally larger employer.

Although OECD investors are smaller in size, we find evidence of a strongly positive and significant 'wage premium' compared to domestic

Table 5.6 The labor-market effects of foreign investors: OECD versus BRICS

	Mod. 1	*Mod. 2*	*Mod. 3*	*Mod. 4*	*Mod. 5*	*Mod. 6*
	No. of workers (in log)	*No. of workers (in log)*	*Average wages (in log)*	*Average wages (in log)*	*Skill ratio**	*Skill ratio**
Firm average labor costs (ln)	−0.289***	−0.287***				
	(0.018)	*(0.018)*				
Wages of white collars (ln)					−0.021***	−0.022***
					(0.006)	(0.006)
Long-term cost of capital (ln)	−0.081**	−0.082**			−0.009	−0.009
	(0.032)	(0.032)			(0.008)	(0.008)
Total sales (ln)	0.463***	0.461***	0.231***	0.231***	−0.017***	−0.017***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.003)	(0.003)
Firm age (*t*-1)	0.010***	0.010***	0.001	0.001	0.001**	0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)
Skill ratio			0.820***	0.817***		
			(0.067)	(0.067)		
Foreign workers (share)			0.311*	0.318*		
			(0.185)	(0.183)		
Female workers (share)			0.087	0.099		
			(0.091)	(0.091)		
Export intensity (*t*-1)	0.196***	0.196***	−0.243***	−0.224***	−0.002	−0.002
	(0.037)	(0.037)	(0.081)	(0.080)	(0.009)	(0.009)
Labor productivity (*t*-1; ln)					0.033***	0.033***
					(0.004)	(0.004)
Multi-product firm					0.018**	0.017**
					(0.007)	(0.007)
OECD	0.109***	0.109***	0.254***	0.250***	−0.005	−0.006
	(0.036)	(0.036)	(0.044)	(0.044)	(0.010)	(0.010)
BRICS	0.178***		−0.053		−0.027**	
	(0.054)		(0.071)		(0.011)	
Other origin countries	0.133***	0.091**	0.141***	0.135**	−0.022**	−0.022*
	(0.042)	(0.045)	(0.050)	(0.055)	(0.011)	(0.012)
China		0.425***		−0.470***		−0.055***
		(0.106)		*(0.126)*		*(0.018)*
India		0.068		0.107		−0.021
		(0.061)		*(0.077)*		*(0.013)*
South Africa		0.210**		0.007		−0.004
		(0.093)		(0.095)		(0.021)
Constant	−0.695***	−0.685***	4.091***	4.081***	0.366***	0.368***
	(0.206)	(0.208)	(0.27)	(0.271)	(0.052)	(0.052)

(*continued*)

Table 5.6 (continued)

	Mod. 1	*Mod. 2*	*Mod. 3*	*Mod. 4*	*Mod. 5*	*Mod. 6*
	No. of workers (in log)	*No. of workers (in log)*	*Average wages (in log)*	*Average wages (in log)*	*Skill ratio**	*Skill ratio**
Observations	4525	4525	4501	4501	3554	3554
R-squared	0.631	0.633	0.347	0.35		
Country of destination and Industry FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses, $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$ / (*) Skill ratio = share of white collars workers over firm total employment; Models 5 and 6 present marginal average effects from Tobit estimates

firms as they paid circa 17% more all else being equal. This result, as in Coniglio et al. 2015, is in line with previous work that found that foreign firms pay higher wages than domestic ones in several developing countries (te Velde and Morrissey 2003; Lipsey and Sjöholm 2004; Chen et al. 2005).

Our econometric analysis does not find robust evidence of a wage premium for South-South FDI (Models 3–4 in Table 5.6). On the contrary, when we include the country of origin dummies for BRICS, our analysis reveals a negative wage gap between Chinese and domestic firms (approximately 60% less). This result goes in the direction of confirming anecdotal evidence from case studies on the low wages paid by Chinese investors in African countries. More research is necessary to establish the exact determinants of the large wage gaps observed in the data.[12] We also find that larger and more skilled intensive investors pay higher salaries. On the contrary, export-oriented firms are associated with lower wages.

Finally, we consider the different propensity of foreign investors vis-à-vis domestic ones in hiring skilled workers (Models 5–6). Clearly, this is a fundamental dimension for assessing the development impact on inward FDIs as argued by Javorcik (2004). Our dependent variable, the share of white collars over the overall number of workers (skill ratio), is significantly and negatively associated with BRICS. In particular, we find evidence of a reduced demand for skilled workers by Chinese investors. The demand of qualified workers from other origin countries, including those from the OECD, is not significantly different from similar African domestic investors.

These results highlight a significantly different labor-market impact of foreign investors across origin countries. A trade-off between the quantity of work opportunities generated and their 'quality' in terms of wages and demand for skilled workers seems to emerge between OECD and BRIC (mostly Chinese) investors. As argued in Coniglio et al. (2015), these findings are highly relevant for assessing the impact of FDI and design appropriate policies in host countries.

Conclusion

Is one dollar of FDI equivalent regardless of its origin? The answer to this question is no. Foreign investments differ from other (more arm's length) forms of capital investment as they bring not only capital but also different knowledge, business practices, different values and different people. Many of these elements are peculiar to each single firms but a relevant bundle is highly related to the country/area of origin of the investors.

The main goal of this contribution is that of highlighting commonalities and differences between OECD and BRICS investors in Africa. Why should OECD and BRICS investments differ? One explanation can be offered by the different factors which drove the investments of these firms in Africa. In fact, different motives might explain heterogeneous 'investors' and, in turn, significant differences in the way the firms will operate in the host economy.

Table A.5.1 in the appendix shows the self-reported 'crucial' motives which led to the investments by foreign firms in 19 Sub-Saharan African countries. Some investors are more driven by locational advantages based on cheap labor force and hence are likely to re-locate all or part of their labor-intensive production processes. Other firms are attracted by local market opportunities and might be more or less sensitive to the social, political or economic stability of the host countries. Some of the findings above can be explained by such differences.

An additional theoretical argument at the basis of the observed differences across investors can be found in the 'South-South FDI advantage' illustrated by Dixit (2012). Investors from emerging and developing countries might be more used than OECD ones to deal with the difficult economic environment and the 'bad' institutional framework which often characterizes African countries. This advantage translates into lower cost of entry and operates into these markets which in turn might explain a larger size and a reduced reliance on local partners by BRICS investors.

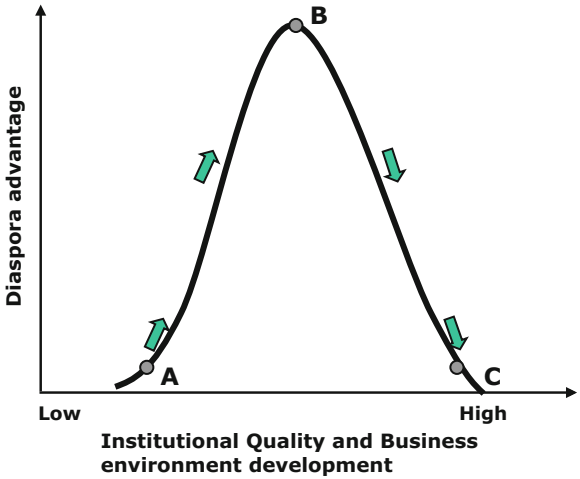

Fig. 5.5 Institutional and business environment quality in the host country and the 'South-South Advantage'

It is likely that this 'South-South Advantage' depends on the institutional quality and the business environment of host countries as depicted in Fig. 5.5. When the quality of institutions is very low—for instance, in a 'failed' state afflicted by civil conflicts—even for investors from less-developed countries, the advantage of investing is low or null. For intermediate level of institutional quality, it is likely that South investors are more able to conduct business in the host country compared to other investors. On the contrary, where institutions are well functioning, then—at least in principle—a reduced cultural and social proximity to the host economy represents a minor handicap in conducting business also for countries with a very different socioeconomic context. Hence, the 'South-South Advantage' is likely to be bell-shaped and, when institutional quality improves, to be eroded over time.

In the context of Africa, the differences are relevant in terms of the capacity of host countries to fully reap the benefit of the growing inflows of FDI. Our results highlight important differences but do not allow to conclude that some investors are, ceteris paribus, better than others. Some trade-offs emerge and how the above results can help in shaping more effective FDI attraction policy depends on the specific goals that host countries pursue.

Appendix

Table A.5.1 Which location factors matter more for foreign investors in Africa?

Location factors	*Total MNE*	*OECD*	*BRICS*	*China*	*India*	*South Africa*
Political stability	28	27.3	27.4	32.7	24.3	34.8
Economic stability	22.2	22.7	23.6	23	23.7	29.8
Transparency of business regulation	13.6	14.6	12.9	9.9	14.1	14.4
Quality of life	9.3	9.2	10.6	7.4	10.4	14.4
Bilateral agreements and double taxation treaties	8.2	8.1	8.9	8.9	8.9	8.8
Local market	19.2	17.5	20.9	18.2	21.5	22.4
Export market	10.1	10.5	11.5	21	7.2	8.8
Labor costs	9.2	9.3	10.5	13	7.4	14.4
Availability of skilled labor	13.1	13.6	13.4	13.8	12	16.3
Costs of raw materials	17.7	17.6	17.9	16.4	19.9	15.3
Availability of local suppliers	9.4	9.4	9.6	8.2	10.7	8.8
Incentive packages	10	8.9	11.3	8.2	14.3	8.8

Source: Authors' elaborations from UNIDO AIS (2010)

Table A.5.2 The determinants of backward linkages. Description of the variables employed

Variable	*Description*	*Mean*	*S.D.*	*Min*	*Max*	*N.Obs.*
Backward linkages *(dependent variable)*	Share of the cost of local intermediate inputs in total costs.	0.156	0.241	0	0.995	1144
Long-run suppliers' share *(dependent variable)*	Share of long-run suppliers in total local suppliers	0.453	0.388	0	1	1082
Total sales	Log of sales/turnover over the last financial year	107,000,000	3,180,000,000	0	117,000,000,000	1340
Firm age	Year of the survey (2010) minus year of the original investment	18.107	16.736	0	141	1391
Capital intensity	Log of capital – labor ratio (multiplied by US$10,000)	105.416	3344.297	0	119338.8	1274
Skill mix	Log of the ratio of white collars to total employment	0.312	0.259	0	5.882	1318
		% in the sample				
Management autonomy	Dummy equal to 1 if the local management is strongly autonomous in capital expenditure and 0 otherwise	73.88%				1359
Diaspora firm	Dummy equal to 1 either if the foreign investment is a diaspora investment or if the main source of awareness	9.79%				1409
OECD	Dummy equal to 1 if foreign investor is from an OECD country and 0 otherwise	42.94%				1409
BRICS	Dummy equal to 1 if foreign investor is from an BRICS country and 0 otherwise	29.60%				1409
Greenfield	Dummy equal to 1 if the initial investment took place as a new operation and 0 otherwise	84.97%				1377

Local partner	Dummy equal to 1 if the foreign company has a local partner and 0 otherwise	25.5%	1392
Local market	Dummy equal to 1 if local market is very important or crucial in the company's decision to invest and 0 otherwise	59.46%	1332

Table A.5.3 Labor-market effects of foreign and domestic firms in Africa. Summary statistics of the variables employed

Total sales (ln)	*Obs*	*Mean*	*Std. dev.*	*Min*	*Max*
Number of workers (in log)	6306	3.744	1.388	0.000	9.680
Average wages (in log)	5860	7.888	1.309	0.181	15.875
Skill ratio	6179	0.412	0.277	0.000	1.000
Firm average labor costs (ln)	4721	1.066	0.645	0.006	4.405
Long-term cost of capital (ln)	5462	2.606	0.483	−1.050	4.977
Total sales (ln)	6161	13.786	2.249	−0.685	25.482
Firm age (t-1)	6419	16.278	15.189	0.000	161.000
Export intensity (t-1)	5810	0.236	0.425	0.000	1.000
Foreign workers (share)	5777	0.047	0.100	0.000	1.000
Female workers (share)	6186	0.259	0.219	0.000	1.000
Labor productivity (t-1; ln)	5575	9.898	1.668	−4.218	13.804
Multi-product firm	6406	0.665	0.472	0.000	1.000
OECD	6497	0.174	0.379	0.000	1.000
BRICS	6497	0.075	0.263	0.000	1.000
China	6497	0.026	0.158	0.000	1.000
India	6497	0.047	0.213	0.000	1.000
South Africa	6497	0.026	0.158	0.000	1.000
Other origin countries	6497	0.133	0.340	0.000	1.000

Notes

1. Data on Economic Complexity Index are taken from Atlas of Economic Complexity, which is provided by the Center for International Development at the Harvard University.
2. Merger and acquisition are much less relevant for Africa: in aggregate, their value was equal to 9% and 5.7% of that of greenfield-type investments in, respectively, 2010 and 2014.
3. BRICS stands for Brazil, Russia, India, China and South Africa.
4. Clearly, the gains from FDI inflows are far from automatic. In the context of Africa, Asiedu (2006) emphasizes the role of good institutions and a favorable business environment as facilitator of these gains.
5. UNIDO African Investor Survey (2010) includes detailed information on the general characteristics of firms, such as the organizational

structure, country of origin, market orientation, output and production factors prices and quantities; moreover, it provides detailed information on the linkages between domestic and foreign producers.

6. The advantage of using firm-level data stems from the ability to isolate more precisely—using parametric and nonparametric techniques—the role played by the origin of the investors by considering explicitly other features of the foreign investors which might affect their behavior in the host country (for instance, size, capital intensity, sector, market orientation etc.).
7. Our econometric specification is based on a trans-log cost function as in Amendolagine et al. (2013) and Kiyota et al. (2008). The use of a Tobit model is related to the left and right censoring of our dependent variable. For a detailed description of the data and empirical methodology, we refer the readers to Amendolagine et al. (2013).
8. Burkina Faso, Burundi, Cameroon, Cape Verde, Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mali, Mozambique, Niger, Nigeria, Rwanda, Senegal, Tanzania, Uganda, Zambia.
9. This argument is theoretically developed in Rodriguez-Clare (1996).
10. As in Coniglio et al. (2015), we derive our empirical specification from a constant elasticity of substitution production function.
11. One important limit of our approach is the use of cross-sectional data for a single year. Given the lack of a panel dimension, we are not able to estimate, as it is frequently done in the literature, a dynamic labor demand. In this exercise, we are mainly interested in pointing out structural (static) differences between MNEs and domestic firms rather than interpreting the results in a causal way.
12. Note that our estimates control for several characteristics of the firm—age, sector, size, skill intensity, export propensity, share of female workers—and include country of destination-fixed effects. The lower wages might be associated to other characteristics of the investors not fully observed in the data; one possible candidate is the specific geographical location of investors within the country. In fact, some foreign investors might be more willing to locate in relatively more remote or peripheral area where wages are lower.

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CHAPTER 6

BRICS versus G7 Countries' Direct Investment Impact in Africa

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Introduction

Over the past three decades, foreign direct investment (FDI)[1] flows to Africa have increased by approximately 1325 percent, from US$4 billion in 1980 to around US$57 billion in 2013 (Fig. 6.1). Over 50 percent of these investments originate from developed countries, with the European Union(EU) taking the lion's share (UNCTAD 2013). Emerging economies consisting of Brazil, Russia, India, China, and South Africa (BRICS) and Middle East-countries have also become significant investors in Africa, especially after the 2008 World financial crisis (UNCTAD 2013). For example, the share of BRICS in Africa's FDI stock and flows in 2010 was 14 and 25 percent, respectively; compared to 51 and 41 percent for the EU member countries. In isolation, the relative share of BRICS' FDI in Africa is small, but when evaluated in context—where BRICS consist of only

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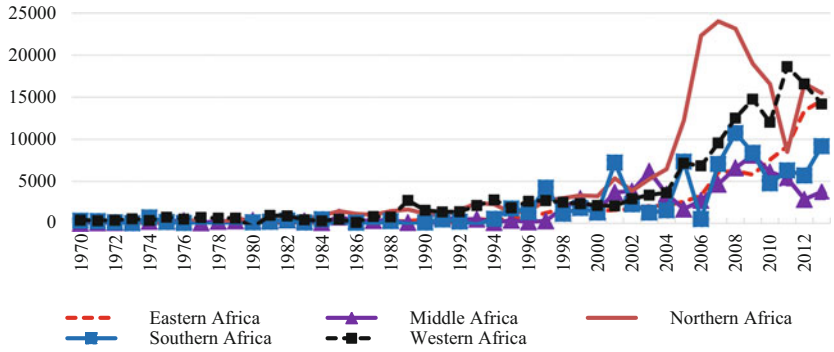

Fig. 6.1 FDI inflows to Africa over 1970–2013 (millions of current US$). *Source*: Authors' computation based on UNCTAD (2016)

5 countries and the EU has 28 member countries with a combined GDP that is over 1000 times that of BRICS—then the increasing relevance of these emerging economies in Africa becomes apparent. In fact, data on greenfield FDI projects in Africa show that while the share of developed countries has been declining since 2008, that of BRICS has been increasing steadily (UNCTAD 2013). Evidence also shows that multinational enterprises (MNEs) from developed economies (particularly, France and the United Kingdom) continue to divest from Africa, with the assets left behind acquired by BRICS, United Arab Emirates, and other developing countries (UNCTAD 2015).

Furthermore, FDI into Africa has diversified in terms of destination sectors and countries. For instance, it has slowly been shifting away from the extractive sector into manufacturing and services sectors and expanding into non-resource-rich countries in the region (UNCTAD 2013, 2015). These changes attest to the importance of the new players in Africa's FDI market and to the shifting determinants of FDI into the region. Previously, (traditional) investors were attracted to Africa solely for its natural resources. However, recent studies indicate that in addition to resource-seeking FDI, the new investors are market-seeking (and to a lesser extent, efficiency-seeking), looking to take advantage of not only Africa's internal market but also its duty-free, quota-free access to European Union, United States, and China's markets through the United States' African Growth and Opportunity Act (AGOA), EU's Everything But Arms (EBA), and China's zero-tariff measures of Africa's least-developed countries (LDCs)

initiatives (UNCTAD 2013, 2015; Chen et al. 2015; Pigato and Tang 2015; Shen 2015; Chakrabarti and Ghosh 2014; Warmerdam and van Dijk 2013).

According to the 2013 and 2015 UNCTAD's investment reports, a large proportion of BRICS' investments in Africa are in manufacturing and services sectors. In fact, evidence indicates that only 25 percent of BRICS investments on the continent are in the primary sector, and they tend to be owned by state-sponsored MNEs. For example: (1) Brazilian Development Bank and Brazilian Caixa Economica Federal that have been involved in developing Africa's ethanol industry (Angola, Ghana, and Mozambique) and housing projects (Angola and Mozambique); (2) China National Offshore Oil Corporation (CNOOC) in Uganda, Sudan, and South Sudan; (3) India's Oil and Natural Gas Corporation (ONGC) in Mozambique, Equatorial Guinea, Sudan, and South Sudan; and (4) Russia's Rusal (private), the world's largest aluminum producer, operating in Nigeria, Angola, Guinea, and South Africa.

There is ample anecdotal evidence of BRICS' and other developing countries' MNEs investing in the services and manufacturing sectors in Africa. For example, 80 percent of India's investment in East Africa is in the aforementioned two sectors, concentrating in textile and garment, construction, and ICT-related services (Chen et al. 2015; UNCTAD 2013). In 2010, India's Bharti group acquired the African mobile phone network of Kuwait's Zain, and in 2014 alone, it undertook 11 greenfield investment projects in Nigeria and Uganda, adding to its existing investment in 13 other African countries,[2] in order to establish a Wi-Fi network across Africa. Also in 2014, Chinese firms invested in South Africa's solar panel industry, while United Arab Emirates, particularly Dubai, accounted for 6 percent of total capital expenditure related to greenfield FDI projects in Africa; targeting consumer industries, infrastructure, and services. Moreover, South Africa's MTN established data centers, sales offices, and 4G projects in Cote d'Ivoire, Ghana, Swaziland, and Uganda in 2013. These and many other examples demonstrate a stark contrast between developing (South investors) and developed (North investors) countries' investment characteristics in Africa, whereas the latter tend to dominate the primary sector.

In terms of sectoral distribution of Africa's FDI, the services sector is the largest recipient, followed by manufacturing and primary sectors. Available data show that Africa's services FDI stock increased fourfold between 2001 and 2012. It accounted for 48 percent of Africa's total stock of FDI, more

than twice the share of manufacturing (21 percent) and significantly more than the primary sector (31 percent) (UNCTAD 2015). In 2014 alone, the services sector received 60 percent of announced greenfield FDI projects and 43 percent of capital expenditure, whereas the manufacturing sector received 38 and 33 percent of the projects and capital expenditures, respectively (UNCTAD 2015).

In light of the aforementioned this chapter examines the labor-productivity growth and employment effects of BRICS' FDI in Africa. We compare the resulting effects to those of G7 countries' FDI, which has traditionally concentrated in the primary sector. As noted above, BRICS have become important players in Africa, especially with their increased investment in manufacturing and service sectors. Moreover, they have intensified competition for Africa's natural resources and expanding consumer base, enabling the continent to increase and diversify the composition of its trade and improve terms of trade (Clus-Rossouw et al. 2015; Mlachila and Takebe 2011).

Consistent with their investment patterns in Africa, largely in manufacturing and services sectors, we expect BRICS' direct investment to have labor productivity- and employment-enhancing effects. However, there are challenges and critiques leveled against BRICS regarding lax attention to governance, labor standards, and safety issues. These institutional factors have been found to have long-run effects on macroeconomic fundamentals (Acemoglu et al. 2005; Acemoglu and Robinson 2013; North 1990). As such, if overlooked, the resulting negative consequences may undermine any positive impact of BRICS' direct investment on labor productivity and employment in these countries.

The rest of the chapter is organized as follows: The next section provides a review of related literature, followed by a specification of the regression model. This is followed by a description of the data. The last two sections present analysis of the estimated results and concluding remarks, respectively.

Has Africa Benefited from Foreign Direct Investment?

There is considerable literature on the contributions of FDI to the host country, including growth effects, technology spillover effects, backward- and forward-linkage effects, trade effects, and competitive effects (Kim et al. 2015). Through FDI, domestic firms get access to new knowledge, production systems, managerial skills, and technology; all of which have the

potential to increase productivity in the host country. The presence of foreign firms also creates backward- and forward-linkage opportunities; where the domestic firms can develop beneficial networks with foreign-owned firms. Backward linkages not only provide domestic firms' access to human capital, technology, and material resources, but also tend to improve the competitiveness of these firms. Domestic firms can learn from foreign firms by observation or by establishing business relations with the latter or through labor turnover as domestic employees move from foreign to domestic firms. In fact, an increase in FDI can induce more investments in human capital, which enhances the catch-up potential of the recipient country (Liu 2008).

Much of the existing evidence on FDI, however, focuses on how FDI contributes to the host country's economic growth, with the resulting effects being positive, negative, or inconclusive. For example, Borensztein et al. (1998), Li and Liu (2005), and Bengoa and Sanchez-Robles (2003) found that FDI boosts economic growth; Khose et al. (2009), Akinlo (2004), and Saltz (1992) on the contrary found negative effects, while Khose et al. (2009) and de Mello (1997) obtained mixed results. The variation in results could be attributed to differences in the sampling periods, country coverage, nature of control variables, and estimation methods.

On the South-South FDI growth-enhancing effects, Busse et al. (2016) and Fu and Buckley (2015) have concluded that Chinese FDI has had an impressive impact on growth in Africa. Similarly, Weisbrod and Whalley (2011) who evaluated the impact of Chinese FDI on 13 big economies in Africa found that FDI contributed about 0.5 percent to GDP growth over the period 1990–2008. Fu and Buckley (2015) also arrived at a similar conclusion in which for every 10 percent increase in the share of Chinese FDI in total inward FDI to Africa, GDP per capita increased by 0.09 percent. Given that Chinese direct investment share in total inward FDI to Africa increased from 1.85 percent in 2004 to 6.85 percent at its peak in 2007, this suggests a contribution of 0.045 percent to per capita income growth in Africa over the 2004–2007 period.

Sectoral growth effect of BRICS' investment in Africa is another area that has attracted scholars' interest. Studies that have explored this route include Mlachila and Takebe (2011), Chakrabarti and Ghosh (2014), Pigato and Tang (2015), and Shen (2015). They provide evidence of BRICS' direct investment contributing to rapid growth of the oil sector in South Sudan, and helping to strengthen the country's balance of payments (Mlachila and

Takebe 2011). Other sectors that have benefited from BRICS' direct investment include manufacturing and services sectors (Chakrabarti and Ghosh 2014; Pigato and Tang 2015; Shen 2015). For example, BRICS have concentrated in agro-processing and garment manufacturing in Ghana and have contributed to increasing value added in both upstream and downstream industries such as refineries in Nigeria and copper wires processing in Zambia (Waldkirch 2010). They have helped rehabilitate railway lines in Angola, Democratic Republic of Congo, Zambia, Liberia, and Guinea, which are necessary in facilitating trade within and across these countries. All these activities have both direct and indirect (via spillovers) effects on growth, employment creation, and labor productivity in these countries.

Another strand of FDI literature is on the relationship between FDI and employment in the host country, where evidence suggests that inward FDI creates jobs, particularly through greenfield investments (Javorcik 2015). A recent study by Coniglio et al. (2014) has, for example, demonstrated that FDI, especially from the global South, has on average contributed 14.2 and 10.6 percent more employment than domestic firms and North MNEs, respectively. More importantly, Chinese firms were found to have the largest labor demand followed by those from South Africa and the Middle East and North Africa (MENA) region.

Notwithstanding the positive employment effects of FDI, evidence in the literature has shown that FDI could lead to crowding-out effects on less-competitive domestic firms, eventually resulting in a reduction in employment creation. Attracting FDI that is capital intensive could also impact employment negatively in labor surplus economies such as those in Africa. A reduction in employment could also occur depending on whether FDI takes the form of acquisitions or mergers, even if this leads to greater efficiency (through streamlining the workforce) in the long run.

Model Specification

In our quest to establish the labor productivity growth effects of BRICS' versus G7 countries' direct investment in Africa, we adopt a neoclassical growth model (Solow 1956, 1957) as specified in Eq. (6.1) below:

$$lp_{it} = \beta_0 \ln y_{i\,t-1} + \beta_1 \ln \mathrm{BRICS}'^{s} I_{i\,t} + \beta_2 \ln \mathrm{G7}'^{s} I_{i\,t} + \beta_3 \ln \mathrm{Open}_{i\,t} + \beta_4 \mathrm{Gov}_{i\,t} + \beta_5 \ln \mathrm{Edu}_{i\,t} + \eta_t + \nu_i + \varepsilon_{i\,t} \quad (6.1)$$

Where lp_{it} is the annual growth rate of output per person employed in country i in year t, and ln is the natural logarithm operator. Country-specific and time-fixed effects are denoted by υ_i and η_t, respectively. Direct investments from BRICS and G7 countries are the major right-hand side variables of interest.

The growth literature (Barro 1991; Levine and Renelt 1992; Sala-i-Martin et al. 2004) guides us in selecting the core set of labor productivity growth determinants; however, the estimated model variables are constrained by data availability. The initial level of output per worker (y_{it-1}) is included to test for the presence of β-convergence. Control variables include openness (Open), which is measured as the share of trade volume in GDP; governance (Gov), proxied by the Polity2 index; and human capital development (Edu) captured by gross primary school enrolment.

Further, we investigate effects of BRICS' versus G7 countries' direct investment on employment in selected African countries using Eq. (6.2):

$$\mathrm{Emp}_{i\,t} = \beta_0 \ln y_{i\,t-1} + \beta_1 \ln \mathrm{BRICS}'^{s} I_{i\,t} + \beta_2 \ln \mathrm{G7}'^{s} I_{i\,t} + \beta_3 \ln \mathrm{Open}_{i\,t} + \beta_4 \mathrm{Gov}_{i\,t} + \beta_5 \ln \mathrm{Edu}_{i\,t} + \beta_6 \ln \mathrm{Tel}_{i\,t} + \eta_t + \nu_i + \varepsilon_{i\,t} \quad (6.2)$$

where Emp is the employment to population ratio of people aged 15 years and older, y_{it-1} is the growth rate of output (controlling for cyclical employment effects) in country i at time t-1, and Tel *is* the percentage of the population with access to fixed-line telephone, which is used as a proxy for the impact of infrastructure development. The rest of control variables are as defined in Eq. (6.1).

The models in Eqs. (6.1) and (6.2) exhibit a number of methodological issues. Endogeneity bias may arise due to the potential endogeneity of labor-productivity growth and employment determinants such as trade, human capital, FDI, and governance. On the other hand, it is possible that low productivity growth may attract less investment and similarly, higher investment may lead to higher productivity growth; or both investment and productivity growth may be jointly determined by a third variable. In such instances, the model will suffer from reverse causality and

simultaneity bias. Other biases that may affect the consistency of the estimates include the heterogeneity (omitted variable) bias and measurement error (in the independent variables).

To minimize the above effects, we adopt the System GMM (SGMM) approach of Arellano and Bover (1995) and Blundell and Bond (1998). SGMM controls for endogeneity bias, measurement bias, unobserved country-fixed effects, and other potentially omitted variables. Relative to difference GMM, SGMM is robust to weak instrument bias. It uses suitable lagged levels and lagged first differences of the regressors as instruments. Furthermore, we include time dummies to capture universal time-related shocks from the errors (Roodman 2009).

Data

The analysis is done on a sample of 16[3] African countries over the period 2001–2012. Primary school enrolment[4] (defined as the percentage of total enrolment in primary education (regardless of age) in the population at the official primary education age), trade openness (exports plus imports as a share of GDP), fixed-line telephone subscription (per 100 people), and labor productivity (output per employed individuals, generated based on 2005 constant prices) are accessed from World Bank's World Development Indicators (2016). Bilateral FDI stock of BRICS and G7 countries is from UNCTAD statistics (2016). BRICS' and G7 countries' direct investment stock to an African country i at time t is calculated as the sum of FDI from individual BRICS and G7 countries at time t. The Polity2 governance index, which is reported on a scale of −10 to +10, with −10 indicating strongly autocratic and +10 strongly democratic political systems, is obtained from the Polity IV Project (Marshall and Jaggers 2011). Tables A.6.1 and A.6.2 of the appendix contain, respectively, the sample of countries used in this study and summary statistics for selected variables.

Estimation Results

Labor Productivity Growth Effects of BRICS and G7's Direct Investment

To determine labor productivity growth effects of BRICS' and G7 countries' direct investment, we estimate Eq. (6.1) where both measures of FDI are included in the model. Results reported in Table 6.1 show that while BRICS's direct investment has productivity-enhancing effects in Africa, that

Table 6.1 SGMM estimates for labor productivity growth effect of BRICS' and G7 countries' direct investment in selected African countries (2001–2012)

	(1)	*(2)*	*(3)*	*(4)*
Ln GDP per worker (lag)	–5.719***	–5.725***	–5.635***	–5.504***
	(0.596)	(0.585)	(0.314)	(0.306)
Ln BRICS' direct investment	0.291*	0.300*	0.236***	0.236***
	(0.151)	(0.154)	(0.081)	(0.081)
Ln G7's direct investment	–0.153**	–0.156**	0.007	0.024
	(0.073)	(0.079)	(0.100)	(0.106)
Ln education			6.666***	4.434***
			(1.392)	(1.194)
Ln openness				–1.258
				(0.960)
Governance		0.042**	0.037***	0.022**
		(0.017)	(0.013)	(0.009)
No. of observations	160	160	97	97
No. of countries	16	16	16	16
No. of instruments	13	14	15	16
Sargan test (probability> $\chi 2$)	0.228	0.223	0.274	0.308
Arellano-Bond (probability> Z)	0.704	0.693	0.473	0.573
Time dummy	Yes	Yes	Yes	Yes

Note: *All values are based on two-step SGMM. Standard errors are in parentheses.* $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. *Arellano-Bond test that average auto-covariance in residuals of order 2 is 0 accepts H0: no autocorrelation*

of G7 countries retards productivity growth. For example, with every 10 percent increase in FDI stock from BRICS, the growth in labor productivity of African countries increases by 2.4–3.0 percent annually (columns 1–4). By contrast, a 10 percent increase in FDI stock from G7 countries decreases labor productivity by 1.5–1.6 percent (columns 1–2). Moreover, the level of human capital appears to complement the effectiveness of both BRICS's and G7 countries' FDI. In other words, when human capital is included, the level of significance of BRICS' FDI coefficient increases from 10 to 1 percent. However, the magnitude of the impact decreases from 0.3 to 0.24. In the case of G7 countries' investment, controlling for human capital boosts the impact from negative to positive, but the effects are insignificant. The observed increase in the level of significance of the coefficient of BRICS' FDI when human capital is controlled for suggests that human capital has played a crucial role in making FDI a significant driver of labor productivity growth in these countries.

Table 6.2 SGMM estimates for labor productivity growth effect of BRICS' direct investment in selected African countries (2001–2012)

	(1)	*(2)*	*(3)*	*(4)*
Ln GDP per worker (lag)	–5.444***	–5.405***	–5.609***	–5.529***
	(0.628)	(0.610)	(0.215)	(0.220)
Ln BRICS's direct investment	0.206	0.215	0.252***	0.264***
	(0.155)	(0.157)	(0.073)	(0.075)
Ln education			6.220***	4.392***
			(1.384)	(1.121)
Ln openness				–1.392
				(0.993)
Governance		0.037**	0.034***	0.021***
		(0.018)	(0.009)	(0.007)
No. of observations	160	160	97	97
No. of countries	16	16	16	16
No. of instruments	12	13	14	15
Sargan test (probability> $\chi 2$)	0.195	0.19	0.268	0.294
Arellano-Bond (probability> Z)	0.598	0.575	0.467	0.552
Time dummy	Yes	Yes	Yes	Yes

Note: All values are based on two-step SGMM. Standard errors are in parentheses. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. *Arellano-Bond test that average auto-covariance in residuals of order 2 is 0 accepts H0: no autocorrelation*

To isolate the effects of BRICS's direct investment from G7 countries', we estimate two variants of Eq. (6.1). In Table 6.2, we report the results of the models containing only BRICS' direct investment. Similar to the results in Table 6.1, this investment continues to have robust effects on labor-productivity growth but only when the level of human capital is controlled for. Specifically, for every 10 percent increase in direct investment stock from BRICS, labor productivity in Africa grows by 2.5–2.6 percentage points.

Table 6.3 presents results for a model in which G7 countries' FDI is the only measure of foreign investment effects on labor productivity growth. In this case, FDI from G7 countries induces productivity growth substantially only when human capital and openness are accounted for. The magnitude of effect ranges between 1.5 and 1.6 percent for every 10 percent increase in FDI stock (columns 3 and 4). However, the explanatory power is lower when a measure of openness is included in the model (column 4), which is contrary to the findings in Table 6.2 for BRICS' FDI effects. This finding could be attributed to the fact that both FDI and volume of trade are

Table 6.3 SGMM estimates for labor productivity growth effect of G7 countries' direct investment in selected African countries (2001–2012)

	(1)	*(2)*	*(3)*	*(4)*
Ln GDP per worker (lag)	–5.045***	–5.014***	–5.117***	–5.019***
	(0.401)	(0.404)	(0.263)	(0.306)
Ln G7's direct investment	0.011	0.017	0.153**	0.158*
	(0.059)	(0.062)	(0.071)	(0.082)
Ln education			6.658***	4.767***
			(1.386)	(1.257)
Ln openness				–1.694**
				(0.808)
Governance		0.0338**	0.0229*	0.007
		(0.016)	(0.013)	(0.011)
No. of observations	160	160	97	97
No. of countries	16	16	16	16
No. of instruments	12	13	14	15
Sargan test (probability> $\chi 2$)	0.231	0.212	0.29	0.283
Arellano-Bond (probability> Z)	0.728	0.722	0.583	0.675
Time dummy	Yes	Yes	Yes	Yes

Note: *Reports are based on two-step SGMM. Standard errors are in parentheses.* $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. *Arellano-Bond test that average auto-covariance in residuals of order 2 is 0 accepts H0: no autocorrelation*

proxies for a country's level of openness or integration in the global economy. Consequently, in addition to their direct effect on labor productivity growth, they capture the indirect openness effects. Moreover, a large proportion of Africa's trade is with developed countries, which comprises G7 countries. Thus, there is a possibility that the indirect openness effects might also be working through the increased trade volume between G7 and African countries. In comparison, Africa's trade with BRICS as a group is very minimal, which explains why the explanatory power of the coefficient of BRICS' direct investment does not change with inclusion of trade in the model as reported in Table 6.2 (columns 3 and 4).

Consistent with the growth literature, we observe β-convergence in all specifications reported in Tables 6.1 through 6.3. Moreover, human capital development and good governance positively contribute to labor productivity growth, which is in line with related empirical studies on Africa (Gyimah-Brempong et al. 2005; Wamboye and Tochkov 2014). On the contrary, an increase in trade openness hampers productivity growth. These negative effects are significant in the models where G7 countries' direct

investment is the only measure of FDI effects (Table 6.3, column 4). This could be attributed to the fact that most African countries are net importers rather than net exporters, and a large proportion of these imports are from G7 countries.

Employment Effects of BRICS versus G7's Direct Investment

Evidence in the literature suggests that multinational enterprises (MNEs) operating in Africa that originate from emerging economies have roughly 11–14 percent more employees than domestic firms and developed countries' MNEs (Coniglio et al. 2014). In addition, their investments are concentrated in manufacturing and services sectors. Consequently, we evaluate BRICS versus G7 countries' direct investment impact on employment in Africa using Eq. (6.2). Results summarized in Table 6.4 show that, indeed, BRICS' direct investment increases employment rate in

Table 6.4 SGMM estimates for employment impact of BRICS' and G7 countries' direct investment in selected African countries (2001–2012)

	(1)	*(2)*	*(3)*	*(4)*	*(5)*
Ln GDP growth					–0.0001**
					(0.0001)
Ln BRICS's direct investment	0.001***	0.004***	0.004***	0.003***	0.004***
	(0.0003)	(0.001)	(0.001)	(0.0005)	(0.0005)
Ln G7's direct investment	–0.0004	–0.001**	–0.001*	–0.001*	–0.001**
	(0.0003)	(0.001)	(0.001)	(0.001)	(0.001)
Ln Edu		0.037***	0.034***	0.036***	0.030***
		(0.005)	(0.005)	(0.005)	(0.009)
Ln fixed-line telephone				0.001	0.001
				(0.002)	(0.002)
Ln openness			0.002	0.001	0.001
			(0.003)	(0.002)	(0.002)
No. of observations	160	97	97	96	96
No. of countries	16	16	16	16	16
No. of instruments	12	13	14	15	16
Sargan test (probability> $\chi 2$)	0.307	0.228	0.258	0.280	0.351
Arellano-Bond (probability> Z)	0.430	0.653	0.638	0.620	0.643
Time dummy	Yes	Yes	Yes	Yes	Yes

Note: Reports are based on two-step SGMM. Standard errors are in parentheses. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. *Arellano-Bond test that average auto-covariance in residuals of order 2 is 0 accepts H0: no autocorrelation*

Table 6.5 SGMM estimates for employment impact of BRICS' direct investment in selected African countries (2001–2012)

	(1)	*(2)*	*(3)*	*(4)*	*(5)*
Ln GDP growth (lag)					–0.00008***
					(0.00003)
Ln BRICS's direct investment	0.0005***	0.003***	0.003***	0.003***	0.003***
	(0.0002)	(0.0003)	(0.0003)	(0.0002)	(0.0003)
Ln Edu		0.032***	0.032***	0.035***	0.031***
		(0.007)	(0.007)	(0.005)	(0.007)
Ln fixed-line telephone				0.001	0.001
				(0.002)	(0.001)
Ln openness			–0.001	–0.001	–0.001
			(0.003)	(0.002)	(0.003)
No. of observations	160	97	97	96	96
No. of countries	16	16	16	16	16
No. of instruments	11	12	13	14	15
Sargan test (probability> $\chi 2$)	0.336	0.355	0.318	0.322	0.402
Arellano-Bond (probability> Z)	0.438	0.747	0.705	0.672	0.688
Time dummy	Yes	Yes	Yes	Yes	Yes

Note: All values are based on two-step SGMM. Standard errors are in parentheses. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. *Arellano-Bond test that average auto-covariance in residuals of order 2 is 0 accepts H0: no autocorrelation*

Africa, while that from G7 countries decreases it. For every 10 percent increase in FDI stock from BRICS, the employment rate increases by 0.01–0.04 percent annually, and for G7 countries, it decreases by 0.01 percent. Furthermore, similar to what is observed in the growth equations, the impact of FDI from both BRICS and G7 countries is enhanced when education of the workforce is controlled for.

Furthermore, we estimate two variants of Eq. (6.2) where the effects of BRICS' and G7 countries' FDI on the employment rate are captured in separate equations. Results for BRICS' direct investment are reported in Table 6.5, while those of G7 countries, in Table 6.6. Consistent with the findings in Table 6.4, BRICS' direct investment continues to boost employment in Africa at a rate of 0.03 percent annually, for every 10 percent increase in its FDI stock (Table 6.5). With regard to G7 countries' FDI, positive and significant effects are observed only when a measure of infrastructure development, proxied by fixed-line telephone subscription, is included in the model (Table 6.6). Also, the effects are ten times smaller than those from BRICS' FDI. For example, for every 10 percent increase in

Table 6.6 SGMM estimates for employment impact of G7's direct investment in selected African countries (2001–2012)

	(1)	*(2)*	*(3)*	*(4)*	*(5)*
Ln GDP growth (lag)					–0.00005
					(0.00006)
Ln G7's direct investment	–0.0002***	0.0002	0.0002	0.0003**	0.0004**
	(0.00008)	(0.0002)	(0.0002)	(0.0001)	(0.0001)
Ln Edu		0.035***	0.034***	0.030***	0.035***
		(0.007)	(0.007)	(0.007)	(0.009)
Ln fixed-line telephone				0.003	0.003
				(0.002)	(0.002)
Ln openness			–0.002*	–0.001	–0.001
			(0.001)	(0.0009)	(0.001)
No. of observations	160	97	97	96	96
No. of countries	16	16	16	16	16
No. of instruments	11	12	13	14	15
Sargan test (probability> $\chi 2$)	0.315	0.348	0.343	0.416	0.466
Arellano-Bond (probability> Z)	0.451	0.384	0.378	0.385	0.396
Time dummy	Yes	Yes	Yes	Yes	Yes

Note: All values are reported based on two-step SGMM. Standard errors are in parentheses. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. *Arellano-Bond test that average auto-covariance in residuals of order 2 is 0 accepts H0: no autocorrelation*

FDI stock from G7 countries, employment rate increases by 0.003–0.004 percent.

The importance of infrastructure development in raising absorptive capacity of FDI, and in turn leading to job creation in African countries, is apparent, especially in the case of G7 countries' FDI. As stated above, accounting for infrastructure development stimulates employment-generating effects of G7 countries' FDI. In fact, in models where infrastructure development effects are not accounted for, the coefficient of G7 countries' direct investment is either negative (Table 6.6, column 1) or neutral (columns 2 and 3).

Although this study is based on aggregated country-level bilateral FDI stock, the findings documented above could allude to the different sector destination of FDI from BRICS and G7 countries to Africa. As previously mentioned, a large proportion of BRICS' FDI (relative to that from G7 countries) is directed to the services and manufacturing sectors. Since the two sectors tend to be highly productive compared to the primary sector, this could explain the type of results presented in this chapter. Alfaro and Charlton (2007), Wang (2009), and Aizenman and Sushko (2011) find

that FDI to the manufacturing/industry sector yields higher growth effects compared to FDI to the primary sector.

Conclusion

This chapter has examined labor productivity growth and employment effects of BRICS' versus G7 countries' direct investment in selected African countries over the period 2001–2012. The results show that while BRICS' FDI increases productivity growth across different model specifications, G7 countries' FDI has varying effects under different conditions. For example, in the models where G7 countries' FDI effects are analyzed together with BRICS' FDI and without control variables (Table 6.1), significant but negative impact on productivity growth is observed on the coefficient of G7 FDI. In models that exclude BRICS' FDI (Table 6.2), G7 countries' direct investment exerts productivity growth-enhancing effects, which are significant only when a measure of human capital is included in the model. Overall, the results point to the importance of an educated workforce in Africa in augmenting the impact of BRICS' and G7 countries' direct investment on labor-productivity growth.

With regard to employment, FDI from BRICS is shown to contribute to the employment rate in Africa across different model specifications. By contrast, G7 countries' FDI impacts employment differently depending on the model specification. For instance, in the models with BRICS' FDI, it reduces employment, while in those where BRICS' investment is excluded and the impact of infrastructure development is accounted for, it enhances the employment rate in Africa. Moreover, the magnitude of effect of BRICS' FDI on employment is ten times higher than that of G7 countries.

An issue that African policy makers can glean from the forgoing analysis is that BRICS' FDI appears to be a substitute for G7'countries FDI. For example, in models where BRICS' FDI is included alongside that of G7 countries, the effects of G7 countries' FDI on labor-productivity growth and employment are negative (Tables 6.2 and 6.4). In the absence of BRICS' FDI, G7 countries' direct investments have growth- and employment-enhancing effects when human and physical (infrastructure) capital are controlled for. In other words, for G7 countries' FDI to be effective, certain levels of human and physical capital have to be present. In contrast, BRICS' FDI is employment enhancing (and more so compared to G7 FDI) regardless of the level of human/physical capital, suggesting that it is better suited in countries with low human and physical capital.

Our results suggest a strategic approach to FDI policy in Africa that has both long- and short-term implications. Over the long term, the findings point to the need to invest in human and physical capital, in addition to good governance. However, increasing the level of openness to trade has to be strategic, possibly similar to an approach adopted by some Asian countries. Over the short term, the results highlight the importance of putting in place investment policies to attract FDI that matches with local factor proportions and source locally available inputs.

Lastly, an extension of this study could include efforts to generate the data to enable a closer examination of how sector destination of FDI in Africa impacts labor productivity and employment.

Appendix

Table A.6.1 List of selected SSA countries

Angola	Gabon
Botswana	Ivory Coast
Cameroon	Kenya
Chad	Liberia
Congo	Madagascar
DRC	Tanzania
Equatorial Guinea	Uganda
Ethiopia	Zimbabwe

Table A.6.2 Summary statistics of selected variables (2001–2012)

	Mean	*Std. deviation*	*Minimum*	*Maximum*	*N*
GDP per worker growth	0.419	7.756	–52.110	34.690	192
Ln BRICS' FDI	4.041	2.106	0.000	7.790	192
Ln G7 FDI	5.989	2.111	0.000	9.550	192
Fixed-line telephone	1.404	1.777	0.000	8.310	188
Education	103.687	20.136	60.680	164.860	138
Trade	86.402	47.035	25.000	351.110	192
Employment rate	69.205	10.606	46.800	87.700	192
Governance	0.193	4.353	–5.000	8.000	192

Notes

1. In this chapter, foreign direct investment, direct investment, and investment are used interchangeably.
2. These countries include Burkina Faso, Chad, the Democratic Republic of Congo, Ghana, Kenya, Madagascar, Malawi, the Republic of Congo, Seychelles, Sierra Leone, the United Republic of Tanzania, Zambia, and Uganda.
3. The availability of data on BRICS' FDI restricts us to 16 African countries.
4. Primary school gross enrollment ratio can exceed 100 percent due to the inclusion of over-aged and under-aged students because of early or late school entrance and grade repetition.

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CHAPTER 7

BRIC versus OECD Foreign Direct Investment Impact on Development in Africa

Samuel Adams and Eric Evans Osei Opoku

Introduction

The inflows of foreign direct investment (FDI) to developing countries have been increasing in the last 50 years. In 2012, and for the first time ever, developing countries attracted more FDI inflows than developed countries. The FDI flows to developing countries amounted to 52 percent of global flows (UNCTAD 2014a). In the same year, the flows to Africa increased by 5 percent to US$50 billion. Due to increasing flows of FDI from China, Africa has been one of the few regions with rising inflows since 2010 (UNCTAD 2014a).

The major motivation behind the quest to receive foreign capital has been as a result of the countries' inability to raise sufficient domestic capital to cater for their pressing developmental and poverty alleviation programs. The benefits of FDI is attributed to its augmentation of domestic investment and efficiency effects through the transfer of technology, marketing and management skills and human resource practices (Javorcik 2004; Agosin and Machado 2005).

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Despite the expected benefits of FDI, it can also be detrimental to the host economies. This could happen through the crowding out of domestic investment by foreign firms. The inflows of FDI might also lead to exchange rate appreciation, which can negatively affect the competitiveness and expansion of the host countries' manufacturing sector (UNCTAD 2013a). Besides, there are concerns about the detrimental effects of FDI on the environment (Ren et al. 2014). Consequently, it is not surprising that empirical studies on the contribution of FDI to economic growth in Africa have been inconclusive (Akinlo 2004; Seetanah 2009; Gui-Diby 2014; Adams and Opoku 2015; Sakyi et al. 2015).

The need for foreign capital have led many developing countries to liberalize their FDI markets to make their economies more attractive. The competition for natural resources has been cited as one of the major reasons for the increasing flows of FDI into Africa (World Bank 2012; African Economic Outlook 2014).

FDI flows into Africa have been very substantial to its investment stock. For example, for the period 2001–2011, FDI accounted for about 16 percent of the region's gross fixed capital formation relative to a global average of 11 percent (African Economic Outlook 2014). FDI also remains the largest foreign capital flow into Africa (UNCTAD 2013a). Though the Organization for Economic Co-operation and Development (OECD) has remained the most important source of FDI for the region, Brazil, Russia Federation, India, China and South Africa (BRICS) have been making great strides in recent years. For example, as FDI from the OECD dropped from US$34 billion in 2008 to US$15.7 billion in 2012, BRICS increased its share of the total FDI stock in Africa from 8 percent in 2009 to 12 percent in 2012 (African Economic Outlook 2014). China holds the largest stock of FDI from BRICS to Africa. This is followed by South Africa, which happens to be the second largest economy in Africa. China has developed a stronger interest in the region as part of its foreign policy strategy to safeguard access to natural resources and endorse itself in the world economy (Moss and Rose 2006).

With special emphasis on FDI flows from BRICS and OECD for the period 2001–2015, this chapter sheds light on flows from these blocs and how they are impacting development in Africa. The chapter proceeds as follows: the next section provides an overview of FDI flows to Africa. The third section looks at the trend of FDI flows from the OECD and BRICS

into Africa. The fourth section evaluates how FDI from BRICS and OECD are impacting development on the continent.

Overview of the African Region and the Inflows of FDI

Africa is made up of 54 countries with a population of about 1 billion, divided into five sub-regions—Eastern, Central, Northern, Southern and West Africa. Africa is mainly agrarian as the agricultural sector employs about 65 percent of the economically active population and contributes about 32 percent of its GDP (AGRA 2013).

In terms of trade and business, Africa is well known for export of raw materials as it is enormously endowed with natural resources. In recent years, a major natural resource, which has put the region in the limelight is crude oil. KPMG (2013a) notes that the region has approximately 124 billion barrels of oil reserves and 100 billion barrels pending discovery offshore. In addition, it has about 509 trillion cubic feet of natural gas reserves. The International Energy Agency (IEA) reports that in the last five years, 30 percent of global oil and gas discoveries have been in sub-Saharan Africa (IEA 2014). Africa contributes largely to the world production of minerals such as bauxite, chromium, cobalt, gold, manganese, phosphate, platinum group metals, titanium and diamonds. South Africa and Ghana are two major leaders in gold production. North Africa has nearly 85 percent of the world's phosphate reserves (KPMG 2013a).

The International Council on Mines and Metals (ICMM) recounts that Africa's production of minerals accounts for 10 percent of the world production (ICMM 2012). Even more important, Africa remains one of the land areas in the world in which mining has been less explored and therefore, the region possesses a great mining potential. African countries such as Nigeria and Libya are very remarkable in the world's production of crude oil. In 2010, the region contributed close to 20 percent of global crude oil exports (KPMG 2013b). In agriculture, cocoa remains Africa's greatest output as West Africa supplies about two-thirds of global output (World Bank 2013).

Notwithstanding the vast natural resource endowment, Africa remains the poorest region and has the worst human development index in the world. The World Bank (2014a) reports that up to a third of countries in sub-Saharan Africa are nowhere near achieving the first Millennium Development Goals, that is, eradicating extreme poverty and hunger, specifically

halving extreme poverty. It further reports on the region's inability to halve extreme poverty even by 2030. About 47 percent of the population of sub-Saharan Africa, amounting to about 415.4 million, were classified as extremely poor in 2014 as they lived below US$1.25 per day (World Bank 2015). Approximately 12 percent of the world's extremely poor people live in Democratic Republic of Congo (5 percent), Ethiopia (3 percent), Madagascar (2 percent) and Tanzania (2 percent). Democratic Republic of Congo happens to be one of the world's most endowed natural resource countries—having almost every kind of natural resource—yet still one of the poorest countries in the world. In addition to this, the region is also faced with dire infrastructural challenges in areas such as energy generation and transportation. More than 620 million people living in sub-Saharan Africa do not have access to electricity (IEA 2014). The deplorable state of the region's transportation has made the cost of transportation and the cost of doing business one of the most expensive in the world.

The natural resources amidst great strides made in economic growth in recent years have elevated the region as one of the major FDI destinations in the world. The 2014 African Economic Outlook recounts that countries rich in natural resource in Africa accounted for 95 percent of the increase in FDI flows into the region in 2013. This saw an increase in FDI flows into the region by US$1.8 billion. Following poor economic performance in the 1970s, 1980s and part of the 1990s, the region has made some progress in its economic growth statistics in recent years despite the fact that it has the potential of doing better. For example, economic growth rates in the 2001–2007 periods ranged between 3.4 and 5.9 percent (African Development Indicators 2015). In 2012, African countries—Sierra Leone, Niger, Côte d'Ivoire, Liberia, Ethiopia, Burkina Faso, Rwanda, Mozambique, Zambia and Ghana—were among the fastest growing countries in the world. This has also contributed largely to the increasing FDI flows into the region. In addition, Africa in recent years has been regarded as one of the regions with the highest investment returns. For example, the 2012 UNCTAD World Investment Report asserted that returns on USA FDI stock in Africa were 20 percent in 2010 compared with 14 percent in Latin America and the Caribbean and 15 percent in Asia.

FDI flows into Africa vary across its regions. For the period 1971–1980, West Africa topped the list by being the destination with the largest FDI inflows that averaged US$438 million in the region (Table 7.1). In the same period, Southern Africa received the least FDI of US$100 million. Northern Africa (US$995 million), however, became the largest recipient for the

Table 7.1 FDI inflows to Africa (US$ million)

Period	*EA*	*CA*	*NA*	*SA*	*WA*
1971–1980	137	207	156	100	438
1981–1990	170	267	995	110	904
1991–2000	855	889	2222	1268	2185
2001–2010	3903	4711	13,824	5116	7489
2011–2013	12,398	4001	13,542	7064	16,476

Source: UNCTAD Statistics (2015), online
Note: EA, CA, NA, SA and WA refer to Eastern, Central, Northern, Southern and West Africa, respectively

period 1981–1990, and Southern Africa still remained the least recipient with inflows of US$110 million. Northern and West Africa regions again topped the list for the 1991–2000 period with inflows of US$2222 million and US$2185 million, respectively. Though Northern Africa remains the largest recipient in the greater part of the period 2001 to date, (i.e. from 2001 to 2010), West Africa tops the list for the period 2011–2013 with inflows of US$16,476 million.

Currently, Nigeria and South Africa are the region's largest economies and remain two of the largest recipients of FDI due to the former's oil and latter's minerals endowment. The 2014 World Investment Report of the UNCTAD recounts that over the past decade, the region's middle class has increased by about 30 percent to 120 million people, and as a result FDI is beginning to move into consumer-focused sectors such as food production, information communication technology, tourism, finance and retail (UNCTAD 2014b). The region has the fasted growing middle class and as a result countries such as Nigeria, South Africa, Kenya and Ghana are increasingly attracting FDI flows into their briskly growing consumer sector. Other factors such as the relatively attained political stability and good governance have also contributed largely to Africa being an FDI destination.

FDI Flows into Africa: BRICS versus OECD (2001–2015)

Historically, the OECD[1] has accounted for the chunk of FDI flows into the region. They have also remained the paramount trade partners of many African countries. Some trade policies initiated by a number of the OECD countries with Africa have helped not only in boosting trade but also increased the region's competitiveness in the attraction of capital flows

particularly FDI. Key among these policies are the "Everything but Arms" (EBA) Initiative by the European Union (EU) introduced in 2001, and the African Growth and Opportunity Acts (AGOA) by the United States of America (USA) in 2000.[2] The EBA grants duty- and quota-free access to the EU's market for some export goods from least developed countries, including 33 African countries. Similar to the EBA, the AGOA provides quota and duty-free access to some selected goods from 39 sub-Saharan African countries to the USA market. The main target products of these policies have been crude oil and its related products and minerals. The policies have therefore seen a number of foreign investors coming to produce and export from Africa. Exports from the AGOA countries to the USA increased from US$8.15 billion in 2000 to about US$53.8 billion in 2011 (Schneidman and Lewis 2012).

The OECD countries being Africa's traditional partners still dominate the flows of FDI to the region. These countries account for about 80 percent of FDI flows to Africa (African Economic Outlook 2015). These inflows have been received by a limited number of African countries, mainly oil-exporting countries. Between 2001 and 2010, about 85 percent of OECD's FDI went to these countries. The World Bank (2014b) reports that for the period 2001–2011, the largest OECD's FDI flows to countries were from France (US$4.9 billion), the UK (US$4.1 billion), the Netherlands (US$2.7 billion), USA (US$1.8 billion) and Germany (US$1.3 billion). The top recipient countries were Nigeria, South Africa, Angola, Liberia and Ghana receiving US$5.3 billion, US$4.4 billion, US$2.2 billion, US$2 billion and US$0.61 billion, respectively (World Bank 2014b). Europe and the USA accordingly remain Africa's largest FDI partners.

In recent years, the BRICS formerly BRIC—made up of Brazil, the Russia Federation, India, China and South Africa—are making great strides in the region. It also remains the largest recipient of FDI in the world. BRICS attract large FDI flows due to their larger prospective consumer size, thanks to the large population size—accounting for about 40 percent of the world's population. Besides, economic development in these countries has been very impressive over the past decades. Whilst China remains the second largest economy in the world, South Africa is the second largest in Africa. The African Economic Outlook (2015) reported that the FDI share in Africa of non-OECD countries such as Brazil, India and China increased from an average of 18 percent in 1995–1999 to 21 percent for 2000–2008. Though as a whole, about a fourth of BRICS investments in the region are in the primary sector, investments in the manufacturing and services sectors dominate (UNCTAD 2013c). The UNCTAD (2013c) report, for example,

notes that between 2003 and 2012, about 75 percent of the value of BRICS FDI-related projects in Africa were in the manufacturing and services sectors. Approximately 10 percent and 26 percent of the value of FDI-related projects were in the natural resources and agricultural sectors, respectively. China and India top the list of investment projects in the manufacturing and services sectors, which is necessitated largely by relatively cheap labour and policies such as the EBA and AGOA, which allow some duty-/quota-free access to some countries in the OECD.

The largest amount of BRICS' FDI to Africa comes from China. This is not surprising as it is the third largest investor in the world after USA and Japan. In 2009, it became the fifth largest country of origin for FDI flows in the region (African Economic Outlook 2015). China also established the China-Africa Development Fund in 2007 with seed money of US$1 billion to enhance investment in Africa by Chinese companies. The stock of Chinese FDI in Africa has increased consistently in recent years.

For example, it increased from US$491 million in 2003 to US$900 million to US$4462 million in 2007 and then to US$21,730 million in 2012 (Table 7.2). Chinese FDI flows to Africa increased from US$75 million in 2003 to US$5491 million in 2008, but fell to US$1439 million

Table 7.2 FDI out-stocks and outflows from BRICS countries to Africa

	China		*SA*	*India*		*Russia*		*Brazil*	
Year	*Stock*	*Flow*	*Stock*	*Stock*	*Flow*	*Stock*	*Flow*	*Stock*	*Flow*
2001			1239					433	
2002			1593					164	
2003	491	75	2453					109	
2004	900	317	4274					143	
2005	1595	392	3100					144	
2006	2557	520	8573					26	2
2007	4462	1574	12,500				75	73	1
2008	7804	5491	11,060				63	107	10
2009	9332	1439	15,804			1279	70	124	−5
2010	13,042	2112	18,524	11,886	5116	1476	118	67	
2011	16,244	3173	22,789	13,103	2661	1001	−8	125	−5
2012	21,730	2517	23,579	13,261	1829	2167	47	1175	102

Source: UNCTAD Bilateral FDI Statistics (2015), online

Note: Stock, Flow and SA refer to FDI out-stocks, FDI outflows and South Africa, respectively. Data on FDI outflows from South Africa did not exist from the data source. Note that outflows of these countries are inflows to Africa

in 2009. It further increased to US$2517 in 2012. Though Chinese FDI is present in almost all the countries in Africa, the chunk of it, however, goes to South Africa, Sudan, Nigeria, Zambia and Algeria.

Overall, South Africa is the largest FDI recipient from the BRIC and from all parts of the world. It also serves as the largest source of intra-regional FDI origin to the region, with its largest intra-regional outflow to Mauritius, followed by Nigeria, Mozambique and Zimbabwe. South Africa's stock in Africa increased from US$1239 in 2001 to US$8573 and US$23,579 in 2006 and 2012, respectively. It holds the fifth largest FDI stock in the region and also contributes largest to the outflows of FDI from Africa (World Bank 2014b). Its major interests are in mining, the wholesale and health-care sectors.

Mauritius serves as the largest recipient of Indian FDI in Africa. It is quite surprising that Mauritius, an African country, is also the largest source of FDI flows to India. The total stock of Indian FDI in Africa increased from US$11,886 million in 2010 to US$13,103 million and US$13,261 million in 2011 and 2012, respectively. Indian FDI flows to the region, however, fell from US$5116 million in 2010 to US$2661 million and US$1829 million in 2011 and 2012, respectively (Table 7.2).

Though the emergence of Russian investment in Africa has not been long, its FDI stock stood at US$1279 million in 2009. This figure increased to US$2167 million in 2012. Though Brazilian investment in the country has not been very impressive, its performance in 2012 was relatively very good. Its FDI stock in Africa fell from US$433 million in 2001 to US$125 million in 2011, but rose to US$1175 million in 2012 (Table 7.2). Brazil's public financial institutions particularly Brazilian Development Bank has assisted a number of investors to invest in Africa in recent years. Their investments are largely in Angola and Mozambique. This might be as a result of their colonial affiliation. Ghana and South Africa also receive substantial FDI from Brazil, mainly in agriculture, oil, mining, infrastructure and ethanol and bio-energy production.

It is evident that FDI flows from emerging markets and particularly BRICS mainly into resource-endowed countries in the region—Algeria, Angola, Botswana, Cameroon, Congo Republic, Democratic Republic of Congo Equatorial Guinea, Gabon, Ghana, Guinea, Liberia, Libya, Mauritania, Namibia, Nigeria, Sierra Leone, South Africa, Sudan and Zambia. As the BRICS' interests have generally been natural resource-rich countries as a whole, OECD's have mainly been oil-exporting countries.

It can be deduced from the available data that though in the twenty-first century BRICS countries have made enormous progress in FDI flows and stock, OECD countries remain the leaders in terms of volume and value.

For instance in 2010 the combined FDI flows from China, India and Russia[3] amounted to US$7346 million, relative to UK's US$12,086 million (Table 7.2). In 2011, the combined FDI from Brazil, Russia, India and China was US$5822 compared to US$5127 million from the USA (Table 7.3). In 2012, the UK's FDI in Africa amounted to US$7450 million, while the combined value from Brazil, Russia, India and China was US$4494 million (Table 7.2).

The statistics favour the OECD more when FDI stock is considered. For example, as the FDI stock for the whole of BRICS stood at US$44,995 million, US$53,260 million and US$61,911 million for the periods 2010, 2011 and 2012, respectively, that of the USA was US$54,799 million, US $57,213 million and US$61,366 million for three years (Table 7.3). It is not surprising that the OECD does better than the BRICS regarding FDI flows to Africa since (i) the OECD countries have done business with African countries for a relatively long period and consequently understand the continent better than the emerging BRICS, (ii) Africa has colonial ties with a number of the OECD countries (such as UK, France, Portugal, Spain, Belgium and Italy) and (iii) the OECD is made up of 34 countries and the BRICS is made up of just five emerging economies. However, it is

Table 7.3 FDI out-stocks and outflows from UK and USA to Africa (US$ million)

	UK		*USA*	
Year	*Out-stocks*	*Outflows*	*Out-stocks*	*Outflows*
2001	12,978	1658	15,574	2439
2002	21,785	3291	16,040	−578
2003	30,410	5639	19,835	2697
2004	33,510	10,735	20,356	1612
2005	35,874	10,624	22,756	2564
2006	29,651	−432	28,158	5157
2007	37,095	9456	32,607	4490
2008	30,765	1620	36,746	3837
2009	47,853	10,266	43,924	9447
2010	47,189	12,086	54,799	9281
2011	47,694	−5105	57,213	5127
2012	58,937	7450	61,366	3706

Source: UNCTAD Bilateral FDI Statistics (2015), online
Note: Note that outflows of these countries are inflows to Africa

expected that the formation of the New Development Bank (BRICS Bank) with seed money of US$100 billion will help boost BRICS' FDI flows to Africa.

FDI and Development in Africa: BRICS versus OECD

Economic literature (both theoretical and empirical) elaborates on the extent to which FDI can be useful to economic development especially for developing countries in terms of technology spillovers, business establishment and expansion, employment generation, infrastructural support and increasing market access among others. The UNCTAD (2011) reports that FDI is the biggest source of employment creation and trade for all least developed countries. Considering the fact that Africa is bedevilled with enormous poverty, high unemployment, poor and undeveloped infrastructure and very low industry, the region is very much interested in FDI flows which will help improve these issues and hence boost economic growth.

The OECD has historically remained the main origin of FDI to Africa. It has as well generally had the greatest FDI impact on the development of the African economy. However, with the emergence of BRICS, FDI's impact on development in Africa in the twenty-first century has more been generated by the BRICS. OECD (2010), for example, notes that the new investors are active in areas that are mostly essential to Africa's developmental goals, such as infrastructure and agriculture. As the OECD has traditionally and generally been interested in the natural resource sector which is more capital intensive and employs just a handful of Africans, the BRICS investments in the region generally cut across interests in the natural resource sector and on other sectors such as agriculture, construction, manufacturing and services (telecommunication and financial services).

Unlike the OECD's, an interesting strand of BRICS' investment in Africa is their interest in small- and medium-scale enterprises (SMEs). The AfDB (2011), for example, notes that the corporation between India and Africa has tremendously stimulated the development of SMEs in the region. SMEs' development is very relevant to the development of Africa as most of its businesses are in this sector and also employs a large proportion of the workforce. Employment has been recognized as a major conduit through which growth can consequentially reduce poverty (UNECA 2011). BRICS FDI flows have helped boost employment in Africa. For example, Odebrecht[4] is the largest private sector employer in Angola. As of the year 2011, it had employed about 26,000 Angolans (AfDB 2011). This firm has

also contributed largely to infrastructure in South Africa, Botswana, Mozambique, Republic of Congo, Gabon and Liberia. In 2004, Companhia Vale do Rio Doce[5] invested US$1.3 billion in coal mine in Mozambique. This investment was believed to have created 4500 jobs. Brazil has also contributed largely in the sphere of agriculture in Africa. India's telecommunication company, Airtel,[6] has made enormous presence and investment in 18 African countries.

In recent years, many of the mergers and acquisitions (M&A) have come from the BRICS. For example, in 2010, Airtel telecommunications made one of the largest M&A in the world by acquiring Zain's[7] investment in Africa[8] to the tune of US$10.7 billion. In 2013, about 75 percent of Africa's inward international M&A came from developing countries and over half of this came from China (Gestrin 2014). In 2006, China invested heavily in the oil sectors of Angola (US$2.4 billion), Sudan (US$757 million) and Nigeria (US$2.7 billion) (Ajakaiye et al. 2009). In Agriculture, China invested US$4.3 million in Ghana in 2001. It has also invested heavily in coffee in Kenya; rice, timber and fisheries in Cameroon; and cotton in Mali, Tanzania, Uganda and Zambia (Ajakaiye et al. 2009). The AfDB (2011) recounts that as Rosatom[9] intended to invest US$1.8 billion in nuclear power in Egypt, Lukoil[10] invested US$900 million in oil exploration in Côte d'Ivoire and Ghana (AfDB 2011). Lukoil's investment contributed enormously to infrastructural development in the oil sector in Côte d'Ivoire. Gazprom[11] also invested US$2.5 billion in Nigeria's petroleum industry in 2009. The 2006 World Investment Report (UNCTAD 2006) reports that FDI in apparel in Lesotho, which partly comes from China, has significantly increased its manufactured exports. FDI flows from BRICS have contributed about 35 percent in electricity supply, 10 percent rise in railway and lower cost of telephony (Onjala 2008; Foster et al. 2009). Weisbrod and Whalley (2011) estimate that between 2003 and 2009, FDI from China contributed 1.9 percentage points of economic growth in Zambia and 0.04 percentage points in South Africa.

Conclusion

FDI has been the most stable and abundant capital inflow for development in Africa in the last two decades. The natural resource sector—mainly crude oil, gas and minerals—has been the number one sector for foreign investors. Nevertheless, FDI flows to the manufacturing, information communication technology, tourism, finance and retail sectors have risen in recent years.

This has been the case due to the increase in population, causing consumption to rise.

Though the OECD has historically and still remains the largest source of FDI to Africa, great progress has been made by BRICS as its share of FDI inflows keeps rising. As a result, countries such as China, South Africa and India have become part of Africa's important investors. As investors from OECD have keen interest in the natural resources sector, the infrastructure and manufacturing and services sectors have been the main interests of BRICS investors. It must, however, be stated that BRICS also has substantial interest in the natural resource sector as well. Relative to the OECD, BRICS investors are more concentrated in the SME sector—the sector employing a chunk of Africans—and as a result contribute more to employment. Besides, the BRICS target areas such as agriculture, telecommunication, manufacturing, construction—quite relevant for the development of the region. Capital flows from the OECD, on the other hand, are generally more macro-oriented and focus on governance, debt sustainability and economic stability. Therefore, in examining the role of capital flows from the OECD and BRICS, measures must be taken to avoid inertia or conflict between BRICS and OECD or other similar organizations.

Considering the importance of FDI to Africa, governments of the region have to develop policy framework that will enable them to not only attract more FDI but also maximize the benefits for development. As the review above shows FDI is necessary but insufficient to generate growth without the appropriate governance infrastructure to enhance its positive impact on the host economies. Moving forward therefore, African countries would need to provide the necessary domestic infrastructure to attract FDI to complement and not to substitute domestic investment to be assured of the benefits of FDI. This requires a targeted approach to attract FDI that provides linkages with the other sectors of the economy. For this to happen, however, government policy must seek to enhance and improve the absorptive capacity of local firms with the objective of diversifying the economy in the long run to stop the dependence on natural resources as the main determinant of economic development.

Notes

1. The OECD, which spans across the regions of North and South America, Europe and Asia-Pacific, is made of Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia,

Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom and United States.

2. Though AGOA was initiated in the year 2000, its full effect and benefits have been experienced in the twenty-first century.
3. We are unable to cite all countries as data do not exist for all countries for all the periods.
4. Odebrecht is a conglomerate of Brazilian origin consisting of businesses in the areas of engineering, construction and petrochemicals. It currently operates in 21 countries across the world.
5. Companhia Vale do Rio Doce, also of Brazilian origin, is one of the largest mining firms in the world. It is number one in the production of iron ore, pellets and nickel.
6. Airtel, formally Bharti Airtel, is India's largest telecommunication company, operating in 21 countries across Asia and Africa.
7. Zain is a mobile telecommunication group with Kuwait origin.
8. This, however, excludes Zain Morocco and Sudan.
9. Rosatom is the Russian Federation national nuclear corporation made up of about 400 nuclear companies.
10. Lukoil is the second largest oil company in Russia.
11. Gazprom is a Russian company specialized in the business of production, transportation and sale of gas and oil.

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CHAPTER 8

Cross-Border Capital Flows and Economic Performance in Africa: A Sectoral Analysis

Odongo Kodongo and Kalu Ojah

Introduction

The high financial constraint profile of most African countries is so legendary that most Africans would not dispute its pervasiveness (Allen et al. 2012; Ojah and Kodongo 2015). Rather, we believe that most people in these countries would naturally question why that is the case, with the more curious and well-meaning ones asking: why are African countries highly financially constrained and what can be done to reverse that or at least make them less financially constrained? The second half of this string of questions forms the basis for this study. Specifically, we take the view that it is more worthwhile to ponder solutions to a nagging problem than to dissipate energy on endless diagnoses of the problem. For instance, our attempt to ascertain, in this study, the extent to which cross-border capital flows relieve this huge financial constraint would provide to countries important guidance on how best to evolve effective finance-provisioning strategies.

In this study, the term "financial constraint" indicates a country's difficulty and/or inability to finance aggregate economic activity, both private and public, from within its confines (i.e., from the national financial markets). This definition is in the spirit of what Allen et al. (2012) dubbed

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"financial development gap". Several reasons have been adduced for its being: e.g., low aggregate saving which in turn provides insufficient pool of funds for credit creation/extension (Mavrotas and Santillana 1999; Dupas and Robinson 2009; World Bank 2013); few, small, underdeveloped and relatively illiquid financial markets (Andrianaivo and Yartey 2010; Allen et al. 2012; Ojah and Kodongo 2015); and lack of and/or weak physical and institutional infrastructure support (Japelli et al. 2005; Ojah et al. 2010; Gwatidzo and Ojah 2014), among others.

In line with the cue from Harrod-Domar/Feldstein and Bachetta's (1991) financing gap-based model of development, we map the saving-investment gap of select[1] African countries as a means of providing aggregate level evidence of the extent to which African countries are financially constrained. Though a better proxy could, for example, be the ratio of the sum of all new equity share offerings by firms and incremental financial services institutions' credit supply to the private sector to the sum of incremental private and public sector investment, the conventional wisdom in financial economics that the key source of incremental investable capital (finance) is the size and effectiveness of the national financial system, which is in turn highly correlated with gross national saving, supports the use of this proxy. This reasonably representative proxy for country-level financing gap (saving-investment gap) is reported in Fig. 8.1.

As the picture in Fig. 8.1 clearly shows, over the considered period of 2–3 decades, only Algeria, Botswana, Nigeria and South Africa recorded positive saving-investment gap for a reasonable number of years, plus Cameroon, for which the positive gap prevailed for just about half of the period surveyed. The rest of the 18 select countries recorded hugely negative gaps over lengthy periods. This picture, therefore, leaves no doubt about the main source of African countries' pervasive financial constraint.

Still, at the aggregate level, one of the ramifications of Africa's high financial constraint condition, which has been attributed to the failings of its national financial markets, is evident in many African countries' history of fiscal deficit and its attendant unsustainable external indebtedness (Muhanji and Ojah 2011a, 2011b). In fact, Muhanji and Ojah (2011b) show that although there has been a reversal of the external indebtedness trend in many African countries, the indebtedness levels of many of them still remain above the sustainability threshold.[2] This kind of fiscal balance's binding constraint can also be seen at the sectoral level: for example, the real estate and the infrastructure sectors (Kundu 2015; Kodongo and Ojah 2015).

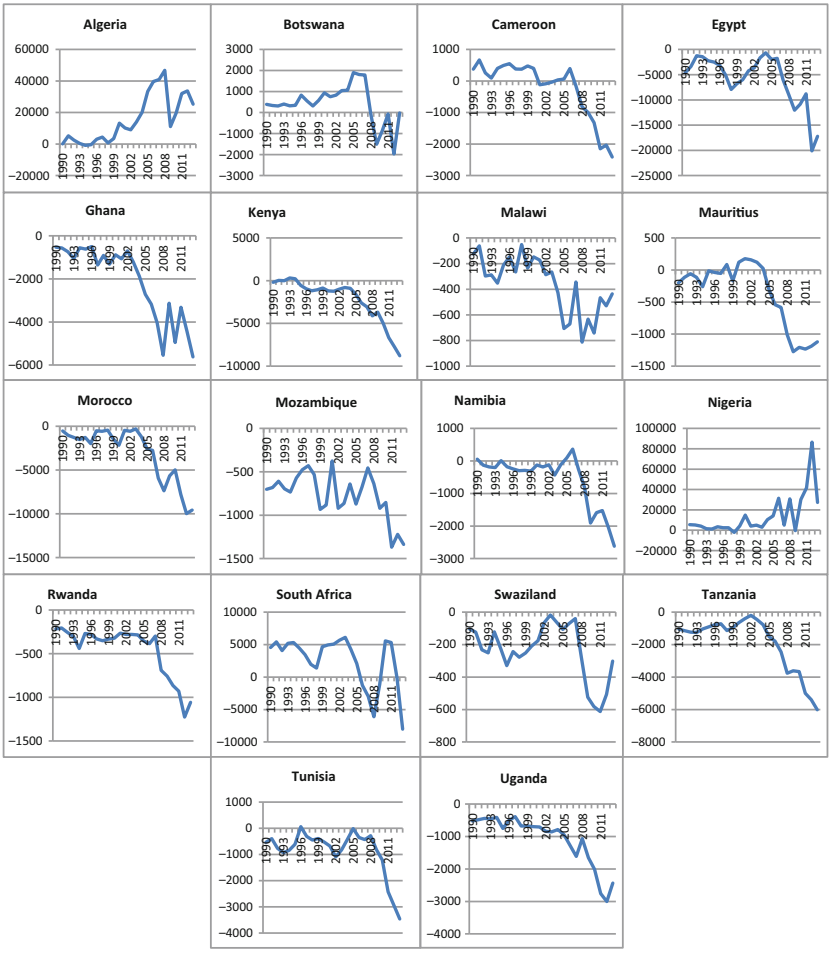

Fig. 8.1 Trends in savings-investment gap for African countries (US$ millions)

The provisioning of public housing or its lack thereof is one area where financial constraint and the failings of financial markets have combined to throw up a significant socio-economic consequence that is way too obvious for many to see. According to the World Bank (2011), of the 54 countries in Africa, only Morocco, Namibia, South Africa and Tunisia can boast of a mortgage to GDP ratio that is above mere 10%, while developed nations

(which typically have less rural to urban migration) such as Canada, Denmark, Germany, Netherlands, the UK and their likes have an upwards of 80% and more of the ratio of total mortgage loans to GDP as commonplace. This contrasting picture is expectedly reflected in the significant attendant housing deficit in the urban locations of African countries.

Much more on the front burner than the real-estate (housing) sector deficit, the economic (public) infrastructure deficit of African countries is both huge and much talked about, and it is considered a major bane of economic growth in Africa (Calderón and Servén 2004, 2008; Yepes et al. 2009; Kodongo and Ojah 2015). In fact, the picture in Table 8.1 tells the story; for example, the estimate is that sub-Saharan Africa alone would need to invest about US$93 billion between 2010 and 2020, to cover its constituent countries' infrastructure funding deficit (Foster and Briceno-Garmendia 2010).

From the foregoing, it is clear to see that the binding constraint on financing provision in Africa that is more amenable to relieve than the other such constraints is the "financial markets failings". Since the seminal works of Shaw (1973) and McKinnon (1973) and related works (e.g., Stern 1989) that eventually culminated in what became known as the "Washington Consensus" (Williamson 1989; Bekaert et al. 2005; Henry 2013), developing countries, including those in Africa, have been advised that financial liberalization is an important way to enhance savings, efficient allocation of credits and investments, as to consequently reap the attendant economic growth. Among other forms, the liberalization agenda has included establishment of new stock exchanges, privatization of state-owned enterprises, liberalization of interest rates and foreign exchange regimes, especially of current and capital accounts.

Empirical works have since documented improvement in savings and investments that are attributable to the liberalization of capital accounts (Levine and Zervos 1998; Singh and Weisse 1998; Obstfeld 2009; and others). Specifically for Africa, foreign direct investment (FDI) inflow grew from US$5.61 billion in 1997 to US$58.53 billion in 2008; foreign portfolio investments (FPIs), which were largely in equity form, rose from US $804 million in 2004 to US$19.78 billion in 2010; and the formerly less-considered remittances from the Diaspora (RFD) surprisingly surpassed FPI as a source of cross-border flow to Africa, standing at an impressive US $39.31 billion in 2010. Therefore, the evidence is that Africa's (and other developing regions' countries) positive response to the call to liberalize has yielded some fruits.

Table 8.1 Overview of infrastructure spending in sub-Saharan Africa

	Current expenditure (2009)				*Projected expenditure needs (2010–2020)*				*Shortfall*			
Infrastructure sector	*Capital expenditure*	*Operations and maintenance*	*Total spending*		*Capital expenditure*	*Operations and maintenance*	*Total spending*		*Capital expenditure*	*Operations and maintenance*	*Total spending*	
Information and communication	7.0	2.0	9.0	19.8	7.0	2.0	9.0	9.6	0.0	0.0	0.0	0.0
Power	4.6	7.0	11.6	25.6	26.7	14.1	40.8	43.7	−22.1	−7.1	−29.2	−25.2
Transport	8.4	7.8	16.2	35.7	8.8	9.4	18.2	19.5	−0.4	−1.6	−2.0	−12
Water supply and sanitation	4.6	3.1	7.7	17.0	14.9	7.0	21.9	23.4	−10.3	−3.9	−14.2	−18.4
Irrigation	0.3	0.6	0.9	2.0	2.9	0.6	3.5	3.7	−2.6	0.0	−2.6	−28.9
Total	24.9	20.5	45.4	100	60.3	33.1	93.4	100	−35.4	−12.6	−48	−106

Source: Adapted from Foster and Briceño-Garmendia (2010). Note that amounts are in billions of US$

The question for Africa, however, is to what extent this liberalization-born outcome (capital/financing from cross-border flows) has provided the necessary financial constraint relief flagged above and how best could African countries extract the most effective and efficient benefit from this seemingly obvious relief—which comes in the form of cross-border capital flows? In other words, do these different sources of potential relief have the ultimate benefit of fostering efficient production (which by extension enables economic growth) and through what channels?

To begin answering these questions, further questions seem necessary. For instance, are all cross-border flows equal? Having conducted the most comprehensive cross-border capital flow studies about Africa, to date, Kodongo and Ojah (2011, 2012, 2013, 2014) document that all cross-border capital flows to Africa are not of the same foreign exchange rate effect; for example, FPI expectedly exhibits "hot money's" high volatility which has been characteristically documented in fledgling and emerging markets such as those of African countries and more so than FDI and remittances types of cross-border flow. Further, they show that there are investment risk differentials, depending on whether the foreign investor who originates the cross-border flow is coming from the US or the Euro area (Kodongo and Ojah 2011). Therefore, it is safe to expect investment risk differentials for investors from identifiably different regions of the world as well.

From the foregoing, one can surmise that we aim to provide a systematic and relatively more nuanced picture of cross-border flows and their economic performance (growth) effects than has hitherto been provided in the context of African countries. In a systematic fashion, therefore, the key specific objectives of this study are as delineated below, to:

- Ascertain the main descriptive features and trends of cross-border capital flows—foreign direct investment (FDI), foreign portfolio investment (FPI), and remittances from Diaspora (RFD)—that flow into Africa.
- Determine the extent to which these disparate cross-border capital flows are disruptive or not disruptive to recipient countries and which economic sectors might be amenable to financial constraint relief from a given kind of cross-border capital flow.
- Determine differential sectoral performances per cross-border capital flow type.
- Ascertain policy derivatives that are inherent in or emanate from outcomes of the preceding objectives.

The remainder of the paper unfolds as follows. The section "Types and Importance of Cross-Border Capital Flow" defines the three different kinds of cross-border flows covered in this study, maps these flows' financial constraint relief potential for specific production sectors and provides a picture of these flows' trends for the sample African countries. Section "Estimation Technique and Data" describes the data and estimation technique deployed. Section "Effects of Cross-Border Capital on Economic Sectors" lays out the estimation results and section "Conclusion and Closing Remarks" concludes the paper.

Types and Importance of Cross-Border Capital Flow

This section profiles three important types of cross-border flows that many countries in Africa receive, with emphasis placed on their size and relative significance for potentially relieving the enormous financial constraint which these countries face. Further, we highlight how certain capital flows may be more suited to aiding the production activities of specific kinds of economic sectors.

Foreign Direct Investment

Foreign direct investment (FDI), by definition and its form, appears natural for providing the kind of cross-border financing solution that financially constrained African countries need. It is a cross-border capital that generally has a life of many years on account that FDI takes place when a foreign investor takes an equity position of no less than 10% of the domestic firm's total ownership value. Therefore, not only does FDI provide an important, long gestation period for using cross-border capital inflow for domestic production but the 10% stake also guarantees that the foreign investor would be supplying a significant volume of capital to the financing-receiving domestic firm.

Like many researchers that have examined the relative flow of FDI to African countries, Anyanwu (2015) shows how Africa has historically received the lowest portion of global FDI flows, among all regions of the developing world. In the light of the smallness of many of Africa's economies, what might be more useful is the absolute values and historical trends of these countries' inflow of FDI. To gauge how this FDI flow trajectory might portend a veritable and reliable source of finance-gap relief for African

countries, we assemble a plot of these countries' FDI inflows over, the most recent, 2–3 decades in Fig. 8.2.

The graphs in Fig. 8.2 show that all of the select countries record positive FDI inflows for a meaningful period of the 2–3 decades of available data, and interestingly, the resource-rich and/or large-size countries of Nigeria, South Africa, Egypt, Algeria and Morocco record the higher-level inflows in

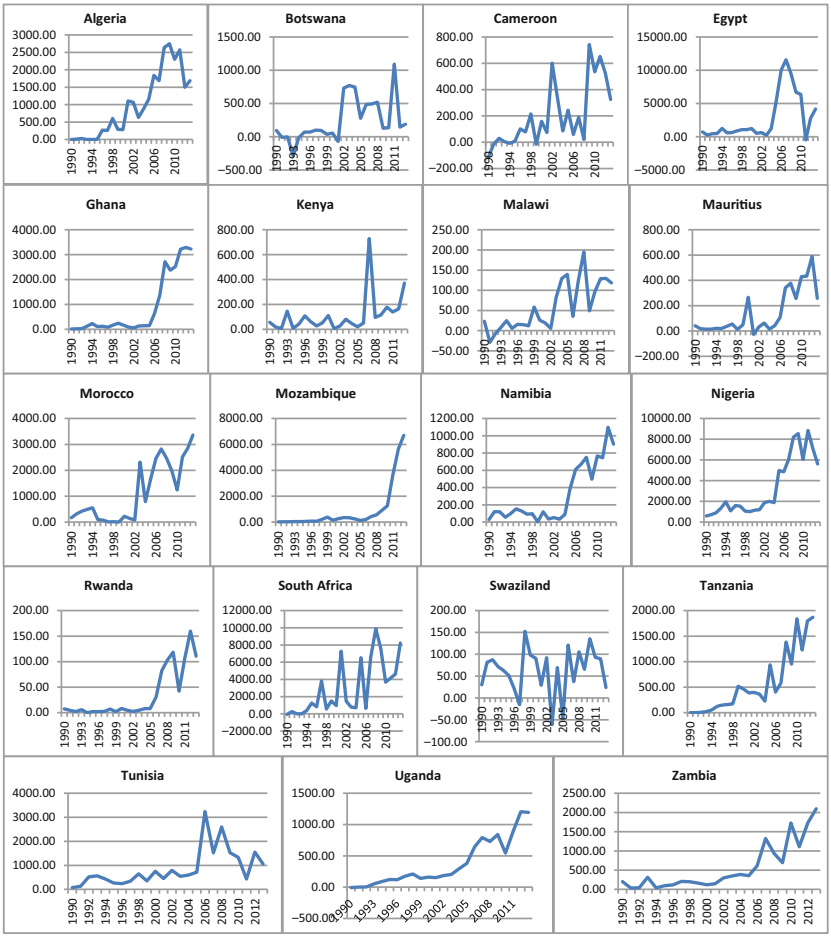

Fig. 8.2 Net foreign direct investment flows (US$ millions)

the tune of billions of US$; this high-value flow was also most visible for these countries during the 2000s, which was a period of high commodity prices (credited for the recent reversal of Africa's growth tragedy). Furthermore, countries with new discoveries of natural resources such as Ghana and Mozambique also recorded high values of FDI inflows during the later end of the data period.

This recorded positive correlation between natural resource endowment and FDI inflow raises the question of which economic sectors are likely to receive FDIs and how sustainable the supply of this form of cross-border capital can be going forward. First, the positive correlation suggests that the extractive and processing (manufacturing) sectors would be natural magnets of FDI inflows into Africa. Second, and most poignantly, is the sustainability aspect of this flow's supply. Unless African countries proactively demand FDI activity over the value chain of production around their natural resource endowments and enable positive spillovers from the cross-sector production engagement of FDI firms, the sustainability of FDI supply will tragically be tied to the exhaustibility of natural resources.

The above narration does not only flag the likely disruption of economic activity that a badly conceived FDI exploration strategy can cause, it also points to the fact that failure in exploration strategy would inevitably throw up negative spillovers. Ill-conceived exploration of FDI's potentials has seen African countries rollout costly FDI incentives—for example, tax holidays, land use concessions and premature allowance for profit repatriation—for which commensurate returns were not ensured (Dupasquier and Osakwe 2006; Anyanwu 2015; ACR 2015).

Moreover, to even enable FDI firms' participation in production across value chains, certain enabling facilities are preconditions—appropriately skilled labour supply, pertinent physical infrastructure such as electricity, water and roads and ease of doing business rules (Anyanwu 2015). It is therefore clear that the FDI kind of cross-border capital flows is not without cost; thus, taking on such a cost would only be worthwhile if FDIs' investment returns more than it takes to cover this cost.

Remittances from the Diaspora

Among the three sources of cross-border capital flows considered in this study, remittances from the Diaspora (RFD) have emerged, on account of several positive features, as the surprisingly most likely source to be more easily moulded into a sustainable supply of investable funds.[3] One, they are

relatively more stable than official development aid, FPI and even FDI in downtimes because they are underpinned by the moral obligation or altruism of the originators (Lartey 2013; CFLP 2015). Two, because altruism underlines origination of RFD, the flows are likely to increase in tough times and are consequently countercyclical; with this feature, they smooth consumption, investment and foreign exchange reserve (CFLP 2015). Thirdly, because they come in a vast range of denominations and conduits, economies of scale and scope are relatively easily attained.

These three features speak clearly to RFD's potential as a robust source of financial constraint relief, yet, they equally raise a concern about RFD's concerted impact on economic performance especially on a more aggregate than microeconomic level. For instance, most remittances to Africa are used by recipients for education, health care and general consumption (Adams 2005; CFLP 2015); that is, the impact of education or health care provisioning that is attributable to RFD cannot be easily traced to a given sector of the economy. Even where RFD flows are traceable to large capital projects such as housing construction (real estate), the sector that subsumes this kind of production investment is only now evolving in Africa (Kundu 2015).

This seemingly "mixed bag", that is RFD, raises the following questions: which identifiable production sectors are distinctly amenable to RFD financing relief, does it have any multiplier effect on an account of its large consumption usage[4] and most importantly, does it enable or enhance economic growth? Among other similar works, Bourdet and Falck (2006) and Fonchamnyo (2012) found that remittances increase global competitiveness of recipient countries and correlate positively with the income of recipient countries, respectively. Therefore, the imperative that emerges here is the need for financial-inclusion efforts of African countries to hasten the appropriate financial product innovation that would intermediate effectively the RFD flows—along the lines of telephony money (M-Pesa) and the creation of infrastructure and diaspora bonds—for harnessing efficiently this cross-border capital inflow (Ojah and Kodongo 2015; ACR 2015; CLFP).

In the light of these promising features of this particular cross-border capital flow and its steadily increasing growth (estimated to stand at about US$400 billion globally and about US$40–70 billion for Africa), it is worthwhile examining what the trend has been for individual African countries. Such examination would aid a more useful country-specific strategy. We assemble a plot of the select countries' RFD inflows over the most recent 2–3 decades in Fig. 8.3. The graphs in this figure show that all

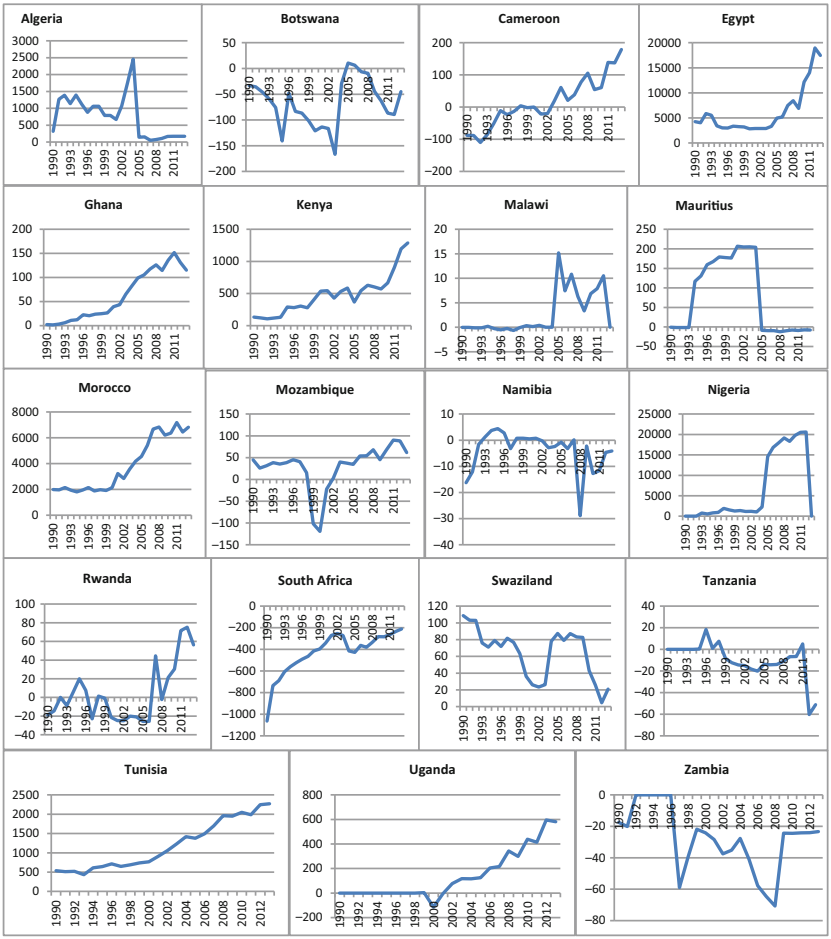

Fig. 8.3 Flow of net foreign remittances from the diaspora (US$ millions)

19 select countries but Botswana, Namibia, South Africa, Tanzania and Zambia record positive RFD inflows for a meaningful period of the 2–3 decades of available data, a possible explanation for how many African countries weathered successfully the buffeting of the global financial crisis—for example, almost all of the countries that recorded positive RFD flows also recorded a linearly increasing inflow in the last third of the study period (the 2000s).

A final important consideration of this capital flow is its cost. How considerable is it, and does it justify pursuing the moulding of it into the sustainable source of financing gap relief it is believed to portend? The World Bank computes remittances' average transaction cost globally to be about 8–10% of the remitted funds and 12–13% for Africa (World Bank 2014). Both of these are considered unacceptably exorbitant, and the G8 have pushed for a maximum average explicit cost of 5%. However, for Africa, the implicit cost, in the form of brain drain, with African countries' emigrants said to possess the highest level of education than emigrants from other developing regions of the world, may be more concerning. Therefore, unless the relative marginal product of labour (and its attendant commensurate wage value) in offshore location versus home location is positive, the concern of appropriate cost of direct cost being capped at 5% becomes irrelevant.

Portfolio Investment Flow

Unlike FDI and RFD, foreign portfolio investment (FPI), by its nature and key driver, appears less amenable to providing the kind of financial constraint relief considered in this study. It is essentially an acquisition, by a foreign investor, of claims to the cash flow (whether via equity or debt contract) of a firm or a government unit in another country. The key differences between this arrangement and that of FDI are (1) the value of stakes attached to equity claims of firms in the case of FPI is not of a controlling magnitude, thus, it lacks a meaningful degree of permanence, and (2) the purchased claims under FPI can take the form of debt contracting as well, which caps the investor's entitlement of the firm's or government unit's potential cash flows.

These two distinguishing features of FPI entail that such a capital fund will generally cross national borders in search of relatively higher investment returns than is available onshore. Therefore, it is fickle and highly mobile as though it is hot in the hands of the offshore recipient—thus the label "hot money". It is therefore mainly useful as a source of relief for financial constraint by increasing liquidity in the recipient country and thus reducing cost of external finance for the country. Further, the higher the association a country has with FPI flows, the more it is regarded as being investable and the more it would attract the more permanent FDI and RFD flows. The kinds of production sector FPI would most likely support is the finance

sector and perhaps, by extension, those supported by FDIs and RFDs, whose increases are linked to increases in FPI.

What is the picture of this kind of capital flow into individual African countries, many of which have fledgling public equity markets and debt market markets with a low investor base? Again, we map for FPI a similar kind of graph we mapped for FDI and RFD, for the same group of select countries across the same time frame. As is evident in Fig. 8.4, only Cameroon, Egypt, Kenya, Malawi, Morocco, Namibia and Tunisia recorded positive FPI inflow over the maximum average period of 5 years, reflecting the evolving nature of these countries' organized capital markets. Importantly, the value of these inflows is quite low compared to those of FDI and RFD, and their trends are highly volatile as expected. Indeed, its major cost is the volatility it causes in capital investment planning and the relative currency value of the recipient country.

Estimation Technique and Data

The data for this study covers 19 African countries[5] that have stock exchanges and therefore are likely to have some record of foreign portfolio investment, in addition to reasonable information on foreign direct investment, remittances and external indebtedness. Given the macroeconomic nature and low frequency of the key relevant variables of the study, we use annual data over the years 1990–2013.

Our objective is to investigate the economic growth impact of cross-border capital relief or intervention at a less-aggregated level and thus provide effectively more useful and nuanced knowledge on how to effectively leverage the relief foreign capital can provide. We therefore intend to examine how these cross-border capital types affect the performance of key sectors that have been touted, whether based on empirical or anecdotal evidence, to hold a special developmental prospect for Africa. We have identified the sectors for which data are available to include the agriculture, industrial, manufacturing and services (telecoms) sectors. The following are our main data sources: World Bank's World Development Indicators, International Financial Statistics, Bloomberg database, Central banks and National Bureaus of Statistics of relevant/covered countries.

A great deal of effort was expended on detailed data collection, collation and analyses. The nature and form of the envisaged descriptive statistics and trend analyses of the study were informed or underpinned by a significant desktop analysis and literature review. Particularly important was the

Fig. 8.4 Net portfolio investment flows (NPF) (US$ millions)

determination of each cross-border capital type's effects on Africa's financial markets and select sectors' performance. These examinations lend themselves to econometric analyses—association between variables, nature of data distribution, stationarity, richness of data and other data technical issues were considered. In view of the paucity of data on African matters and the need to glean the most information from them, we deployed panel

analysis with a view to controlling for heterogeneity among countries and/or endogeneity in some of the relationships that we investigated.

Our dependent variable for empirical tests is annual growth in value added by each of the four economic sectors (agricultural, industrial, manufacturing and services). Stacking the data in a panel of 19 countries, we seek to test whether domestic savings, financial flows (net FDI and net personal remittances) and other methods of (domestic) finance provisioning, namely, credit to the private sector and ownership-supplied financing (proxied by stock market capitalization and stock market value traded, both expressed as a proportion of GDP) explain the performance of these sectors.

We control for various factors that can also explain sectoral performance including national income (growth in GDP per capita), foreign exchange rates and economic openness (measured as total trade to GDP). Growth in GDP per capita is expected to increase spending in the economy and therefore might affect the demand for products and services created by these sectors; currency exchange rates and trade openness can affect the external competitiveness for sectors that are export oriented as well as sectors with heavy proportion of inputs coming from external markets.

Some of the explanatory variables might be endogenous to the sectoral production process. For instance, sectoral output feeds into the aggregate national output and is expected to directly influence national GDP per capita. Similarly, export-oriented sectors, such as agriculture, supply currency to the markets while net import sectors create demand for foreign currency, both of which affect the exchange rate. To deal with endogeneity, we use the difference GMM of Arellano and Bond (1991) to estimate the equation:

$$G_{s,t}^{VA} = \alpha G_{s,t-1}^{VA} + \beta F_t + \gamma C_t + \theta_t + \mu_i + \varepsilon \quad (8.1)$$

where $G_{s,t}^{VA}$ denotes annual growth in value added by sector s at time t, F is vector of flows from financing sources at time t, C is the vector of control variables defined in the foregoing discussion at time t, θ_t and μ_i are country and time dummies to control for fixed and time-varying factors and ε is the error term.

Effects of Cross-Border Capital on Economic Sectors

We start by describing the summary statistics. Table 8.2 presents the results. Consistent with our preliminary discussion in section "Types and Importance of Cross-Border Capital Flow", the table developed from pooled data of 19 countries shows, among others, that gross domestic savings averaged only about 14% in the countries studied. The median values of net FDI and personal remittance flows, which we have highlighted as potential vehicles for providing relief to Africa's financial constraints arising from low savings, were only 1.74% and 0.2% respectively of GDP; their low standard deviations (3.67% and 2.63%, respectively) imply that over time, the distributions of the two variables had a tendency to cluster around their low mean values. During the same period, the median stock market capitalization was only 9.71% of GDP, and the value of stock traded to GDP was 7.2%, confirming the legendary low liquidity and size of Africa's stock markets.

Although lending interest rates were rather high at 11.86% per annum on average, the debt markets appeared to provide respite to the production sectors in need of capital, providing an average of 116% credit to the private sector as a percentage of GDP—with a minimum of (surprisingly) negative 12.62% of GDP and maximum of 1148% of GDP. The expensive cost of debt capital would be expected to adversely affect production activities. It is therefore not surprising that Africa's state of financial constraint depicted by these statistics appears to be reflected in the performance of the major economic sectors: the annual growth in value added in the agricultural sector averaged only 3.4%, industrial sector 4.1%, manufacturing sector 3.6%, and services sector 5%. As a percentage of GDP, the four sectors' contribution averaged between 14% and 49%, with the service sector taking the lead.

Before we begin our empirical analysis, we check, as is the norm, whether our explanatory variables exhibit multicollinearity. Table 8.3 reports the correlation coefficients, which are very low, allowing us to proceed with our tests.

Estimation outputs are presented in Tables 8.4 and 8.5. Table 8.4 shows that net FDI inflows positively affect industrial sector's value addition and negatively inform services sector's value addition. The positive influence on the industrial sector can be attributed to spillover effects arising from technology transfers from the sources of the FDI. However, we have not yet tested this "hunch" because it is outside the scope of this study. The negative effect on the services sector is likely to be a result of increased

Table 8.2 Summary statistics of study variables (1990–2013)

Variable	*Symbol*	*Mean*	*Median*	*Std. Dev*	*Kurtosis*	*Skewness*	*Minimum*	*Maximum*	*Observations*
Gross domestic savings*	GDS	0.1407	0.1404	0.1290	2.0824	0.1978	−0.4851	0.5706	480
FDI, net inflows*	FDI	0.0265	0.0174	0.0367	51.8394	5.6147	−0.0690	0.4333	480
Credit to private sector*	CPS	29.9410	16.6123	30.3469	4.4254	2.0595	3.0936	160.1249	459
Personal remittances, net*	REM	0.0151	0.0020	0.0263	3.1117	1.6556	−0.0297	0.1403	480
GDP growth	GDG	4.2615	4.4112	5.0832	33.2657	−2.1760	−50.2481	35.2241	480
GDP per capita growth	GDC	2.0401	2.1214	4.8484	31.5774	−1.4871	−47.7225	37.1276	480
Consumer inflation	INF	12.3993	7.9213	17.0167	41.5702	5.3803	−3.2066	183.3120	440
Agriculture value added, % annual growth	AVG	3.4029	3.2336	11.7122	8.3211	0.9955	−42.9997	73.9992	458
Industrial value added, % annual growth	IVG	4.1078	3.9185	7.7901	17.6975	−0.9621	−65.3467	48.3973	460
Manufacturing value added, % annual growth	MVG	3.5759	3.5248	7.4459	9.9657	−1.0236	−54.0070	34.7007	458
Services value added, % annual growth	SVG	4.9548	5.1265	6.1147	30.1190	−1.4624	−57.1215	45.0308	458
Agriculture value added, % of GDP	AVA	20.9836	18.1478	12.8222	−0.7789	0.4318	2.0323	56.5769	474
Industrial value added, % of GDP	IVA	30.2146	29.6695	10.6290	−0.0627	0.5894	11.0585	61.0199	470
Manufacturing value added, % of GDP	MVA	14.4512	13.1191	7.9261	3.0073	1.5323	2.4101	45.6658	461
Services value added, % of GDP	SVA	48.7640	49.3460	10.3262	0.2933	−0.4885	19.7363	72.4836	470
Exchange rate (LCU to the US$)	EXR	200.0856	10.8231	435.5238	9.5297	3.0159	0.0303	2586.8896	456
Lending interest rate	INT	11.8640	9.3667	9.8948	27.9905	4.1567	2.0800	103.2083	414

(*continued*)

Table 8.2 (continued)

Variable	*Symbol*	*Mean*	*Median*	*Std. Dev*	*Kurtosis*	*Skewness*	*Minimum*	*Maximum*	*Observations*
Stock market capitalization*	CAP	9.7106	7.8684	10.6541	171.0855	11.3265	−8.8542	175.7083	349
Stocks, value traded as a percentage of GDP	STR	7.1861	0.8674	19.8129	21.1728	4.3668	0.0000	142.1928	309
Domestic credit provided by financial sector*	CRE	116.5338	40.0000	210.6545	7.0245	2.6928	−12.6222	1148.0000	348
Economic openness [(imports + exports)/GDP]	OPN	1.2495	0.7253	2.1772	56.8693	6.8141	0.0000	23.3506	480

*US dollar values expressed as a percentage of GDP in US dollars

Table 8.3 Correlation matrix for explanatory variables (1990–2013)

	GDS	*FDI*	*CPS*	*REM*	*GDG*	*GDC*	*INF*	*AVG*	*INT*	*CAP*	*STR*	*CRE*
GDS	1.000											
FDI	−0.068											
CPS	0.184	−0.054										
REM	0.108	−0.016	0.109									
GDG	0.098	0.169	−0.106	0.031								
GDC	0.140	0.152	−0.031	0.066	0.975							
INF	−0.216	0.025	−0.243	−0.113	−0.122	−0.168						
AVG	−0.103	0.023	−0.267	−0.152	0.141	0.068	−0.108					
INT	−0.252	−0.062	−0.148	−0.153	−0.251	−0.272	0.710	−0.098				
CAP	−0.247	−0.050	−0.196	−0.101	−0.182	−0.197	0.143	0.186	0.597			
STR	0.058	−0.067	0.729	−0.078	−0.097	−0.056	−0.135	−0.109	−0.079	−0.096		
CRE	0.025	−0.142	0.466	0.198	−0.068	−0.059	−0.054	−0.153	−0.025	−0.160	0.380	
OPN	0.005	−0.005	−0.047	−0.039	−0.067	−0.077	0.302	−0.125	0.099	−0.071	−0.080	−0.014

Note: Variable symbols as defined in column 2 of Table 8.2

Table 8.4 Difference GMM estimates for economic performance impact of cross-border flows (1990–2013)

	Dependent variables: economic sector performance (annual growth in value added)			
Explanatory variables	*Agricultural*	*Industrial*	*Manufacturing*	*Services*
Constant	−6.677 (5.73)	−6.043** (2.52)	−4.218 (2.98)	4.586** (1.94)
Lagged dependent variable	−0.320*** (0.06)	−0.266*** (0.05)	0.030 (0.06)	0.038 (0.05)
FDI, net inflows	−12.893 (28.65)	27.281** (12.66)	−21.923 (14.50)	−20.502** (9.03)
Personal remittances, net inflows	−24.072 (42.61)	−42.245** (18.53)	33.676 (21.63)	35.00*** (13.45)
Gross domestic savings	0.445 (10.84)	9.307* (5.19)	6.154 (5.71)	−6.658* (3.68)
Credit to the private sector	−0.101 (0.10)	−0.082* (0.04)	−0.027 (0.05)	0.023 (0.03)
GDP per capita, annual growth	0.520** (0.22)	0.926*** (0.10)	0.493*** (0.12)	0.692*** (0.07)
Foreign exchange rate, nominal	−0.002 (0.01)	0.001 (0.00)	0.001 (0.00)	0.002 (0.00)
Lending interest rates	0.137 (0.19)	−0.196** (0.09)	−0.081 (0.10)	−0.061 (0.06)
Domestic financial sector credit	0.003 (0.08)	−0.012 (0.03)	0.037 (0.04)	0.015 (0.02)
Openness	−0.111 (0.83)	−0.430 (0.28)	−0.285 (0.39)	0.297 (0.26)
P-values of specification tests				
Serial correlation (AR2)	0.10	0.16	0.59	0.99
Sargan	0.31	0.24	0.11	0.48
Wald test for time dummies	0.33	0.01‡	0.24	0.01‡
Number of observations used	246	248	248	246

Note: Asymptotic standard errors in parentheses. ‡ Other time-specific influences/factors collectively influence industrial and services sectors. ***, **, * signify 1%, 5% and 10% levels of significance, respectively

competition—several technology services firms have recently set up shop in Africa to tap into the growing market for mobile telephony. Our results therefore suggest that the perceived attractiveness of the telecom sector in Africa might have caused overinvestment in the sector.

The results also show that the net personal remittances are negatively related to the industrial sector (which by their nature of being capital-intensive requires large denomination capital, with some degree of permanence as well) but positively related to the services sector. The positive relationship between personal remittances and services sector is largely because a sizable proportion of the flows are used to sustain a certain type of lifestyle that is supported by mobile telephony and other services-type products (e.g., health care, financial services and even education services). For instance, mobile telephones have recently acquired a new function in Africa as a medium of money remittances; similarly, it is the only reliable source of internet access in most countries. Remittance flows are therefore possibly channelled by recipients into purchase of technological necessities such as internet access.

When we incorporate financing through the equity market channel, in addition to the credit/debt market channel, in the analysis (Table 8.5) the coefficient signs remain unaffected, a sign that our results for the two sectors (industrial and services) are robust. In addition, we see a weakly significant (at 10%) negative coefficient for net FDI inflows and positive coefficient for net remittance flows, in respect of the manufacturing sector. Our interpretations are (1) the inclusion of all capital market channels as possible conduits for harnessing cross-border capital enhances the effect of RFD on manufacturing, and (2) the significantly negative effects of FDI flow on manufacturing sector growth could be a reflection of African countries' ill-advised and non-cost effective FDI incentive programmes (Anyanwu 2015).

It is important to note that equity financing (or even the credit markets alone) is not significantly related to performance in any of the sectors, which underlies our earlier observations that equity markets in the continent are probably too small to play an important role in the financing of enterprises. This and the results of the capital flow's effect on the manufacturing sector when both equity and credit markets are jointly considered in our model support the "financial services quality" postulate of the finance-growth nexus story. That is, the quality of financial services in a country enables finance-growth association and not whether the financial system structure of the country is either bank or market leaning (Levine 2002).

Table 8.5 Difference GMM estimates for economic performance impact of cross-border flows (1990–2013)

	Dependent variables: economic sector performance (annual growth in value added)			
Explanatory variables	*Agricultural*	*Industrial*	*Manufacturing*	*Services*
Constant	−6.136 (6.27)	0.179 (2.74)	−2.773 (3.38)	0.823 (1.94)
Lagged dependent variable	−0.280*** (0.07)	−0.169*** (0.06)	0.0538 (0.07)	0.020 (0.06)
FDI, net inflows	−12.848 (28.96)	20.774* (12.38)	−27.962* (14.69)	−26.653*** (8.63)
Personal remittances, net inflows	9.845 (42.73)	−36.771** (17.67)	39.367* (22.36)	29.564** (12.80)
Gross domestic savings	−6.050 (12.66)	9.719* (5.61)	7.013 (6.72)	−6.609* (3.88)
GDP per capita, annual growth	0.570** (0.23)	0.832*** (0.10)	0.500*** (0.13)	0.698*** (0.07)
Foreign exchange rate, nominal	0.001 (0.01)	−0.005 (0.04)	0.002 (0.50)	0.006* (0.00)
Lending interest rates	0.003 (0.19)	−0.128 (0.09)	0.035 (0.11)	0.047 (0.06)
Domestic financial sector credit	0.001 (0.07)	−0.004 (0.00)	0.004 (0.00)	0.024 (0.02)
Openness	0.045 (0.66)	−0.231 (0.26)	0.300 (0.34)	0.254 (0.21)
Stock market capitalization	−0.185 (0.32)	0.024 (0.14)	0.112 (0.16)	−0.012 (0.10)
Stock market value traded	0.045 (0.05)	0.009 (0.03)	−0.002 (0.03)	0.004 (0.02)
P-values of specification tests				
Serial correlation (AR2)	0.20	0.17	0.78	0.97
Sargan	0.49	0.38	0.10	0.50
Wald test for time dummies	0.90	0.13	0.10	0.01‡
Number of observations used	207	207	207	207

Note: Asymptotic standard errors in parentheses. ‡ Other time-specific influences/factors collectively influence industrial and services sectors. ***, **, * signify 1%, 5% and 10% levels of significance, respectively

In both tables, the growth in national demand for goods and services (growth in GDP per capita) seems to play an important role in sectoral value addition. Clear implications of this result is that a growing economy, and the attendant income creation, is an important plank in the performance of the various sectors of the economy, which should be a rallying call to governments to put in place policies that enhance employment creation.

Conclusion and Closing Remarks

We advanced the argument that the legendary financial constraint profile of most African countries can receive robust relief from cross-border flows such as foreign direct investment (FDI), foreign portfolio investment (FPI) and remittances from the diaspora (RFD), only if these flows are carefully harnessed and efficiently linked to the production sectors for which each is best suited.

To establish the basis for our proposed relief, we mapped, at the aggregate level, the financial-gap profile of 19 select African countries that boast some presence of both organized public equity market and credit market. We found the financing gap to be indeed pervasive. We elucidated the possible relief each type of capital inflow might provide and in what specific sectors of the economy. We found that RFD and FDI, in that order, held the potential for financing gap relief for several specific production sectors. FPI was considered the least likely to directly provide relief, with its contribution coming indirectly by way of increasing the investability of countries that increasingly receive them, an outcome that would, in turn, foster increases in FDI and RFD.

Importantly, we explored the crux of our thesis that an understanding of which production sector is most amenable to each disparate cross-border capital would best leverage the relief inherent in them. Using the difference GMM estimation technique, we found that net FDI inflows positively affect industrial sector's value addition and negatively affect services sector's value addition. The results also show that the net personal remittances are negatively related to the industrial sector (which by their virtue of being capital-intensive requires large denomination capital with some degree of permanence) but positively related to the services sector.

Furthermore, when we considered financing channels of the equity market, in addition to those of the credit market, we found a weakly significant negative coefficient for FDI inflows and positive coefficient for RFD flows, in respect of the manufacturing sector. Our interpretations are

(1) the inclusion of all capital market channels as possible conduits for harnessing cross-border capital enhances the effect of RFD on manufacturing and (2) the significantly negative effects of FDI flow on the manufacturing sector could be a reflection of African countries' ill-conceived and non-cost effective FDI incentive programmes.

The upshot of these results is that our thesis has been empirically supported. One can therefore see policy derivatives that are apparent from these results. To get the financial constraint relief that is inherent in cross-border capital flows, African countries must match each flow type to appropriate specific production sectors and set sensible cost-effect incentive programmes for attracting each relevant flow.

Some related issues of this study have not received attention here. They would be interesting as future research projects. For instance, due to data difficulties, some of the sectors in African economies that seem most amenable to relief from cross-border capital flows were not considered. These include the financial, extractive and real-estate sectors. Further, having been historically considered susceptible to external influence (of particularly the multilateral development agencies and former colonial masters), there is the talk or perception that business linkages with emerging market economy powerhouses, such as the "South" and BRICS member states, may be more beneficial than linkages with OECD member states whose economic relationship with Africa, to date, has been viewed with suspicion. It would be worthwhile to explore the truth in this conjecture.

Notes

1. We focus on African countries that have established some form of organized equity market. In addition to banks and non-bank debt services institutions, having a national equity market indicates a relatively better effort/evidence of provisioning finance than countries without such a presence of public equity market. See footnote 5 for the list of the select countries.
2. Muhanji and Ojah (2011b) define "external debt sustainability" as the ability of a country to meet its current and future debt obligations of both private and public sectors without: running into arrears, recourse to debt-rescheduling and a need for balance of payments adjustment.
3. It is worth noting at this early definition of RFD that, in the parlance of national income accounting, remittances are grouped under the

current account sub-balance of the balance of payments and not under the capital account sub-balance. However, it is indisputably a source of financing that is external to the domestic African markets within which financially constrained firms are carrying out their production activity. Remittance (RFD), broadly speaking, is an obligation-free transfer of funds into a country by an economic agent (e.g., an individual, a household or a government unit) that is temporarily or permanently domiciled offshore.

4. Some have argued that due to RFD's use for consumption by recipient countries and the likely high influx of foreign currencies via unofficial channels, the recipient country's currency value can appreciate as a result and, in turn, worsen the country's trade balance.
5. The 19 countries are Algeria, Botswana, Cameroon, Egypt, Ghana, Kenya, Malawi, Mauritius, Morocco, Mozambique, Namibia, Nigeria, Rwanda, South Africa, Swaziland, Tanzania, Tunisia, Uganda and Zambia.

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PART IV

The Politics of Land, Land Grab, and the Development Puzzle

CHAPTER 9

The Concept of Land in Ethiopian Tradition: Land, Power, and Famine

Mesfin Wolde-Mariam

Introduction

Since time immemorial, land has been the only resource for the people and the state of Ethiopia and remains to be so to this day. The sense of land provides the connection and the bond between the present, past, and future generations. In the traditional Ethiopia, the sense of "honor" defines a gentleman. For an Ethiopian gentleman, land is not a disposable object; rather, it is the embodiment or the concrete manifestation of the sacrifices of countless generations for the honor and dignity of the MOTHERLAND. The land-holding is called *rist* or *atsme-rist*. The term *atsme-rist* (*atsm)* is a Ge'ez word meaning bone. *Atsme-rist* is land that is sanctified by sacrifice and signifies the blood and bones of those that gave their lives for the honor and dignity of all future generations of Ethiopians and for the Motherland.

A term that is almost always used with a wrong meaning, *ghebbar*, provides the connection between the state and the citizen. The citizen, the rightful owner of the land, of *rist,* pays tribute to the state. This tribute is called *ghibir* and so *ghebbar* means one who pays tribute, which means *one who owns land*. Those who interpret *ghebbar* as landless fall into a deep social pit which clouds the understanding of Ethiopian society. The *ghebbar* as a

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land owner was under obligation to mobilize whenever there was the need to defend the country against invaders. The right of land ownership imposes an obligation to fight for the country whenever called upon to do so.

Because the land is sanctified by the blood and bones of those who died defending it from intruders, no foreigner was allowed to own land in Ethiopia until late in Haile Selassie's reign. It is true that some Europeans were privileged to own land because they had served the *Niguse Neghest* (King of Kings) or the country. It is evident that the only way a foreigner could acquire a piece of land in Ethiopia was by serving the country or by marrying an Ethiopian.

The sanctification of land also precluded it from the market; land was not a commodity, it was inseparably associated with the blood and bones of the forefathers. To sell land was to dishonor the sacrifices made by these forefathers. Since land was not a commodity, it could neither be sold nor bought. Ethiopian culture bestowed the highest value on land: LIFE or the PROMISE of LIFE to protect the MOTHERLAND with one's life. This, I believe, is incomprehensible to the materialistic and commercial Western culture. In general, it may be said that the Western mind knows no value greater than that of cash; conversely, for the traditional Ethiopian, nothing has greater value than land.

> This material, social and psychlogical bond between the peasant and the land was so strong that the peasant generally remained in his village community until death. To detach himself from the land, which was the source of all his rights as a respectable human being, would require an absolutely certain guarantee not only for his continued sustenance but also for his respectability. This guarantee often came when peasants became rifle carrying attendants of some Ras or Dejazmach. In such case, the rifle provided the means of extorting his provision from peasants, and the servile assocciation with Ras or Dejazmach or some dignitary gave him some aura of respectability.[1]

One of the most important factors, if not the only factor, in cementing and solidifying patriotism is land. In most parts of the world, land is some physical object or possession or commodity. For Ethiopians land is not simply a physical object: it is part and parcel of one's being, the manifestation of one's right as a human being, of one's identity as a social member of the society, and of one's mark of honor and respectability. Every human being, except those that were excluded by division of labor, had a right to a piece of land, no matter how poor and unproductive. The piece of land

provided at once a concrete proof for the individual's right as an authentic and legal member and as an obligation to defend that birthright.

Realizing the large-scale dispossession of land in the country and the general discontent in rural Ethiopia, Atse Haile Selassie issued a proclamation on November 14, 1952 (Hidar 5, 1945 Ethiopian Calendar). The proclamation pertaining to land had the following four points:

1. Every Ethiopian is entitled to one-half of one *Gasha*, which is approximately 20 hectares.
2. For those who will be farming new land there will be a five-year tax-free period.
3. Ethiopians who operate *maderia*[2] *land* will convert one-third of one *gasha* to *rist*.
4. Patriots and wounded veterans will be entitled to one *gasha*.

It was certainly not a realistic proclamation because it did not take into account the dynamic nature of the population and the size of available cultivable land. But it certainly served a political purpose and endeared Haile Selassie by the peasantry which is accustomed to live in empty hope. Haile Selassie's proclamation demonstrates that the land was the basis for the power of the state.

The land is the mainstay of the individual citizen, especially the peasants, as it is the foundation for the power of the state. It is the symbol of the collective national body politic. Quite rightly, it was impossible to separate the people from the land on which they lived. Consequently, the state, too, depended on land. Land was and is the basis of state and society.

The utilization of this singular resource is much to be desired both for the peasants and from the officials of the regime. Neither the peasants nor the regime is aware of population dynamics and the static nature of land. In fact, the land in Ethiopia is far from static: the productive land is decreasing both physically and qualitatively. Urbanization, roads, and factories are eating up the best agricultural land in the country, as in Ada, south-east of Addis Ababa.

Subsistence Farming

It is subsistence production that ties more than 85 percent of Ethiopians to the land. Without land they are nothing. Without land they have nothing. Most of the Ethiopian people are peasants who live by cultivating their small

piece of land or by raising livestock. They are subsistence producers. Subsistence production is almost always on the precipice of famine. It is under the influence of two merciless forces: dictatorship of man and nature.

> We may identify subsistence production with the following five characteristics: (i) small and often fragmented farm land, (ii) primitive tools and implements, (iii) production geared to personal needs rather than to market, (iv) lack of alternative or seasonal employment opportunities, and (v) almost total absence of reserves of either grain or cash.[3]

Peasant farms are too small, often much less than one hectare which is hardly sufficient to produce the requirements to meet the annual needs of the peasant and his family. According to the Ethiopian Statistical Authority more than 61 percent of peasants operate on farms that are less than one hectare and about two-thirds of all farms are less than one hectare. When we consider the total annual production of the peasant it is important to remember that what the peasant produces has multiple ownership, among which, the peasant comes last. The regime's tax collectors, local petty officials, contributions for doubtful projects, and money-lenders who extract enormous interest in kind descend on the peasants at harvest time. What is left after all these obligations is paid and is what the peasant and his family are supposed to subsist on till the next harvest. Of course they do not make it without falling into debt again.

Why should subsistence producers pay taxes, much less than other contributions? Although the irresponsible and irresponsive official pays no attention, peasants cry out their pain:

> If land tax we must pay
> So must the monkey;
> For is it not the same land
> That it scratches with its hand?[4]

I have been advocating for tax exemption for subsistence producers for the last 40 years. It is the cash obligations such as taxes, debts, and contributions that impoverish peasants permanently. They never have reserves of grain or cash. That is why they remain vulnerable to famine. With the slightest negative change of natural factors, the peasant populations slide down to the agony of famine. Once this stage is reached, only timely and massive assistance could stop it from turning into a mass killer.

For the last 25 years, there was hardly a year without food assistance from the USA. This has certainly prevented the development of full-scale famine. But food assistance does not reduce food insecurity, malnutrition, and undernourishment, which eventually turn into famine. It may be useful to highlight some of the serious problems associated with both forces that negatively affect subsistence production. The vagaries of nature, especially that of climate, and the persistent oppressive and exploitative forces of tyranny, together with the increasing population and impoverishment of the land, tend to keep the peasants at a low level of living. The land and the peasantry are the backbone of the state. Yet, both the land and the peasantry are constantly under the irrational force of dictatorial rule that impoverishes them. Famine is a consequence of this irrational force with occasional assistance from natural factors.

Attempts to change the peasant by external forces will certainly be counterproductive as DERG government found out in the 1970s and 1980s. But, as I indicated in a conference organized by the Planning Office of the *DERG* in 1986:

> The changing of peasant attitudes deserves prior attention. First and foremost, the problem of subsistence mentality must be tackled. During my recent field work in northern Shewa and southern Wello, I came back totally convinced that one of the most formidable psychological problems for agricultural development is the solidified subsistence mentality of the peasants.[5]

Furthermore

> [The] extremely low purchasing power of the peasants is both the symptom and the economic malaise of peasant agriculture. As a concrete manifestation of their abject poverty it is a symptom. But as proof of their disability or of their economic paralysis it is the malaise itself. This condition of peasant life is certainly created by various forms of institutional forces. It cannot be said, however, that the peasants themselves have no responsibility for their own condition of life. At least they are responsible for their subsistence mentality and for not daring to take calculated risks in their farming activities and for their fossilized attitudes towards production and consumption.
>
> Whatever its causes may be, it seems to be a very difficult task to bring about significant transformation in agricultural production without solving the deeply ingrained subsistence mentality of the peasants. This will require high-powered development administrators who can win the genuine affection, respect, and confidence of peasants. It is only by planning and working

> with them rather than for them that it may be possible to weaken the subsistence mentality and to open the psychological vistas for new and greater possibilities.[6]

This is an area that is yet to be explored. The current government, because of its obvious mental shortcomings, cannot see the problem. Because of its tight control and infringement on academic freedom, research academicians do not venture to study the problem.

Vulnerability to Famine

Following the Second World War Ethiopia's subsistence farmers had some surplus for export, as seen in the Table 9.1 below:

It has already been indicated that vulnerability to famine is a consequence of the twin assault of persistent and extremely bad governance, on one hand, and occasional aberrations of nature, on the other. Oppression and exploitation impoverish the peasants so much that most of them store away nothing for bad days. In fact, successive regimes have considered peasants an always ready source of cash, albeit their small size. It has been proved sufficiently that subsistence farmers are the most vulnerable population. Paradoxically, these are the people that are primarily engaged in food production.[7]

> The persistent claim on the produce of the peasant has at least three major effects. First, the peasants are kept permanently at a level of, or below, subsistence, meeting the claims of outsiders before they satisfy their own basic needs. Second, the peasants' capacity to save becomes, in such

Table 9.1 Exports and imports of food in metric tons: 1945–84

Years	*Export (T)*	*%*	*Import (T)*	*%*
1945–49	435,780	28.7	58	0
1950–54	373,808	24.6	2421	0.1
1955–59	262,570	17.3	77,179	4.6
1960–64	298,098	19.6	83,334	5
1965–69	14,763	1.0	165,732	9.8
1970–74	30,455	2.0	163,833	9.7
1975–79	3576	0.2	140,609	8.4
1980–84	99,434	6.6	1,048,964	62.4
Total	1,518,484	100	1,682,130	100

Source: Compiled from CSA

circumstances of marginal living, unthinkable. Third, and most important, the persistent demand of outsiders renders the peasants incapable of commercializing their farms.[8]

Famine: The Scourge of Subsistence Farmers

Many confuse famine with ordinary hunger. Others confuse it with malnutrition or undernourishment. But it is different from all these.

> Famine is a visible horror. The fortunate part of mankind may have only heard or read about famine. They may have even seen it on the screen. None of this second-hand learning can match the reality of famine, the actual sight of emaciated human beings struggling against premature death . . . can we really talk of a society under circumstances in which periodic mass death by starvation is the lot of the majority?

> Nothing else manifests man's inhumanity to man more than famine. Nothing else expresses the hypocrisy of cultural and religious values. Nothing else reveals social, economic and political anarchy more than famine . . . when, under extremely adverse circumstances, the masses of peasants starve to death, the mechanism of the common good that normally serves to rationalize exploitation of the masses of poor peasant's breaks down totally and leaves them in helpless disarray.[9]

To put it bluntly:

> Famine is the most negative state of food consumption under which people, unable to replace even the energy they lose in basal metabolism, consume whatever is stored in their bodies; that means they literally consume themselves to death.[10]

The various perceptions of famine, and there are many, are described elsewhere in detail.[11] Nevertheless, one very important fact needs to be that the peasant does not sell their land. Equally important is the fact that the peasant does not sell their livestock in times of stress. Both land and livestock are part and parcel of a peasant's life. It is not enough to describe them as assets. The lives of the peasant and the pastoralist are empty without land and livestock.

At the height of the famine period in Wello in 1974, the average number of peasants

> that sold or abandoned land in the six Awrajas of wello is only about 15.3 percent. The highest proportion was 27.5 percent in Ambassel, and no land was sold in Lasta. The proportion of families that mortgaged their land is even less, the average being only 2.6 percent.[12]

The short-term view of survival from famine seems to suggest that the peasant sells their land and the pastoralist their livestock to negotiate through the difficult times. But the practical wisdom of both the peasant and the pastoralist makes it abundantly clear that without land for the peasant, and without livestock for the pastoralist, there is no secure future. Therefore, the choice is between short-term expediency and long-term security. The peasant and the pastoralist choose the latter. Not many people know that famine is not a one-time affair. One year of famine dislocates farmers and pastoralists and reduces their numbers. With sick and exhausted labor, with reduced and emaciated livestock, and without seeds, it is difficult to regain normal production and to continue normal life immediately after the famine year. It takes at least three to four years to recover fully and start production. Therefore, there is no single year of famine.

Recovery for one year of famine may take three or four years and, therefore, will require elaborate planning to rebuild the lives of the peasants. This, obviously, does not mean reinstating them to where they were before the occurrence of famine; it means looking further ahead and putting policies in place that ensure that the society is completely secure from famine. This is not as easy as the initial fire brigade work or what is called the emergency assistance.

Land: Ethiopia's Contribution to Globalization

The whole world has heard with sadness of what is now known as the land grab in Ethiopia. The fact that a killer famine is raging in most parts of Ethiopia today is the proof that the country is suffering from a very serious malaise of food security. If nothing else this malaise indicates that the only resource of the country, the land, is underutilized, misutilized, or not utilized. The Central Statistical Authority of Ethiopia could not hide the fact that nearly 90 percent of the farms are operated by very small-scale peasant subsistence producers. Pushing out subsistence producers from their farms will turn them from subsistence producers to subsistence laborers.

Already irrational decisions by Ethiopian officials and their Chinese advisors have reduced and damaged the agricultural land of Ethiopia. Horticulture has become the new cash-making industry and is taking a large amount of land (some 766,000 hectares) in various parts of the country. Khat (the traditional herbal stimulant native to the horn of Africa and Arabian Peninsula) is also occupying much of the former agricultural land. Moreover, the poorly planned, if at all it is planned, urbanization is taking away some of the best agricultural land of the country. For some odd reason roads and factories choose prime agricultural land, as in Ada, south-east of Addis Ababa. If this diminution and degradation of the country's agricultural potential is not dangerous enough, the government has given some 1,546,266 hectares of land to so called investors, including Ethiopians in exile. It has already been pointed out that two-thirds of Ethiopian farmers have an average farm of less than one hectare.

The Ethiopian population, according to a more reliable source, is almost 102 million in 2016.[13] So far, Ethiopia does not have any other resource, besides its land and the people. Young Ethiopians are languishing in jails in many countries or suffering indignities in many Arab countries, and the most unfortunate ones sinking into the Red Sea and the Mediterranean. Who can make an autocratic government intoxicated by power understand that to reduce the available agricultural land in the face of a growing population is to invite disaster? The current famine in Ethiopia is only a warning of the downward trend facing the people. But, autocrats can only learn from disaster, and then the learning is too late to be useful.

Conclusion

It is enervating to realize that over 40 years of research and talks about the problem of Ethiopian peasants and agriculture have simply fallen on deaf ears of three consecutive regimes. This is a clear manifestation of how incongruous the regimes and the people are. One can imagine what the fate of the Ethiopian people would be if there were no emergency food assistance. Emergency food assistance on its part has become an international institution that *promotes* food shortage and famine. Persons who have become professionals in emergency food assistance have made it a lucrative career. The emergency food assistance is not a small business, as

Table 9.2 Total contributions of emergency food assistance to Ethiopia

Fiscal year	*Metric tons*	*US dollars (in millions)*
2015	158,500	109.9
2014	271,120	218.1
2013	274,770	235.7
2012	365,400	306.6
2011	371,599	313.3

Source: USAID—Food Assistance Factsheet 2016

shown in Table 9.2. Note that once dependency is established, assistance decreases!

As shown in Table 9.2 above, once the dependency is established, assistance decreases. Thus, it is not only the regimes that profit from famine and emergency food assistance. What can be more backward than repeating what was said in 1991:

> Individual liberty is the source of human intellectual and spiritual energy. To stifle individual liberty, will in the long run harm the society at large, more than it harms the stifled individual . . . as John Stuart Mill[14] wrote in his book "On Liberty" in 1859, "whatever crushes individuality is despotism, by whatever name it may be called, and whether it professes to be enforcing the will of God or the injunctions of men."

> The demand for freedom must not be considered a form of imitation. It must be seen as a confirmation of human ideals, indeed, even of humanity . . . it is only under conditions of freedom that the best in man is brought out—both for his own benefit and for the benefit of society.

> If the same indicators were used to rank all the states in the world in terms of what is called development and also in terms of the freedom of citizens to participate in the political process by making real choices, there would probably be a very high correlation between development and freedom. This correlation will not be accidental or mere chance. Freedom is the condition that allows the release of the physical, mental and spiritual energies of individuals and groups; it is freedom that allows new ideas to be generated; it is freedom that provides real choices for individuals and groups; it is in freedom and open debate that harmony is promoted and conflict mitigated. The greater the diversity of views, the greater is the energy and vitality. The role of leadership is not to stifle energy and vitality, but to encourage and channel them towards constructive social ends.[15]

In 2016 some people are paying as much as 10,000–40,000 Birr[16] for their final resting place of approximately 1.5 square meters of land. Soon the poor in Ethiopia may not afford the cost of burial. A competitive cremation company may solve partly the pressure on the land.

Notes

1. Wolde-Mariam (1986a).
2. *Maderia* is land that is made available in lieu of salary, or as pension, or as payment for services rendered to the government.
3. Wolde-Mariam (1986a).
4. Wolde-Mariam (1986a) …, op.cit., my own translation.
5. Wolde-Mariam (1986b), Ethiopia's Food Security: Problems and Projects (Presented at The National Workshop on Food Strategies for Ethiopia O.N.C.C.P., Alemaya, December 8–13, 1986).
6. Ibid.
7. The fact that subsistence farmers are the main victims of famine was first emphasized by Spitz (1978).
8. See Wolde-Mariam (1991).
9. Ibid.
10. Ibid.
11. Ibid.
12. Ibid.
13. www.Worldometers.info.
14. Mill (1859).
15. Wolde-Mariam (1991). In this connection, one is invited to examine Amartya Sen's *Development as Freedom* published in 1999. The difference between Sen's Development as Freedom and my concept summarized above is that for me it is freedom as development.
16. Birr is the currency of Ethiopia, with an average exchange rate of 23 Birr for 1US$ in the year 2016.

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CHAPTER 10

Your Next "Landlord" Will Not Be Ethiopian: How Globalization Undermines the Poor

Aklog Birara

Introduction

Africa is full of promise and pitfalls. It has immense untapped natural resources and a growing human capital. However, it is constrained by poor governance, rent seeking, extensive illicit capital outflow, ethnic conflicts, and threat of terrorism. Ethiopia represents Africa's promise and pitfalls. The recent uprising in the Oromia region of Ethiopia, a result of the Capital's Master Plan expansion, demonstrates the poor governance system of the country, and the plight of many Ethiopians who depend on land for survival.

For over two decades, Ethiopia has faced numerous problems: increasing land grab and displacement of indigenous people without due compensation, rampant corruption, rising unemployment, increasing poverty, and the mass exodus of youth to foreign countries in search of greener pastures.

Ethiopia is the largest recipient of foreign aid in Sub-Saharan Africa, with 50–60 percent of its budget covered by foreign aid (AEO 2015). It is experiencing the worst famine in 30 years, with an estimated 18 million

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people requiring food aid. In terms of social development, Ethiopia is among the most repressed and poorest countries in the world. The country has shown some progress in social and infrastructure development (fueled by foreign aid, loan, and remittances), and has attracted foreign direct investment (FDI) especially in land investment, at the expense of peasants whose lives depend solely on it. Moreover, the government claims to have liberalized the economy, yet monopolies exist in key sectors of the economy, including financial and communication.

I chose the title **Your Next "Landlord" Will Not Be Ethiopian: How Globalization Undermines the Poor** for sound reasons. Ethiopia has ample irrigable and other farmlands. Yet, it is food aid dependent and is one of the largest aid recipients in Africa and the world. It is one of the centers of land grab. Its economic and social structures are archaic. Its growth favors ethnic elites. Furthermore, over 60 percent of its population consists of youth, who are constantly undertaking dangerous migration to the Middle East, European countries, and South Africa, with hopes of finding jobs to support their families back home. It is unable to create jobs, in part because the private sector is squeezed by party and endowment monopolies. It draws FDI but does not have a regulatory framework of partnership that favors the domestic private sector. Sadly, the global community does not find anything wrong with the current government. For reasons that escape me, Ethiopia's benefactors—donors and friendly governments—seem to prefer stability at the cost of freedom, human rights, the rule of law, and democracy.

It is certainly true that in a region of failed states and terrorism, Ethiopia has not suffered the traumas of savage and senseless attacks by terrorist groups such as Al-Shabab. But for how long? Most Ethiopian intellectuals and opposition political groups contend that the Ethiopian state is "terrorizing" its population. This may be debatable depending on the motive behind the characterization. What I know is this. Ethiopia is one of the worst jailers of journalists in the world. It is one of the major sources of immigrants in Africa. It suffers from one of the worst cases of nepotism, corruption, and illicit capital outflow. It is among the top centers for land grab and dispossession of indigenous people.

The tragedy of Ethiopia's land grab illustrates the pitfalls of globalization combined with poor governance. The motives are self-serving. I remind the reader that investors are driven by three motives: First is "the need to establish beachheads and secure reliable and reasonably priced food supplies for their clients." This is understandable given diminished arable lands

across the globe. The concern is the transfer of ownership from indigenous people to foreign and elite domestic investors. Second is "to secure reliable and reasonably priced sources of biofuels." Ethiopia's top priority should be to be food self-sufficient and therefore, to boost food productivity of small-scale farmers. Third is to respond to "hedge funds and other investors that wish to capitalize on the commodity boom." The Ethiopian government's argument that the country should lease its land, gain foreign exchange, and purchase food supplies in the open market is short-sighted. Among other things, the policy "undermines domestic capabilities and perpetuates food dependency" (Birara 2011). In my estimation, globalization in the form of foreign direct investment, trade, migration, remittances, and the fight against terrorism does not have to be a zero sum game.

The consequences of poor and repressive governance are staggering. For example, if we take the ten fastest growing economies in Africa, the socio-economic situation for most Africans is either the same or worse. The difference in GDP per capita per year between Botswana (at US$16,000) and Ethiopia (at US$470–US$490) is day and night. It cannot be explained by any other variable but lack of good and empowering governance. Social rates of return in Botswana are about four times higher than in Ethiopia. The private sector in Botswana is more robust, and corruption is almost zero. On the contrary, corruption is institutionalized in Ethiopia.

It is arguable that FDI, aid, and trade can improve lives in a sustainable manner with accountability in governance. For example, how come Ethiopia has not achieved food self-sufficiency after US$40 billion in Western development assistance? This chapter argues that in the absence of a vibrant private sector, good and empowering governance with a regulatory framework that is transparent, fair, just, and pro-poor increases in aid, FDI and remittances will not solve Ethiopia's legendary structural poverty. When government becomes accountable for its people and practices these instruments in a fair and proper manner, the people of the country will reap the benefits of growth and development, eventually leading to sustainable development.

The rest of the chapter is structured as follows: the next section provides a brief exposition of how development is understood and interpreted in Ethiopia in the current regime, and how the prevailing understanding might affect development in the country. Section "Farmlands and Water Grabbing" discusses farmlands and water grabbing in Ethiopia, the scale of the grab, and its implication on the long-term socioeconomic development of the country. In section "Is There a Way Out?," ways and means of

mitigating farmland and water grabbing are presented and discussed. Section "Conclusion" concludes.

Development in Ethiopia

Today, ordinary Ethiopians joke about growth in the country. In other words, the government has degraded the concept. It has made a mockery of growth by defining growth and development as top down similar to command economies. For me, it is freedom and empowerment. As such, it is about people and ownership of assets. If you wish to build a better home, you work hard, save, and invest. You cannot save if you do not have a job or are not allowed to establish a firm.

Land ownership has been a long-standing problem in Ethiopia, as it is the case for saving, investment, and inclusive growth. These structural problems coupled with the absence of good governance have seriously affected the labor market of the country where thousands of graduates are unemployed for long. Ethiopia, like any other African country, suffered immensely from structural adjustment programs that curtailed public spending in education, health, and other social sectors. In the early 1990s, Ethiopia was compelled to privatize state-owned enterprises (SOEs), including those that were profitable. To date, the government has not explained to the public to which groups and/or individuals the privatized firms were transferred, and what social and economic benefits Ethiopians gained. The process was opaque. Equally worrisome is the fact that the current Ethiopia's land leases and FDI are shrouded in mystery.

Ethiopia is paying a heavy price in the media and telecommunications sector, which is owned by the government. Its potential to contribute to increased employment and incomes will not be realized until the government deregulates and privatizes the sector, similar to other African countries. I reckon that the government is reluctant to grow the telecommunications sector because of its democratization feature. Imagine millions of Ethiopian youth sharing knowledge using social media. Among other things, they may demand more freedom, which is a threat to the government. It exposes poor and rent-seeking governance. The freedom deficit is among the ingredients that give globalization a bad name. Under such conditions, achieving optimal growth and sustainable development is impossible.

Farmlands and Water Grabbing

A prime example of greed in the midst of poverty is land grab by foreign investors and domestic elites. FDI in farmlands in Africa is a new form of "colonialism." In all cases, such FDI disadvantages poorly governed countries such as Ethiopia. There are no rules, regulations, and protocols to protect the poor, and Ethiopia's national interests and sovereignty are compromised. Countries dominated by repressive governments are always characterized by weak institutions. There is no community or civic voice or independent media to mitigate risks. My argument is that benefits depend on the existence of nationally oriented, competent and highly dedicated government leaders and institutions that negotiate, defend, and protect indigenous population. FDI does not advance public welfare unless authorities defend the interests of their societies. There are no transparent and shared rules and arrangements that govern investments. The poor and domestic investors, in Ethiopia, are left on their own.

Land grab is an excellent example of poor and repressive elite governance in Ethiopia. Land grab means expropriation. The government expropriates and gives farmlands away to the highest bidder without any open competition or compensation. The reason is simple. It is to ensure single-party dominance over the national economy. When I contrast unbridled FDI in commercial agriculture in Ethiopia with countries that negotiate the best deals for their societies, I discover that Ethiopia sold or leased its farmlands and water basins for nothing. In the process, the government dispossessed millions of its citizens.

As a matter of fact, there is no evidence showing that patriotic and committed governments give away the most critical source of comparative advantage to investors for free. They ensure that their populations are given priority over foreign investors. Repressive and corrupt governments, including the Ethiopian government that has been in power since 1991, give away natural resources including fertile farmlands for short-term gains such as foreign exchange. When this occurs, the social, economic, and environmental effects are huge. Families, communities, and the entire society lose control of a key natural resource that defines their culture, identity, potential source of prosperity, and security.

At the beginning of 2011, the Ethiopian government had leased or sold 3 million hectares of farmlands to foreign investors, an amount that is almost 30,000 km^2. In mid-April 2011, a pro-government newspaper, the Reporter, confirmed that regional states had voluntarily transferred to the

Federal Government of Ethiopia 3,638,415 hectares of land for the purpose of leasing them to foreign and selected domestic investors—900 permits and licenses were granted. Regional governments are run by ethnic elites, who benefit from land transfers. Land is the primary source of nepotism, bribery, and corruption in Ethiopia. Ethiopia's land giveaway did not generate outcry among elites or the opposition parties because of self-interest and fear. Further, Ethiopians are ill-informed and confused about the meaning of development and the role of land grab in achieving growth goals. Ever since I remember, two extreme classes have characterized Ethiopia: the rich and super rich at the top and the poorest of the poor at the bottom.

For the past half-century, the country provided ground to the poverty alleviation business. Aid is received on behalf of the poor but enriches the few. This is where I would center the growth and development debate. It must be people-centered and not ethnic-elite centered. Without it, one cannot understand the political economy of poor governance and transfer of natural resources to investors. Without it, we cannot understand why there is widespread conflict among ethnic elites for control of natural resources. The distinction I made earlier between Botswana and Ethiopia refers to the two extremes. Ethiopia does not have a middle class, it has a few millionaires. On the contrary, Botswana has a growing middle class. Millions of Ethiopians starve; there is no starvation in Botswana. The difference is accountable and democratic governance in Botswana and dictatorial governance in Ethiopia.

Foreign experts and visitors travel to Ethiopia and declare that the country is hopelessly poor, while recognizing physical change. Physical infrastructure has had a glitz effect masking deep policy and structural hurdles that Ethiopia faces. The hopelessness arises from abject poverty that they see everywhere. The World Bank defines the middle class as those who earn between US$10 (Egypt) and US$50 (Cyprus) per day. In Ethiopia, 39 percent of its population live on less than US$1.25/day, and majority are multidimensional poor, living on an average daily income of approximately US$1.7 (AfDB 2011).

In 2009, 1.8 billion people in the World belonged to the middle class. The projection by OECD Observer is that this number will rise to 3.2 billion in 2020 and 4.9 billion by 2030 (Pezzini 2012). In Asia, for example, its middle class was 525 million people in 2009, which represented 28 percent of the global middle class, and is expected to increase to 66 percent by 2030 (Pezzini 2012). In contrast, only 8.2 percent of Ethiopia's population

are categorized as middle class (AfDB 2011). This reinforces my argument that poverty reduction in Ethiopia must be measured by the rise of the middle class. It is when the poor eat three meals a day, send their children to school, and have accesses to economic opportunities that substantial rise in the middle class occurs. The current system grows incomes and assets for the rich and super rich but does not enhance opportunities for the poor. Land is among the most important variables in the equation. How it is allocated, developed, and used determines the extent to which those at the bottom would rise to the middle. This middle class is central to producing and consuming large quantities of domestically manufactured/produced goods, and services. It enlarges the government's tax revenue base. It also demands accountability from its government. The poor do not have the resources, time, or freedom to meaningfully impact domestic consumption, contribute to the tax base, and demand accountability as much as the middle class. For a repressive government, it pays to keep the poor where they are.

The second organizing principle is that the Ethiopian government seems to market the notion that a large chunk of fertile farmlands and waters in the Gambela region can be transferred to foreign ownership in order to grow and develop the region. Millions of hectares of farmlands have been or will soon be transferred to investors. The developmental argument of forcibly removing inhabitants in order to lift them out of destitution is absurd and immoral. How many ordinary people in Gambela would enter the middle class if they are marginalized and deposed from the source of their livelihood? What would be their social rates of return? Would reliance on commodity exports owned by foreigners induce a middle class and pave the way for sustainable and equitable development? The outcome in Gambela illustrates that this is not the case. The vast majority of the population falls into the lowest level of income and material poverty.

A commercial farm manager of an Indian enterprise located in Gambela said it best. "They gave it to us, and we took it. We did not even see the place." Karuturi is one of the 896 foreign investors that scrambled for a piece of land in Gambela and other locations. At the height of "farmland grabbing by invitation," at least 36 governments were involved. On March 21, 2011, John Vidal of the UK's Guardian news chain presented a heart-wrenching documentary on the social, economic, and environmental implications of disenfranchisement that comes from transfers of ownership from Ethiopians to foreign investors. One commercial farm of 100,000 hectares of emerald green land is as "big as Wales" in the United Kingdom. The

300,000 hectares plus land offered to Karuturi, one of the largest "landlords" in Ethiopia, stretches 1000 square miles and displaces villages. The documentary offers a vivid picture of 250 people who were left stranded for eight months (Birara 2011).

Land as big as "Wales" represents more than geography. It represents people and their future. Vidal (2011)'s documentary quotes people under conditions of anonymity, because they are people who were uprooted from their homes and are full of fear. We "are scared to talk." "Who cares about us; they will jail me." Utterances such as these do not indicate consent, but coercion. On the other hand, utterances by foreign investors such as "they gave it to us, and we took it," imply that it is the Ethiopian government, rather than investors, that should be blamed. Accountability for social, economic, and environmental outcomes resides with the government. "Who cares about us" is a story about the poor, and the callousness of their government.

At the peak of land transfers to 896 licensees in 2007 when the government earned more than US$3 billion, thousands of inhabitants in Benishangul-Gumuz and Gambela were forced to move. Officials told Vidal (2011) that resettlement was voluntary and developmental. Villages were razed to the ground, and the poor had very little choice but to move. Officials argue that the primary reason for resettlement is the need to accelerate social and infrastructural development, and that it is virtually impossible and uneconomical to provide social services to scattered villages. This is true and has been for the past 25 years under the watch of the current government.

Is it coincidental that resettlements are speeded up in order to meet a development gap? It does not seem to be that way. Relocation is planned and deliberated as part of the transfers. On November 29, 2010, William Davison of Bloomberg news reported that 150,000 households or 750,000 people from the Afar, Benishangul-Gumuz, Gambela, and Ogaden regions would be resettled. What is heart wrenching is the reaction of indigenous people, victims of land grab in the name of development. "We are deceived by our government."

In *Public Backlash Against Forced Evictions from Land a Certainty* posted by the Solidarity Movement for a New Ethiopia [SMNE (January 3, 2011)], one learns the magnitude and growing resentments that Vidal (2011) underscored in his documentary. SMNE (2011) reported that 75 percent of the population of Gambela were slated to be relocated. Assuming a population of 225,000, it means close to 170,000 people would be relocated. This amounts to effective evacuation of the majority

to make room for large-scale commercial farms. "Villagization" is a deliberate program of the government and is a result of land grab. In the initial phase, officials promised 3–4 hectares of farmlands for each household, but only 60,000 hectares are set aside. It is equivalent to 1.3 hectares per household in a region that is giving up 1.8 million hectares to investors. As enticements, inhabitants are promised schools, health facilities, market sites, roads, and the like. No high school or higher education is planned by either the government or investors. Inhabitants complain that the minimal promises from the government that earns billions of dollars from land sales and leases are not often kept. Without quality education and accesses to new economic opportunities, it is unlikely that the people of Afar, Benishangul-Gumuz, Gambela, or Ogaden would see increases in incomes. What is predictable is continued poverty, inequality, and instability.

Karuturi's holding of 300,000 hectares is accompanied by Saudi Star that owns between 300,000 and 500,000 hectares in Gambela. It has similar projects in Benishangul-Gumuz. These foreign investments cannot possibly take place without adverse effects on inhabitants and the environment. The government is ignorant for not acknowledging that land transfers to investors entail huge costs. The Anuak people of Gambela, as cited in SMNE (2011) report, say "If these people (the government and foreign investors) think they will come here, remove us by force from our ancestral land for mega-farms and think they will succeed in harvesting their crops without any resistance, they are wrong. The only way they will be right in thinking this is if their crops remain green; and ready to harvest forever." It is easy to understand the agony of these Ethiopians. The Indian representative said that the Ethiopian government "gave it to us, and we took it. Seriously, we did not even see the land. The government offered it. That is all." These assertations support my argument that farmland and water basin transfers or giveaways to foreign investors are effectively "farmland grabbing by invitation." People are simply "scared to talk."

The developmental state point of the government fits the definition of "survival of the fittest" model. It is only those people with political influence and their allies who could not only survive but thrive. Under this inequitable model, the world seems to condone, one would have to wonder for how long would people live with the model itself. My sense is that it will perpetuate the extremes of elites and the poor and ignite civil conflict. Public backlash is inevitable. The totality of potential adverse effects leads Vidal (2011) to call the transfers the "deal of the century." After visiting with government officials at all levels and learning the party line, he asked

the penultimate question, "is it in the people's best interest" that the government gave away a source of Ethiopia's comparative advantage and prosperity? My conclusion is none at all. This is the reason why the twenty-first-century globalization is perceived as unjust. The uprising in the Oromia region of Ethiopia in early 2016 reveals the dilemma of political and economic capture, especially land, by a minority ethnic group and the marginalization of millions.

Is There a Way Out?

I believe there is and it requires political will. In summary, I provide several suggestions. First and foremost, Ethiopians must hold their government accountable at all times. This occurs when good governance is institutionalized. Equally, the global community, especially in the realm of foreign investment, must be governed by new, inclusive, democratic, and accountable governance. In this regard, economic and social rates of return from investments in natural resource must be equally beneficial to Ethiopians. The value chain should be improved by enabling Ethiopians to be producers, income earners, food processors, manufacturers, exporters, consumers, and so on. As designed, the value-added of foreign-owned large-scale commercial farms accrues to investors. Ethiopians are not only disenfranchised from transfers of an estimated 30,000 km^2 of their most fertile farmlands and water basins; they do not play roles in the development process. Millions of Ethiopians live in extreme poverty earning less than US$1.25 a day. Escalating food prices further diminish the meager earnings.

At the annual Spring meetings of the IMF and World Bank in April 2011, President of the World Bank had warned "on the threat of social unrest" driven by escalating food prices and unemployment. When food prices persist upwards, it is the poorest of the poor who suffer the most. The jigsaw puzzle of development policy of the Ethiopian government in giving away farmlands to foreign investors while importing food will inevitably lead to the tensions the World Bank and others have predicted. These transfers deny Ethiopians the benefits that arise from ownership and control. The value-added from "processing, marketing and distributing" of produces in their own homeland goes to investors. Accordingly, the "deal of the century" enriches investors while deepening Ethiopia's poverty and dependency on foreigners. This unbelievable deal is not governed by any code of business conduct to mitigate risks for Ethiopian households, communities, and society.

The investment deals do not induce food self-sufficiency. The government has ignored key lessons from North Africa and the Middle East uprisings. According to a statement from Robert Zoellick, President of the World Bank, "we should remember that the revolution in Tunisia started with the self-immolation of a fruit seller who was harassed by authorities." Farmland giveaways for FDI and a selected few domestic investors are imposed by Ethiopian authorities without clear and predictable benefits to the Ethiopian people. When a government dispossesses its own citizens in favor of foreign investors or domestic elites without participatory consultations, it invites civil conflict. Widespread civil conflict spares no one, including the physical properties of foreign and domestic investors.

Second, these farmlands are sources of comparative advantage for Ethiopia and could be transformed into granaries for exports and domestic consumption. Building national institutions and strengthening domestic capabilities will generate private sector enterprises and employment, boost agricultural productivity, and make the country more competitive. Given favorable conditions—instead of foreign investors—it will be Ethiopians who will be in a position to export agricultural produce to Chinese, Egyptian, Saudi, and Indian markets. Empowering foreign "landlords" without due compensation of the indigenous people is the opposite policy.

Third, terms and conditions do not clearly and openly state that these large-scale commercial farms will generate permanent employment, and that wages and benefits will lift employees from poverty. On the contrary, low wages will keep Ethiopian workers poor. This is no way to achieve middle-income status. These Ethiopians will be condemned to endure the indignity of working for "new landlords" who happen to be non-Ethiopian in a sector where the country has a solid history and potential for a smallholder "green revolution."

Fourth, Ethiopia has a clear policy that governs FDI, which was formulated under the imperial government. The policy stipulates 51 and 49 percent of domestic and foreign ownership, respectively. The imperial government was futuristic because it was nationalistic and wanted to protect the country's interests. Land deals under the current government do not manifest this policy in natural resource management.

Fifth, whether unoccupied or occupied, fertile farmlands belong to specific groups. Their involvement and participation in decision-making is vital. The government has not shown any inclination to engage them. Such decisions create unnecessary tensions and conflicts that could have been avoided. The fact that lands are not occupied is irrelevant. Unoccupied

lands can be leased in a responsible manner, with the Ethiopian people in control of their natural resources for their benefits.

Ethiopian communities are stakeholders and deserve to be heard. They must feel that their government stands on their side. Workers should not be expected to live with "below-minimum wage rates" working on farmlands in their own home country. There are numerous Ethiopians with technical and managerial skills to manage large-scale commercial farms. Farming is a national tradition that goes back thousands of years. The role of the government is to equip smallholders with the tools they need to increase productivity and employment, rather than forcing them to be tenants and "strangers" in their own lands.

Sixth, when the government gives away farmlands or other natural resources without engaging foreign corporations to agree to terms and conditions that will advance the interests of households, communities, and the entire society, it is legitimate to question the ultimate objective of such deals. Effective FDI is always based on shared benefits and is publicized in order to educate the public. Further, nationalistic governments ensure that there is no environmental destruction.

Ethiopia has a history of environmental degradation. The landmass that is forested and needs custodianship is much smaller than it used to be. There is ample evidence in Gambela and other localities that show catastrophic levels of clearing of virgin and irreplaceable forests as well as streams. The flora and fauna as well as the natural resources used by households and communities to earn a living are being destroyed. For example, households harvest honey to earn incomes and to sustain livelihoods. This will not occur when the forest is cleared. Inhabitants use streams and rivers to fish for commercial and household consumption. This disappears when foreign corporations construct dams and divert the rivers to support their large commercial farms. Eliminating sources of livelihood to make way for FDI without offering meaningful alternatives is irreprehensible in a country that "begs" for food. The social and environmental impacts of these unregulated clearings by investors are catastrophic and irreversible. Future generations of Ethiopians will suffer from these destructions. These are among the reasons why the deals are questionable.

Equally, the corruption reflected in forcefully taking and distributing Ethiopia's natural resources to foreigners and domestic elites is a clear manifestation of the corrupt political system and political elites who find nothing wrong with their policy on FDI in natural resources. Elites are the lead beneficiaries of this phenomenon. The problem is this: concentration of

incomes and wealth is hugely risky for Ethiopia. It creates inequality and poverty and leads to social and political instability and terrorism. It narrows the domestic savings and consumer base and reduces productivity, consumption, and competition. Eventually, people revolt because economic and social opportunities are closed. Those who are rich do not feel safe and flee with their capital. Their homes and enterprises become easy targets for the outraged. This actually happened recently when Oromo youth targeted and burned investment properties because they were outraged by government brutality.

Unfortunately, the government allows natural resource exploitation because it gains from collusion with foreign investors. Ethiopia cannot afford to emulate income and wealth inequality as a sustainable development model. Control of the commanding heights of the economy by the government proves to be a sure way of aggravating income inequality, future social fissures, and dependency on foreigners. Citing a few success stories here and there—such as cut-flower exports—without diversification and expansion of economic opportunities for large numbers of people, does not suggest that the lives of ordinary Ethiopians are improving, and that Ethiopia's middle class is exploding. More critical, this model does not illustrate that Ethiopians are in control of their future. Millions of people find it difficult to eat two meals a day in a country that is giving away its fertile farmlands to foreign investors.

This leads me to critique the "win-win" proposition advanced by such entities as international finance corporation (IFC) and private sector multinationals, hedge funds, and rich individuals that lack intellectual honesty. They suggest that FDI in commercial farming is critical for Africa. FDI in commercial farms is not altruistic. The primary motive is to make profits, secure food sources, and alternatives to fossil fuel. Investors are helped by the convergence of domestic economic, financial, and political and class interests. Just imagine how the poor can survive this well-financed assault on their social, economic, and cultural rights. In one form or another, the principle applied is the availability of untapped farmlands, markets, and rural poverty. Consequences on communities and the environment are immaterial. In a capital- and technology-poor country such as Ethiopia, there is nothing wrong in investing in fertile farmlands that would alleviate world demand for foods and biofuels while contributing to the development process. The question is "For whom and how?" Sustainability and equity are vital in development. Without both, growth is meaningless and chaos is inevitable.

It is ironic that the World Bank, International Food Policy Research Institute (IFPRI), and others agree on a set of principles that should govern investments in farmlands. In Africa, principles dictated by "Good Samaritans" are a dime-a-dozen. They dictate them but do nothing to push such principles on the Ethiopian government and on investors. Instead, they have watched the government push and impose on the poor and defenseless a laissez-faire development model that many nationalist governments would find repulsive. So far, no one has been held accountable for social and environmental degradation in Africa. Ethiopia is the worst example of this. Because fundamental principles are not enforced, inter-ethnic conflicts and terrorisms will flourish.

The global community must acknowledge the enormous gap between intentions and deeds on the ground that makes the global system untrustworthy and unreliable for the poor. Most Africans disenchanted with this unjust system ask the pertinent question "Where is the moral obligation to make repressive governments and FDI accountable to communities, the society and future generations?" If there is one notion that has given unregulated capitalism a bad name, it is corruption and greed. Unregulated FDI is full of greed. In Ethiopia, greed among officials and non-officials loyal to the governing party is legendary. Ethiopia continues to lose billions of dollars in illicit outflow of capital each year.

Greed put the world capitalist system on the brink of collapse in 2008/2009 and threatens its very existence today. FDI in farmlands is full of greed. Firms such as Saudi Star and Karuturi, and numerous hedge funds and individual investors, are not in Ethiopia to alleviate poverty, feed the hungry, and end dependency. They are not the "Mother Teresa" of the Ethiopian poor and never will be. No one blames them for exploiting the country's natural resources and human capital. They are there at the invitation of the Ethiopian government. The transnational corporations that command billions of dollars in investment assets found a willing and inviting partner at the top of the decision-making pyramid and are taking full advantage.

Conclusion

Investors do not feel obligated to apply any fair and just principle. Firms operate with political and social classes within the country and feel immune from public scrutiny. Although I have focused on Ethiopia, with a few exceptions, the entire Africa illustrates a recurring dilemma. Natural

resource endowments have become a curse. This is the reason why, each year, hundreds of thousands of African youth leave their homes and families in search of opportunities in Europe and elsewhere. Ethiopia is among the top contributors to this exodus. Building physical infrastructure such as roads, rails, dams, lavish villas, and skyscrapers is fairly easy if you receive billions of dollars in aid monies. The litmus test of credible growth in Ethiopia is the extent to which most citizens eat three meals a day, enjoy freedom, better health, safe drinking water, and better sanitation and youth look forward to employment opportunities after they complete their education. As an Ethiopian friend once confided in me, "You cannot eat the Renaissance Dam. Can you?"

I conclude with my repeated claim of collusion between global capital and domestic elites at enormous costs for households, communities, and the entire Ethiopian society. This is not a "win-win" proposition. Instead, it should be labeled "Welcome to your 'new land lord' who is not Ethiopian." I am convinced that Ethiopians and other Africans can come up with better governance and regulatory alternatives if they have freedom.

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CHAPTER 11

The Truth About Land Grabs: A Review of the Oakland Institute's Reports on Large-Scale Land Investments in the Twenty-First Century

Elizabeth Fraser and Anuradha Mittal

Introduction

In the early twenty-first century, land grabs—the purchase or lease of large parcels of land by wealthy countries and/or private investors from mostly poor countries in the Global South—emerged as a new global trend, taking place at an unprecedented scale (Daniel and Mittal 2009). This rush for global agricultural land has been spurred by a series of interlocking factors. The 2007–2008 global food price crisis caused some net food-importing countries to look outside their borders for land to guarantee their own food security. Interest emerged from private investors and speculators, who saw agricultural land as a lucrative investment opportunity. New markets—including those for carbon credits and agrofuels—created new demand for commodities such as sugar, corn, jatropha, palm oil, and forestry plantations (Ibid., pp. 5–6).

Nongovernmental organizations like The Oakland Institute and GRAIN began raising concern about the scale and impact of these land acquisitions

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(GRAIN 2008). At the same time, transnational groups like the Food and Agriculture Organization (FAO) of the United Nations and the World Bank (WB) proposed ways to turn this land rush into a win-win situation for both investors and host nations (Daniel and Mittal 2009, p. 1).

By 2011, it was apparent that little on-the-ground research existed on the impacts of increased land acquisitions in the Global South, and in particular, Africa. That year, The Oakland Institute—a think tank dedicated to increasing public participation and fair debate on pressing social, economic, and environmental issues (The Oakland Institute n.d.-a)—published a series of seven country case studies, entitled "Understanding Land Investment Deals in Africa."[1] The reports involved extensive field research in Ethiopia, Mali, Mozambique, Sierra Leone, Sudan, Tanzania, and Zambia. Since then, The Oakland Institute has continued its in-depth reporting on land rights, extending to many other countries including Uganda, Papua New Guinea, Cameroon, Ukraine, and Sri Lanka (The Oakland Institute n.d.-d).

This paper examines many of the lessons distilled from The Oakland Institute's extensive research on land grabs. In particular, it will critically examine six core misconceptions often associated with large-scale land investments. This paper will also examine positive investment alternatives, drawing upon a second commissioned study by The Oakland Institute focused on successful agroecological projects in Africa (The Oakland Institute n.d.-b).

Investment in agriculture globally is important; however, the current trajectory of global agricultural investments is troubling. It is imperative that agricultural investments in the Global South take place in a way that increases agricultural productivity, while also increasing local food security, supporting livelihoods, recognizing land rights, and protecting the environment.

Background

In the late 2000s, a new trend in foreign direct investment (FDI) emerged. On the heels of the Great Recession and the global food price crisis, the world witnessed a significant increase in investments in arable land in the Global South (Daniel and Mittal 2009). These investments often came with promises of increased employment, improved infrastructure, and more for host countries.

The upswing in investments in agriculture—in particular the purchase or long-term lease of vast swaths of farmland in the Global South—has been

attributed to three interlocking issues. The first is food security. The 2007–2008 global food price crisis brought food security to the forefront and many countries—especially in the Middle East and Asia—began looking to stabilize their food prices and supply by acquiring land elsewhere for food production (Ibid., p. 2). By 2008–2009, this trend was evident: Qatar had acquired land in Kenya, Vietnam, Cambodia, and Sudan for a variety of food production projects; China had acquired land and made agricultural investments in Zimbabwe and Mozambique; and South Korea had acquired over one million ha of land in Sudan, Mongolia, Indonesia, and Argentina (Ibid., pp. 2–3).

Around the same time, new markets for nonfood crops—such as agrofuels and forestry-based carbon credits—began to grow at incredible rates. In the case of agrofuels, 2009 legislation in the European Union (EU) set a target that "20 percent of all energy used in the EU and 10 percent of each member state's transport fuel" would come from renewable sources by the year 2020 (The Oakland Institute 2011b, p. 6). Likewise, the US Renewable Fuel Standard aimed to "increase ethanol use by 3.5 billion gallons between 2005 and 2012" (Daniel and Mittal 2009, p. 4). This led investors to seek out lucrative opportunities to grow large quantities of crops such as sugar and jatropha for agrofuels. Countries in sub-Saharan Africa boast cheap land and labor, and have opaque land laws, making them ideal places for such investments (Ibid.; The Oakland Institute 2011b, pp. 5–6).

In the face of climate change, new market opportunities for carbon credits also emerged. Programs including the clean development mechanism (CDM) and reducing emissions from deforestation and forest degradation (REDD+) created systems where wealthy, high carbon-emitting countries in the Global North can offset their emissions by investing in carbon sequestration projects in the Global South (Lyons et al. 2014, p. 3). This has led to increased demand in forestry plantations in the Global South.

Finally, financial speculation and investment have impacted the land rush. A wide array of financial investment firms—from corporations to investors and hedge funds—saw opportunities in agricultural investments. For instance, starting around 2007, Morgan Stanley and Goldman Sachs both invested in farmland internationally and BlackRock Inc. set up a US$200 million agricultural hedge fund, 15 percent of which was specifically earmarked for acquiring land (Daniel and Mittal 2009, p. 4).

Land investments and acquisitions occurred in the Global South before 2008; however the scale of these investments in the late 2000s was

unprecedented in recent history. Indeed, in the decade leading up to 2008, the average annual expansion rate of agricultural investments was about four million ha per year. In comparison, in 2009 reported large-scale land deals totaled 56 million ha, an area the size of France. The great majority of those deals were happening in Africa (The Oakland Institute 2011b, p. 6).

Land grabs have continued since The Oakland Institute's original reporting took place. While several of the case studies outlined in this paper draw upon research conducted in 2010 and 2011, the trends and misconceptions offered are still relevant in today's investment climate.

Examining Common Misconceptions of Land Grabs

Land deals in the twenty-first century have demonstrated many troubling trends: ignoring the customary land rights of indigenous and rural communities; failing to properly consult with local communities or offer proper compensation once land is seized; meeting resistance and protest against land grabs and displacement with violence, intimidation, and arrest; and failing to make information about the land deals publically available.[2]

Alongside these negative trends, institutions and investors in favor of land grabs assert that this type of FDI can provide a win-win situation for host countries. Many argue that large-scale land acquisitions can improve food security, create jobs, improve infrastructure, and spur economic development (Daniel 2011, pp. 29–30).

This section draws upon extensive field research carried out by The Oakland Institute since 2010 that debunks many of the misconceptions put forward by proponents of land grabs.

Misconception 1: Land Leased to Foreign Investors for Agricultural Development Will Improve Food Security

It has been suggested that land acquisitions can boost agricultural production in traditionally low productivity regions, and thus increase local and global food security (Daniel 2011, p. 29). However, evidence from the ground suggests otherwise. Numerous deals have converted land previously used for smallholder agriculture into agrofuel and forestry plantations, taking land away from food production. Three examples illustrate this trend.

In recent years, the Norwegian forestry company *Green Resources* has had active timber and charcoal projects in Mozambique, Tanzania, and Uganda (Lyons et al. 2014). The company claims to have planted more trees than any other private company in the last ten years, invested over US$125 million in planting trees in Africa, and was allegedly one of the first international companies to receive carbon credits for its plantation forests (Ibid., p. 3).

In Uganda, the company has a 50-year license over 11,000 ha of land where it has developed a forestry project for climate change mitigation (Ibid.). This project has brought significant problems to nearby villages. Up to 8000 villagers have lost land for grazing cattle, cultivating food, gathering fuel and medicinal plants, and other pertinent livelihood and survival activities. Community members have also lost livestock and property, and faced violence and intimidation since the project began (Ibid., p. 2). This has directly impacted villagers ability to survive and threatened community members' food security.

In Zambia, foreign hedge and pension funds have become "actively involved" in land investments thanks to low levels of taxation, the low cost of land, the perception of a politically stable country, and a "foreigner-friendly investment climate" (Horne 2011b, p. 20). One such investment group is Chayton Atlas. In 2011, Chayton Atlas was establishing a US$50 million agribusiness venture in Zambia, with a plan to develop 10,000 ha for crop production (Ibid., p. 26). The company's Investment Promotion and Protection Agreement had a clause allowing the firm to export 80 percent of the food it grew (Ibid., p. 41). At the time, more than 50 percent of Zambia's population was unable to meet their minimum nutritional needs, making local food security a vital issue (Ibid., p. 16). Indeed, as a researcher for The Oakland Institute noted:

> As land pressures increase and more awarded leases are cleared and developed, displaced farmers will move to more and more marginal lands, communal resources will be diminished, climate-related variability will increase periods of extreme food security and food/land-related conflict will increase. (Ibid., p. 40)

Finally, in Mali, by 2011 nearly 545,000 ha of the country's fertile land had been leased or was under negotiation to be leased (Baxter 2011a, p. 1). At the time, 70 percent of the country's population was involved in the agricultural sector, with smallholders producing most of the country's food;

two thirds of the population lived below the poverty line; and one third of children under five were chronically malnourished (Ibid., pp. 6–8). Despite these significant issues, research conducted in 2010 revealed that more than 40 percent of land deals in the country focused on producing agrofuels rather than increasing food production (Ibid., p. 1).

Land acquisitions that did focus on food production in Mali also posed significant issues. For example, 100,000 ha of land in Mali's "Office du Niger" region was secured for development by the Libyan-based "Africa Investment Portfolio" in a project known as Malibya (The Oakland Institute 2011e). The land was acquired for a large-scale irrigation rice scheme, and was offered free for 50 years (Ibid.).

The director of Malibya claimed that the project would increase food security in Libya without negatively impacting the situation in Mali (Ibid.). However, the leased land displaced numerous female farmers from garden plots, where they had produced food for local consumption and sale. These women were not consulted with or compensated for their loss of land and livelihoods (Ibid.). In addition, Malibya's contract did not require any of rice produced to be bought or sold in Mali, and even if it had, the hybrid rice variety that was to be cultivated was deemed unsuitable for local markets (Ibid.).

Local food security is a serious issue for many of the countries targeted for land grabs. According to the FAO, most nations in Africa—including the three case examples mentioned above—are net food-importing nations (Rakotoarisoa et al. 2011, p. 16), and between 2005 and 2009, Mali switched from being a net food-exporting to a net food-importing nation (Valdés and Foster 2012, p. 9). Mali and Uganda were also recipients of the direct transfer of significant amounts of food aid in 2012—approximately 43,000 MT and 39,000 MT, respectively (World Food Programme 2013).

This raises serious questions about the impact of shifting land from smallholder agriculture to large-scale industrial agriculture where significant amounts of land are concentrated in the hands of a few. In Mali in 2011, the average size for crop-based agriculture in the country was 4.7 ha, with one third of farming households cultivating plots less than one hectare in size (Baxter 2011a, p. 39). The land deals reviewed by The Oakland Institute in Mali include enough land to sustain 112,537 farm families—the equivalent to well over half a million people. However, these proposed large-scale land deals would concentrate that land in the hands of just 22 investors, many of whom were given significant tax breaks to entice their business (Ibid.). In this context, it is hard to imagine how leasing large quantities of arable land

for export agriculture, agrofuels, and carbon credits could have a positive net effect on food security.

Misconception 2: The Gulf States, China, Malaysia, and India Are the Largest Land Grabbers: To Feed Themselves

Many focus on the role of countries such as the Gulf States, China, Malaysia, and India as primary global land grabbers, looking to feed their own populations (Daniel and Mittal 2009). While land grabs have taken place for this reason, focusing solely on these actors ignores other important players and factors.

Some of the largest and most egregious land grabs in the twenty-first century have been led by hedge funds and private investors from the West, looking to profit off of cheap agricultural land. In many cases, these investments are purely for speculative purposes, with little to no focus on the actual outcomes of the proposed projects. Indeed, Susan Payne, the former CEO of Emergent Asset Management, was quoted in 2011 as saying:

> In South Africa and Sub-Saharan Africa, the cost of agri-land, arable good agri-land that we're buying is one seventh of the price of similar land in Argentina, Brazil and America. That alone is an arbitrage opportunity. We could be moronic and not grow anything and we think we will make money over the next decade. (The Oakland Institute 2011d, p. 1)

Three examples from The Oakland Institute's research illustrate these trends.

(a) *Texan Interests in South Sudan*

One of the largest land deals that The Oakland Institute has exposed was struck between the Texas-based Nile Trading and Development Inc. (NTD) and the South Sudanese Mukaya Payam Cooperative in March 2008 (The Oakland Institute 2011f). The deal, which cost US$25,000, was for a 49-year lease on 600,000 ha of land, with a possible extension of 400,000 additional hectares. The lease gave NTD unencumbered access to exploit all natural resources on the land, including timber, carbon credits, agriculture, mining and gas exploration, and subleasing the land. According to company documents reviewed by The Oakland Institute, it appeared that plans to develop the land focused on the production of jatropha and palm

oil for biodiesel fuel with the possibility of a forestry operation for carbon credits (Ibid.).

At the heart of this deal was a myriad of Western interests. Nile Trading and Development Inc. was an affiliate of another Texas-based company, Kinyeti Development LLC. The leadership of Kinyeti, who played an instrumental role in negotiating the South Sudanese deal, included former US Ambassador at Large and Coordinator of Refugee Affairs in Sudan (1981–1985), the late Howard Eugene Douglas, and a UK national named Leonard Henry Thatcher, who had previously been a securities broker on the London Stock Exchange (Ibid.).

Among the many suspicious aspects of this deal were allegations that the Mukaya Payam Cooperative was a "fictitious" entity and that the lease was signed "behind the backs of the entire community" (Ibid.). Not long after The Oakland Institute released its report, local community members and government leaders launched protests against the land deal, and it was reversed (The Oakland Institute n.d.-e).

(b) *Iowa's Interest in Tanzanian Farmland*

A second example of a Western-backed land grab in Africa is the case of AgriSol Energy LLC and their planned agriculture development project in Tanzania. In 2011, The Oakland Institute reported on AgriSol's proposed deal to lease over 325,000 ha of land in three regions of Tanzania (The Oakland Institute 2011a). The lease was part of a joint project between Iowa-based Summit Group, Pharos Financial Group, AgriSol Energy LLC, and Iowa State University. At the heart of the deal was Bruce Rastetter, who concurrently acted as the CEO of Summit Group and Pharos Ag, the cofounder and Managing Director of AgriSol Energy LLC, and a major donor and member of the Board of Regents at Iowa State University (Ibid.). The goal of the project was to engage in large-scale crop cultivation, beef and poultry rearing, and biofuel production.

The AgriSol project was contingent upon two controversial changes in Tanzania—the evacuation of current inhabitants in the three regions named for development (see Misconception 3 for more details on this) and a change in the government of Tanzania's regulatory laws regarding biotechnology and genetically modified crops (Ibid.). As a result of the exposure brought to this project by The Oakland Institute and other partner organizations, Iowa State University withdrew from the project, and AgriSol has

failed to ever break ground on the project (The Oakland Institute 2012b, August 23).

(c) *University Pensions Fund Land Grabs in Africa*

Finally in 2011, The Oakland Institute investigated large-scale land acquisitions made by Emergent Asset Management and one of their joint ventures, EmVest Asset Management. At the time, Emergent Asset Management was a private limited liability company based in the UK and minority owned by Toronto Dominion Bank (The Oakland Institute 2011c). The company's leadership included former employees from Goldman Sachs and JP Morgan, and claimed to manage the largest agri-fund in Africa (Ibid.). Through their joint ventures, Emergent acquired large quantities of land in sub-Saharan Africa for industrial-scale agricultural projects. This was made possible by the financial backing of investors in their joint venture, EmVest, including pension funds from Harvard University, Vanderbilt University, and Spelman College (Ibid., p. 2). Due to pressure and exposure by The Oakland Institute, Vanderbilt University divested US $26 million from EmVest in 2013 (Vanderbilt Responsible Endowment Campaign 2013).

As these and other case studies reveal, there is significant Western interest in agricultural land in Africa. This is often spurred by financial investors and speculators, whose interest is primarily in garnering profits for their clients, rather than ensuring the well-being of local farmers. Given the role that financial speculators have played in the global food price crisis (Mittal 2009), it is imperative to scrutinize the actions and interests of Western actors in the land rush.

Misconception 3: Land Leased to Foreign Investors Is Empty or Vacant Land

A third myth is that land leased to foreign investors is vacant, available, and/or underused land. This notion overlooks traditional, non-sedentary livelihoods such as pastoralism and shifting cultivation that are prevalent in many parts of Africa, as well as vital alternative land uses such as traditional medicines and fuel. Often, the belief that lands are vacant or underused is also simply wrong, with communities being forcibly resettled to make way for large-scale land acquisitions. Two examples serve as illustrations.

(a) *AgriSol LLC's displacement of Burundian refugees in Tanzania*

The most egregious case of displacement that The Oakland Institute revealed is connected with the aforementioned AgriSol project in Tanzania. In 2011, AgriSol was negotiating a deal in Tanzania to engage in a variety of agricultural projects on 325,000 ha land in three locations in Tanzania—Lugufu, Katumba, and Mishamo villages. These three villages were reportedly "abandoned refugee camps" (The Oakland Institute 2011a). While Lugufu village was vacant, Katumba and Mishamo villages were not. Instead, they had been home for over 40 years to approximately 162,000 refugees who had fled mass violence in Burundi in 1972 (Ibid.). For decades, these refugees had been farming and building their lives in these villages.

Oakland Institute reports reveal that AgriSol knew about the presence of the refugees. Indeed, a memorandum of understanding between AgriSol and the local Tanzanian government authority noted that refugees were residing in the two villages, and would either be sent back to Burundi or resettled in other parts of Tanzania to make way for the AgriSol project (Ibid.). The Oakland Institute's investigation further revealed that the Tanzanian government had begun the process to naturalize the Burundian refugees in 2008; however, the citizenship for many was being withheld and made contingent on giving up their land and relocating (Ibid.).

In February 2012, after sustained criticism by local and international groups, Iowa State University withdrew as a partner on the AgriSol project (The Oakland Institute 2012a, February 16). To date, the project has not broken ground. The Burundian refugees did get their citizenship certificates in 2014, without having to vacate their homes and lands.

(b) *Forced Displacement for Foreign Investment in Ethiopia*

For years, the Government of Ethiopia has widely advertised millions of hectares of vacant agricultural land available for foreign investment. This land is often in regions of the country that are home to already marginalized indigenous and pastoralist peoples, whose livelihoods and survival relies on the use of this land.

One such region is Gambella, located in the south west of Ethiopia. The indigenous Anuak peoples of Gambella are "shifting cultivators," a process by which families farm on sedentary plots along riverbanks and cultivate land in shifting plots on higher ground. The shifting cultivation plots

protect against poor harvests along the riverbanks, and forest resources are used for medicinal purposes and as supplements when yields are low (Liu et al. 2013, p. 9).

The Anuak's have a strong connection to the land, both for their survival and cultural identity. As one Anuak interviewee noted:

> For the Anuak, land is essentially everything. . . Land is identity and is survival for the community. . . They use the land, forest, and river; everything is very vital to their survival. For the Anuak, the environment is their food source, for hunting, for fishing, for medicinal purposes. (Ibid., p. 8)

Instead of recognizing and supporting indigenous communities and their traditional livelihoods, the Government of Ethiopia has leased their ancestral land to foreign investors. The Indian company, Katuri, claimed to have secured a 99-year lease to 300,000 ha of land in the Gambella region for rice, palm oil, maize, and sugarcane (Horne 2011a, p. 19, 23). Another 10,000 ha of land along the Alwero River in Gambella was awarded to Saudi Star Agriculture Development Plc to cultivate rice for export (The Oakland Institute 2011g).

In order to ensure that the land being leased is vacant, in 2010, the Government of Ethiopia enacted the Commune Development Program (CDP), also known as the "villagization" program. The stated purpose of the CDP was to voluntarily resettle up to 1.5 million Ethiopians in four regions of the country into villages, where the Government was meant to provide better access to basic services and less arid lands (Liu et al. 2013, pp. 6–7). However, investigations by The Oakland Institute revealed a very different situation (The Oakland Institute n.d.-c).

The lands slated for villagization were the same lands being advertised and leased to large-scale investors, and the resettlement process was mired in human rights abuses. Many communities reported being forcibly resettled with threats, intimidation, and violence waged against those who resisted. People were forced to abandon crops at harvest season, resettled to inferior quality land, and the promised basic services often did not materialize (Liu et al. 2013, pp. 5–9).

The abuses experienced by the Anuak through the villagization program were so severe that countless fled the country or were arrested.[3] In 2014 and 2015, the United States Congress took steps to address the situation, by

including important language in each year's Appropriations Bills. The language states that development or economic funding for the Lower Omo and Gambella regions may not be allocated to projects that may directly or indirectly lead to forced evictions (Consolidated Appropriations Act 2014; Consolidated and Further Continuing Appropriations Act 2015). Despite these laws, serious concerns exist regarding the Government of Ethiopia's policies, ongoing land grabs in the region, and funding by multilateral agencies and development partners in regions where forced displacements continue.

As these two examples demonstrate, land is rarely actually vacant or unused in Africa. Rather, land is often inhabited by marginalized and overlooked populations, used by pastoralists or other non-sedentary groups, or offers alternative but vital resources for communities like medicine and fuel.

Many groups also lack secure rights over their land, making these acquisitions hard to fight legally. In many countries, land is nationally owned, with opaque customary rights offered to communities.[4] Customary land rights can form the basis for legal rights over land; however, often this is not the case. Even in countries like Papua New Guinea, where customary land rights are enshrined in the constitution, the government has recently begun abusing legal loopholes to transfer ownership to large-scale timber and palm oil plantations (Mousseau 2013). Thus, it is imperative to critically examine claims that large portions of arable lands are vacant or empty, and ensure that customary land rights and principles like first, prior, and informed consent are enacted in land negotiations.

Misconception 4: Large-Scale Land Investments Will Spur Economic Development, Create Jobs, and Improve Infrastructure

Companies negotiating land deals often promote myriad positive benefits they promise to bring to host countries and local villages. These can include new employment opportunities, improved infrastructure (e.g. roads, health facilities, and schools), and access to technologies and techniques that will improve local farm productivity. The Oakland Institute's field research has demonstrated that often these promises fail to materialize—and even in the most promising and internationally acclaimed projects, there can be hidden costs.

(a) *Promises of job creation and improved infrastructure*

A common thread in many of The Oakland Institute's investigations is the failure to deliver on promises of local job creation.

The Saudi Star rice project in Ethiopia promised employment on a scale of 4000–5000 employees. However, plantation jobs in the region are typically short term and seasonal, at times only employing people for three weeks in a year (The Oakland Institute 2011g).

In the aforementioned Malibya project in Mali, Malibya's Director commented that the project would "provide employment for all inhabitants of the region Ségou" with "priority given to the local population" (The Oakland Institute 2011e). However, the company contract included no concrete job creation plan. In addition, the Malibya project required the construction of canals and irrigation schemes, but these contracts were awarded to a Chinese company, increasing fears that jobs associated with the project would not be filled locally (Ibid.).

In South Sudan, a forest concession project run by Equatorial Teak promised 6000 jobs through their forest operations. When operations began, the company hired 600 people locally; however, interviews conducted with Equatorial Teak employees in 2011 revealed, among other issues, extremely low wages—the equivalent of around US$2 per day (Deng 2011). By October 2010, the company was folding and only 250 were employed (Ibid., p 32).

In Tanzania, UK-based Sun Biofuels offered permanent jobs and improved infrastructure when they negotiated the lease of 8211 ha of land in Tanzania. The project, which would be developed in part on the land of 11 existing villages, would see the creation of a jatropha plantation and agrofuel processing plant (Bergius 2012).

Tanzanian law dictates that communities must be consulted with prior to land deals being approved. Thus, during so-called consultations with the 11 villages, Sun Biofuels offered 1500 permanent jobs once the plantation was fully operational and various infrastructure improvements, such as roads, clinics, wells, and schools (Ibid., p. 3). Interviews with villagers later revealed the one-sided nature of these consultations, with many commenting that they were not moments for negotiation but rather informational sessions run by the company. In addition, the promises made by Sun Biofuels were not formalized in a contract, making it difficult for villages to hold the company accountable (Ibid.).

Between 2009 and 2011, the company employed 750 people. However, households with family members working at the plantation declined economically. These households saw a decrease in their agricultural productivity, causing them to purchase more food at local markets. The Sun Biofuels plantation also seriously impacted the accessibility of clean water and fuel for local communities, requiring many to purchase or travel significant distances to access these vital resources (Ibid., pp. 5–6). Ultimately, households reported that the take-home pay of plantation workers was insufficient to offset the increase costs of living once the plantation was built.

In 2011, just two years after the project began, Sun Biofuels filed for bankruptcy. Six-hundred employees were let go, and the majority of the company shares were purchased by 30 Degrees East, a private firm registered in Mauritius (Ibid., p. 6). At the time of The Oakland Institute's research, the fate of local villagers was unclear. Those still employed at the plantation were mostly security guards, tasked with ensuring that local villagers did not try to reclaim or use the land. Ultimately, no compensation had been paid to villagers, promises of infrastructure were unrealized, access to water and other land and forest resources was not available, and jobs, which were problematic from the very beginning, were gone.

(b) *Agrica and the failure of out-grower schemes in Tanzania*

Projects often also promise direct or trickle-down benefits to local farmers through training, out-grower schemes, and the introduction of new technologies and techniques. These are meant to both increase yields locally and connect smallholder farmers to larger markets. Agrica, a UK-based company, has offered one such scheme through their large rice plantation project in Tanzania.

In 2007, Agrica entered into a public-private partnership with the Rufiji Basin Development Authority to form Kilombero Plantations Ltd. (KPL) (Bergius 2015, p. 6). At the heart of KPL's work is a 5818 ha rice plantation, located in Kilombero Valley, Tanzania. KPL is often promoted as an example of a truly sustainable and locally beneficial agricultural project—praise that has garnered the project investment from Norfund, the Rockefeller Foundation, the Bill and Melina Gates Foundation, and billionaire Jeff Skoll (Ibid.). The project is comprised of a core "nucleus" farm, where significant rice production occurs, as well as an out-grower scheme available to local farmers. As part of this scheme, interested farmers are trained in new techniques to boost rice productivity, called "System of Rice

Intensification" (SRI), and then given the opportunity to become contract farmers for KPL (Ibid., p. 17).

In 2009, KPL began piloting their farmer training program, initially training just 15 farmers in SRI techniques. Funding from the African Enterprise Challenge Fund and USAID expanded the training program significantly, and by 2014, 6527 farmers had been trained (Ibid.). That same year, 800 of the trained farmers joined KPL's out-grower scheme. As part of the program, these farmers entered into strict contracts that detailed what they would grow, using which techniques, how their product would reach market, and what price they would receive for it. Out-grower farmers also received loans for various pre-determined inputs that they were required to use, whether they felt they were necessary or not (Ibid., p. 18).

It is important to note that SRI techniques have been beneficial to many farmers in Tanzania—The Oakland Institute's report notes that yields improved even to the point that local farmers were out-producing the nucleus farm run by KPL (Ibid.). However, the restrictive nature of the loans and contracts of the out-grower scheme created a "nightmare" for farmers (Ibid., p. 20). Many were forced into distress sales of their assets to pay back loans, which were due before the harvest season. In 2014, the price of rice also dropped locally, and many farmers reported being held responsible for the change in prices, despite prearranged price guarantees in their contracts (Ibid., pp. 18–19).

Ultimately, as a result of the exploitative nature of the out-grower scheme, most have quit. The SRI techniques remain valuable, and many local farmers are now self-organizing to get micro-loans and access to markets themselves (Ibid., p. 20). However, the purported larger benefits brought forward by Agrica have not yielded positive outcomes, and instead plunged many farmers into substantial debt.

Misconception 5: The World Bank Supports Smallholder Farmers Through Its Agricultural Development Work in the Global South

The World Bank Group has long been involved in agricultural development in the Global South, and their role in supporting land grabs is no exception. Indeed, the Bank's neoliberal approach—including promoting land markets, market liberalization, and increased foreign direct investment—has significantly aided the land rush in Africa in many ways.

(a) *The role of the IFC and FIAS in encouraging land grabs in Africa*

Two institutions within the World Bank Group have had a particularly significant impact on land grabs: the International Finance Corporation (IFC) and the Facility for Investment Climate Advisory Services (FIAS). Both fall under the private sector arm of the World Bank Group and focus on offering state governments and investors technical expertise and advisory services on investment policies, regulation, and foreign investment (Daniel and Mittal 2010, p. 9).

In the 2000s, FIAS developed several products to help increase private sector investment in land, including the Access to Land product, the Investing Across Borders program, and the Land Market for Investment product (Ibid., pp. 14–16). Together, these tools help countries change processes and regulations to speed up acquisitions of land by offering services such as drafting national policies, setting up investment promotion agencies, promoting land markets, and more (Ibid.).

Unsurprisingly, these World Bank agencies and tools have had a direct influence in the rise of land investments globally. For instance, FIAS became involved in post-war Sierra Leone, to help spur FDI and private investment in the country. Among their activities, in 2006 FIAS helped launch the "Removing Administrative Barriers to Investment" (RABI) project, which led to many reforms, including dropping the cost of registering a company from US$1500 to US$50, making customs procedures for foreign investors simpler, decreasing tax requirements for new businesses, and simplifying the tax system overall (Ibid., pp. 23–25).

FIAS also helped create the Sierra Leone Investment and Export Promotion Agency (SLIEPA), an agency that advertises cheap and abundant land, free water resources, cheap labor, zero percent corporate income tax, and created a guide for foreign investors on how to acquire land (Baxter 2011b, p. 14). In the late 2000s, SLEIPA's Agribusiness Investment Task Force also began identifying land for foreign investment, and began working on the ground to "sensitize" communities and fast-track the process of land acquisition for investors.

These activities led to a vast change in FDI and land acquisitions in Sierra Leone. Between 2000 and 2005, FDI to Sierra Leone averaged US$18 million per year. By 2007, FDI was US$81 million (Ibid., p. 15). In addition, by 2011, an estimated 500,000 ha of land had been leased for large-scale agriculture—often for crops such as sugar and palm oil (Ibid., p. 21).

(b) *Doing Business and enabling the business of agriculture rankings*

A second set of World Bank tools that have impacted land grabs are the annual Doing Business and Enabling the Business of Agriculture reports. Doing Business (DB) is a country-by-country economic ranking system that examines the "ease of doing business" in countries globally. Enabling the Business of Agriculture (EBA) is a similar ranking tool developed in 2013 that promotes the development of more "modern" agricultural sectors (Martin-Prével 2014b, p. 4). These two annual reports have become go-to resources for private investors, development institutions, and donor countries, and as a result have had a significant influence over governance decisions in countries in the Global South.

Both systems reward countries with higher rankings when they take actions to modernize their agricultural sectors or incentivize FDI. For instance, in 2010 Liberia jumped five spots in the "starting a business" category of the DB report for no longer requiring general trading companies to conduct environmental impact assessments (Martin-Prével 2014c). In 2013, Mali likewise improved its ranking by lowering corporate income taxes (Martin-Prével 2014d). Countries can also be penalized by the program, as was the case in Sierra Leone in 2010 when the country increased trade fees and thus dropped five spots in the DBs "Trading Across Borders" category (Martin-Prével 2014e).

The Oakland Institute has revealed serious flaws in the DB/EBA systems and methodology. The rankings for both systems are not, for instance, based on comprehensive, independent studies, or on indicators with proven ties to poverty reduction. Internal World Bank documents highlight many concerns with the methodology for these programs, including "cherry picking" by report authors and overlooking positive aspects of regulation (Martin-Prével 2014b, p. 7). The two systems are also based on the assumption that less regulation and easier administrative processes are inherently good, an assumption that overlooks the importance of building detailed systems like company registries (Ibid.).

The two reports have also gained significant influence over the years, moving well past their initial purpose as informational tools. An independent review of the DB program noted that the reports were being used to direct investments by not only investors but also the World Bank and other donor countries and agencies (Ibid.). The World Bank already possesses incredible power and influence over agricultural development through its direct giving, which in 2012 totaled over US$35 billion (Martin-Prével

2014a, p. 4). The increased influence of these ranking systems further perpetuates this influence, creating a situation where countries reliant on World Bank funding can do little to oppose the neoliberal reforms promoted by the Bank (Ibid.).

(c) *The promotion of land markets*

Lastly, the World Bank has heavily promoted the creation of land markets in the Global South (Ibid., p. 6). The Bank suggests that land markets will help pastoralists and smallholders by securing their land rights and helping them access credit and loans. However, research in Tanzania has refuted many of these claims. Farmers in the country have not had greater access to loans and credit through having formal land titles. Instead, between 2009 and 2013, it was shown that the formalization of property rights had led to increase in social conflict, deeper levels of poverty and inequality, increase landlessness, and the exclusion of women and pastoralists (Ibid.). Indeed, as The Oakland Institute has reported, the shift to privatized land means that "land quickly turns from being an ancestral asset with deep livelihood and cultural significance into a marketable commodity," with lack of regard for customary land rights and traditional livelihoods (Martin-Prével 2014b, p. 6).

Taken together, the actions and influence of the World Bank have significantly promoted and aided the land rush in Africa. This has not improved the well-being of smallholder farmers but rather led to many of the trends outlined in this paper, including the loss of land and livelihoods for many.

Misconception 6: Large-Scale Plantations and Agriculture Projects Are More Productive Than Small-Scale Farming

The land deals investigated by The Oakland Institute all promote large-scale industrial agriculture. Often these projects are justified through discussions of food insecurity and the need to feed the world's growing population. There is no doubt that hunger, malnutrition, and food security are all important issues globally. However, there are many examples of nonindustrial agricultural techniques that can boost yields and incomes while also protecting the environment and land rights.

In 2015, The Oakland Institute published 33 case studies that examine the successful application of agroecological principles and techniques in

Africa (The Oakland Institute n.d.-b). Agroecology is known as the "application of ecological science to agriculture and agroecosystems" (Ibid.). It is associated with a wide variety of practices and techniques, all of which adhere to three core principles: environmental preservation, social fairness, and economic viability. Agroecological practices are often knowledge intensive—requiring significant resources to pass on information—and involve adaptation to different local contexts (Ibid.).

The case studies presented by The Oakland Institute demonstrate a wide variety of positive impacts. Many projects, like the application of Integrated Production and Pest Management systems in West Africa, decrease the quantity of commercial inputs like fertilizers and pesticides that are required to achieve high yields (The Oakland Institute 2015e). This not only decreases farmers' costs (thus increasing their incomes) but also protects the environment.

Many of the projects also build more resilient ecosystems. For instance, in Malawi and Zambia, government policies helped farmers move away from intensive maize cultivation after decades of intensive, monoculture farming. Instead, farmers have integrated more drought-resistant crops, like cassava, into their farming practices, increasing resilience in times of drought and increasing diversity into their farming practices (The Oakland Institute 2015b).

Other projects specifically focus on addressing environmental issues like soil erosion and deforestation. In Malawi, the Agroforestry Food Security Project worked with local farmers to choose and plant a wide variety of locally appropriate trees and shrubs to address issues of deforestation, depleted soil quality, food security, and fuel shortages (The Oakland Institute 2015a). Between 2007 and 2011, the program reached nearly 185,000 farmers, distributed over 350,000 fruit tree seedlings, and demonstrated positive effects on the environmental and local food security (Ibid.).

Finally, many of the case studies examine the importance of boosting yields. One example is the application of System of Rice Intensification (SRI) techniques in Mali (The Oakland Institute 2015d). SRI was first developed in Madagascar in the 1980s and involves a series of changes in rice cultivation—from planting seedlings earlier, to spacing them farther apart, and only planting one seed per pocket. SRI has led to significant increases in yield and has spread to over 20,000 farmers in Madagascar, and to over two dozen countries in Asia, Latin America, and Africa (Ibid.).

SRI was first piloted in the Timbuktu region of Mali between 2007 and 2009, as part of a project led by the NGO Africare (Ibid.). In the first trial season (2007–2008), SRI led to a 34 percent increase in yields and in the

following year, it resulted in increases of between 45 and 105 percent (Ibid.). While the techniques are more labor intensive, SRI uses fewer inputs—including less fertilizer and up to 10 times less seed (Ibid.)—and requires less irrigation. The end result is a system that increases farmer incomes, yields more food for local consumption, has low equipment needs, and is more drought resistant and environmentally friendly.

A second important case study is based in the Tigray region of Ethiopia. In 1996, collaboration between farmers, the Institute for Sustainable Development, the regional Bureau of Agriculture and Rural Development (BoARD), and Mekelle University led to the development of a low input approach to agriculture in Tigray (The Oakland Institute 2015c). After many years of high input agriculture, which had led to substantial farmer debt without adequately addressing food security, this system had a goal of reducing chemical fertilizer use, while increasing food security and soil health in the region (Ibid.).

A large range of techniques were developed and promoted as part of the program, including but not limited to the use of organic compost; building ponds, small earth dams, and upstream check dams to hold water and prevent soil erosion at times of heavy precipitation; digging trenches between fields; planting and reintroducing a variety of grasses and trees known to fix nitrogen and prevent erosion; planting leguminous cover crops; and harvesting rain water.

By 2006, the project had been implemented in 57 communities, and the BoARD was promoting the suite of techniques through its agriculture extension projects (Ibid.).

Between 2003 and 2006, Tigrayan farmers steadily decreased their use of chemical inputs, while grain yields nearly doubled and soil health was markedly improved. By 2010, the project had benefitted an estimated 18,000–20,000 households and was expanding across Ethiopia (Ibid.).

These case studies demonstrate important and viable alternatives for agricultural development in Africa and avoid many of the negative impacts of land grabs. First, the projects have happened in collaboration with local farmers and communities, with an emphasis on local adaptation in new contexts. This is an empowering approach that can lead to important local innovations and build resilient local economic systems. Second, projects have avoided creating displacement and debt, allowing farmers to increase their household incomes while respecting local rights to land and avoiding problematic debt loads. Third, a great number of the case studies profiled have achieved significant increases in crop yields, improving food security in

the regions of the world that need it the most. Lastly, these projects have taken place without violence, social unrest, intimidation, and arrest.

Conclusion

The world is facing a series of vital and challenging issues—including climate change, global poverty, and food insecurity. However, large-scale land acquisitions—a response promoted by the World Bank and other powerful actors—fail to address these issues. Rather than offering win-win scenarios, land grabs have robbed vulnerable communities of their rights, resources, livelihoods, and land and paved the way for investors and corporations to increase their profits.

For years, The Oakland Institute has worked in collaboration with many of the communities directly impacted by these land grabs. Together, The Oakland Institute's reports and on-the-ground resistance and pressure from local communities have resulted in many important wins: the AgriSol project in Tanzania was never able to break ground; the NTD project in South Sudan was revoked; and university pensions from Vanderbilt divested from EmVest. While these wins are important, abuses in many regions—including Ethiopia and Papua New Guinea—continue.

In order to truly address food insecurity, climate change, and poverty, agricultural investments must work with communities to develop locally relevant, environmentally sustainable, and economically viable projects. The Oakland Institute's agroecology case studies highlight 33 such examples, providing strong evidence that these solutions can increase agricultural productivity, while respecting land rights and protecting the environment. As we look to the future of agriculture, it is imperative that we dispel the illusions around the benefits of land grabs, and choose a different, more just path.

Notes

1. These country case studies and all of The Oakland Institute's publications on land rights can be found at: The Oakland Institute (n.d.-d). *Land Rights*. Retrieved from: http://www.oaklandinstitute.org/land-rights-issue
2. These trends are evident throughout the case studies highlighted in this paper, including case studies in Papua New Guinea, Ethiopia, Mali, Uganda, Sierra Leone, and more.

3. For stories from Ethiopians displaced from these land grabs, please see: The Oakland Institute (2015f). *We Say the Land is Not Yours: Breaking the Silence against Forced Displacement in Ethiopia*. Retrieved from: http://www.oaklandinstitute.org/sites/oaklandinstitute.org/files/Breaking%20the%20Silence.pdf
4. For example, Ethiopia and Tanzania.

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PART V

International R&D Spillovers, Trade Linkages, and Economic Development in Africa

CHAPTER 12

International R&D Spillovers and Labor Productivity in Africa

Esubalew Alehegn Tiruneh, Evelyn Wamboye, and David O'Brien

Introduction

Nobel Laureate Robert Solow, in his growth theory, identified capital, labor and technology as drivers of growth and prosperity (Solow 1956, 1957). While Solow considered labor and capital as endogenous factors, he categorized technology, a product of research and development (R&D), as exogenous. Decades later, Romer (1990), Grossman and Helpman (1991a) and Aghion and Howitt (1992) developed new growth models that treated technology as endogenous. These models argued that the long-run productivity growth and technical progress depend primarily on R&D investment and knowledge generation and acquisition.

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Relative to neoclassical growth theory, endogenous growth model provides the opportunity to empirically estimate the impact of international (hereafter foreign) R&D spillovers on productivity, especially in developing countries whose R&D activities are still below the minimum threshold. In their seminal paper, Coe and Helpman (1995) argued that foreign R&D spillovers through bilateral trade benefits productivity of partner countries. Since then, a number of related papers[1] have been published supporting the argument that foreign R&D improves productivity. However, all of these studies, with the exception of Walley and Cushing (2013), have focused on advanced countries.

The aim of this chapter is to analyze the impact of foreign R&D spillovers from selected OECD member countries on labor productivity in Sub-Saharan Africa (SSA) over the period 1992–2011. Following Coe et al. (2009), we employ panel co-integration estimation techniques and provide estimates using dynamic ordinary least squares (DOLS). Similar to Coe and Helpman (1995), we postulate that trade is one of the channels through which spillovers are transferred to SSA via imported goods. Moreover, given the dependency on, and importance of, development aid in SSA, we model bilateral development aid as a potential conduit of foreign R&D spillovers. Similar approach has been used in Walley and Cushing (2013), where they test trade and development aid as channels through which foreign technology is transferred to SSA. However, unlike Walley and Cushing (2013), we disaggregate development aid into two categories: technical cooperation aid and non-technical cooperation aid. In doing so, we are able to evaluate spillovers effects via this channel at a more granular level. Besides, the unique components in the two categories of aid make the disaggregation more appropriate for this analysis. For example, according to OECD's definition, technical cooperation aid encompasses grants to nationals of aid recipient countries receiving education or training at home or abroad, and payments to consultants, advisers, and similar personnel as well as teachers and administrators serving in recipient countries. It supports activities whose primary role is to augment the knowledge base, skills, technical know-how, or productive aptitudes of the population of developing countries. On the other hand, non-technical cooperation aid encompasses all other elements of ODA not related to education and capacity building. It includes grants directed toward infrastructure development, public services, and administration but excludes food, humanitarian, and military aid. This implies that the intensity of foreign R&D spillovers may differ across the two categories of aid, imposing differential effects on productivity.

Consequently, this chapter complements the existing literature on foreign R&D spillovers in a number of ways. First, as previously mentioned, it has been documented in the literature that commercially oriented R&D activities are a major driver of technological progress and productivity growth in developed countries. This implies that for developing countries to accelerate their growth rate and improve income levels, they need to boost their investment in R&D activities (Adeboye 1997). The absence of data on R&D-related activities in SSA suggests miniscule levels of R&D investment in these countries. These "low levels" of domestic R&D activities imply that foreign R&D spillover is necessary—at least in the short run—to fill this gap in order to increase productivity and hence, economic growth.

Second, there is limited empirical evidence on how foreign R&D spillovers are transferred to developing countries and, the resulting magnitude of effect on productivity growth. Trade and foreign direct investment (FDI) are some of the channels that have been suggested in literature. Unfortunately, very little is known about bilateral development aid as a possible conduit. As noted before, we explore this channel in our econometric analysis and find robust evidence suggesting that countries in SSA benefit from R&D spillovers through development aid, with the magnitude of effect being higher for the non-technical cooperation component. Third, one of the major contributions of our chapter is estimating productivity effects of foreign R&D spillovers across a region of the world where productivity level is below that of other developing regions and, where domestic R&D is almost non-existence. Besides, unlike Walley and Cushing (2013), we use a larger sample, and a more recent sampling period. Moreover, we control for institutional factors that are more relevant in these countries and are viewed as important determinants of economic growth.

Literature

Labor productivity, defined as output per worker, is the main driver of long-term growth (Hall and Jones 1999). This growth differs across countries on the level of technology that stem from variations in R&D activities (Romer 1990). While some countries such as South Africa have invested in and benefited from R&D, the overall investment in R&D in SSA is still below the world average. Yet, the work of Coe and Helpman (1995) suggests that countries with low investment in R&D can augment their technological capabilities through foreign interactions that could result in R&D spillovers. For example, through bilateral trade and development aid relationships, African countries can benefit from R&D activities of advanced countries.

Indeed, productivity-enhancing contributions of R&D spillovers via trade and related channels across countries received attention in the 1990s following the endogenous growth theory. Grossman and Helpman (1991a) showed that knowledge spillovers via trade impacted output in developed countries. Other scholars including Aghion and Howitt (1992) and Coe et al. (1997) used endogenous growth theory to examine the implications of knowledge spillovers through trade on productivity among advanced countries. They found that commercially oriented innovation efforts are the major drivers of technological progress and productivity growth. Their research findings confirmed that knowledge embedded in trade improves productivity of importing nations, highlighting the importance of trade as a possible conduit through which knowledge can be transferred between countries. Barro and Sala-i-Martin (1995) and Edwards (1998) also arrived at related conclusion. Specifically, they found that countries with relatively liberal trade policies have greater chances of benefiting from technology diffusion. Similarly, Dollar and Kraay (2004) found that greater openness to trade generates economies of scale and productivity gains. There is also evidence that foreign R&D via training in developed countries has accelerated the expansion of the electronic industries in China (Cheung and Lin 2004). Other studies have evaluated technology spillover effects across industries and the role of government in bridging the technology gap between technologies brought in by foreign enterprises and the technological base of local firms (Bin 2005).

Technical cooperation is a category of development aid aimed to increase the stock of human capital through training (OECD 2009). This implies that an increase in technical cooperation funding leads to the accumulation of knowledge and skills, thereby, enhancing labor productivity in the recipient countries. In addition to technical cooperation, many African countries receive non-technical cooperation aid. This form of aid typically funds infrastructure development and public services and administration. Therefore, it has the potential of improving labor productivity through new or improved logistics and efficient means of production.

Literature on foreign aid has also focused its analysis on aid effectiveness[2] and the channels[3] through which aid impacts growth in recipient countries. Only the recent work of Walley and Cushing (2013) explore the idea that development aid can be an important outlet through which foreign R&D improves productivity in SSA. Their study, though pioneering in the African context, has limitations; including small sample of ten SSA countries. Moreover, Walley and Cushing's (2013) study restricts its sampling period

to1980–2004, which does not take into account the current period for which Africa has shown tremendous growth progress.

FDI, like trade, carries with it foreign knowledge, which helps increase productivity in the host country. It creates employment opportunities, accelerates technological change, increases training and skills, all of which have favorable consequences on economic growth and productivity (Markusen 2002). Notwithstanding, the fact that FDI is one of the potential sources of knowledge transfer and enabler of productivity, its role as a channel of R&D spillovers in Africa has not been empirically tested. Absence of adequate bilateral FDI data between SSA and advanced countries hinders such analysis.

Labor productivity is determined by technology and stock of human capital. Human capital accumulation directly adds to labor productivity and indirectly leads to efficiency gains through rapid adoption of technology (Barro 2001). A country with high levels of human capital is more likely to: attract investors, have the capacity to absorb new ideas, and engage in research and innovations (Grossman and Helpman 1991b). For example, studies by Caselli and Coleman II (2001) and Kiiski and Pohjola (2002) have found evidence that technology adoption and dissemination rely heavily on educational attainment. This implies that foreign R&D spillovers and educational attainment complement each other in their impact on productivity change (Ketteni et al. 2011).

Moreover, studies show that institutions, defined as formal rules and norms, play crucial role in improving long-term growth as well as productivity (Acemoglu et al. 2005; Acemoglu and Robinson 2013; North 1992). Good institutions allocate resources efficiently, enhance business environment, boost investment, and increase productivity. The existence of good institutions depends to a large extent on the stability of political environment, internal conflict, and democratic accountability, among others.

Estimation Strategy

This chapter adopts the endogenous growth theory to analyze the nexus between labor productivity and foreign R&D spillovers through bilateral trade and development aid. Following Aghion et al. (2009) and Aghion and Howitt (1992, 2009), we start with a typical production function:

$$Y = f(A, L, K \ldots) \tag{12.1}$$

where, Υ represents output, L labor, K capital, and A technology. We assume that technology, a product of R&D, is endogenous. Equation (12.1) can be represented in a form of Cobb–Douglas production function:

$$Y = AL^{\alpha}K^{\beta}S^{\lambda}e^{\varepsilon} \tag{12.2}$$

where, S is R&D stock and ε is the error term. Since R&D stock for open economies may come from domestic and foreign sources, we disaggregate S in Eq. (12.2) as shown in 12.3:

$$Y = AL^{\alpha}K^{\beta}\left[(DRD)^{\gamma 1}(FRD)^{\gamma 2}\right]^{\lambda}e^{\varepsilon} \tag{12.3}$$

DRD and FRD are domestic and foreign R&D, respectively. When Eq. (12.3) is divided by labor and transformed into log, it provides an empirical model:

$$\ln lp_{it} = \alpha \ln x_{it} + \ln \varphi_i + \varepsilon_{it} \quad i = 1, 2 \ldots N, t = 1, 2, \ldots..T \tag{12.4}$$

where, ln is the natural logarithm operator, lp_{it} represents labor productivity of a SSA country i over the years 1992–2011, t is year, x is a set of variables that determine labor productivity including international R&D expenditure, ε_{it} is an independently distributed error term with $E(\varepsilon_{it}) = 0$ for all i, and t , φ_i is unobserved country-specific time-invariant, which may be correlated with variable x but not with ε_{it}.

Equation (12.4) can be further rewritten into foreign R&D spillovers model developed by Coe and Helpman (1995) as:

$$\begin{aligned}\ln lp_{it} = {} & \alpha_i + \beta_1\left[m_{it}\ln\left(\sum\nolimits_{i\neq j}\frac{M_{ijt}}{M_{it}}FRD_{jt}\right)\right] \\ & + \beta_2\left[tc_{it}\ln\left(\sum\nolimits_{i\neq j}\frac{TCODA_{ijt}}{TCODA_{it}}FRD_{jt}\right)\right] \\ & + \beta_3\left[ntc_{it}\ln\left(\sum\nolimits_{i\neq j}\frac{NTCODA_{ijt}}{NTCODA_{it}}FRD_{jt}\right)\right] + \beta_4 GS_{it} + \beta_5 HC \\ & + \varphi_i + \varepsilon_{it}\end{aligned} \tag{12.5}$$

where, m_i is country i's bilateral imports share of GDP, M_{ij} is bilateral import of country i from its trading partner country j, M_i is import of country i from all its nine OECD trading partners, tc_i is country i's share of technical cooperation aid in GDP, $TCODA_{ij}$ is country i technical cooperation aid received from country j, $TCODA_i$ is country i technical cooperation aid received from nine OECD member countries, ntc_i represents country i's share of non-technical cooperation aid in GDP, $NTCODA_{ij}$ is non-technical cooperation aid given to country i from country j, $NTCODA_i$ is non-technical cooperation aid of country i from all nine OECD member countries, and FRD_{jt} is country j's R&D capital stock. i and j refer to domestic and foreign country, respectively.

Three weight[4] schemes are used to construct foreign R&D capital stock. The first is the weighted foreign R&D spillover via imports, $\ln\left(\sum_{i\neq j}\frac{M_{ijt}}{M_{it}}FRD_{jt}\right)$, the second via technical cooperation aid, $\ln\left(\sum_{i\neq j}\frac{TCODA_{ijt}}{TCODA_{it}}FRD_{jt}\right)$, and the third through non-technical cooperation aid, $\ln\left(\sum_{i\neq j}\frac{NTCODA_{ijt}}{NTCODA_{it}}FRD_{jt}\right)$. In addition to foreign R&D spillover effects via trade and development aid, we control for government stability (GS) and human capital development.

Dynamic OLS (DOLS), Unit Root and Co-integration Tests

Consistent with estimations of long-run co-integrating relationships, first we test the model variables for unit roots and co-integration. Panel unit root tests, analogous to the time-series augmented Dickey–Fuller tests [(Levin et al. 2002)'s *Levin-Lin-Chu* (LLC) and (Breitung 2001)'s *Breitung*] are used. Test results show that we cannot reject the null hypothesis of no co-integration at levels. Consequently, the LLC and Breitung unit root tests results reported in Table 12.1 are based on first-differenced data. Panel co-integration tests (Pedroni 1999, 2001, 2004), done as pooled (within dimension) and group mean (between dimension), which include nonparametric (rho-statistic and v) and parametric [augmented Dickey–Fuller (ADF) and t-statistic] tests, are presented in Table 12.2. The results are robust at one percent level for all the relationships specified when the t-statistic test is used. Generally, in most cases, we observe co-integrating

Table 12.1 Levin-Lin-Chu and Breitung panel unit root tests (1992–2011)

	Levin-Lin-Chu (adjusted t)	*Breitung (lambda)*
Real GDP per worker	−6.806	−5.257
	(0.000)	(0.000)
R&D spillovers/trade	−7.92	−4.08
	(0.000)	(0.000)
R&D spillovers/TCODA	−9.165	−11.261
	(0.000)	(0.000)
R&D spillovers/NTCODA	−11.33	−9.799
	(0.000)	(0.000)
Human capital	−4.276	−4.845
	(0.000)	(0.000)
Government Stability	−7.757	−5.281
	(0.000)	(0.000)

Note: All statistics are based on first-differenced data, p-values in parenthesis, time trend is included in both tests. Ho: Panels contain unit roots; Ha: Panels are stationary

relationships in both the pooled and group mean tests, which suggest that meaningful long-run relationships can be estimated using either pooled or group mean estimation techniques.

In this chapter, we use Pedroni's (1999, 2001, 2004) dynamic OLS (DOLS)—an extension of the individual time-DOLS—to estimate the long-run relationship between labor productivity and foreign R&D spillover effects while controlling for human capital and government stability (Eq. 12.5). DOLS technique, introduced by Saikkonnen (1991), has received wide recognition due to its simplicity as well as its inclusion of the lead and lag terms of first-differenced explanatory variables in the regression equation. It corrects the nuisance parameter, hence, providing coefficients with improved limiting distribution properties (Kao et al. 1999). Moreover, it can be applied to data that are non-stationary and exhibit co-integrating relationships between variables. Pedroni extended DOLS estimation technique to panel data, which estimates each individual in the panel as follows:

$$y_{i,t} = \alpha_i + \beta_i x_{i,t} + \sum_{j=-p}^{p} \gamma_{i,j} \Delta x_{i,t-j} + \varphi_{i,t}^{*} \tag{12.6}$$

where, i is the number of units in the panel, t is the number time periods, p is the number of leads and lags in the DOLS regression, β_i is the slope

Table 12.2 Pedroni Panel Co-integration tests (1992–2011)

	Pooled tests				*Group mean tests*		
	v	*rho*	*t*	*ADF*	*rho*	*t*	*ADF*
Labor productivity, R&D spillovers (import)	−2.032**	−7.581***	−18.660***	−7.779***	−4.416***	−19.260***	−2.846***
Labor productivity, R&D spillovers (import), human capital	−2.678***	−3.726***	−16.810***	−5.965***	−1.619*	−18.080***	−3.264***
Labor productivity, R&D spillovers (import), human capital, Gov. stability	−3.247***	−1.672*	−15.27***	−6.576***	0.304	−16.490***	−1.906**
Labor productivity, R&D spillovers (TCODA)	−2.391***	−7.291***	−17.37***	−6.044***	−3.916***	−17.170***	−2.553***
Labor productivity, R&D spillovers (TCODA), human capital	−2.929***	−3.355***	−15.41***	−6.086***	−1.162	−16.020***	−2.502***
Labor productivity, R&D spillovers (TCODA), human capital, Gov. stability	−3.456***	−1.294	−13.900***	−5.169***	0.793	−14.630***	−2.477***
Labor productivity, R&D spillovers (NTCODA)	−2.319***	−7.624***	−19.300***	−5.348***	−4.300***	−19.730***	−0.195
Labor productivity, R&D spillovers (NTCODA), human capital	−2.921***	−3.927***	−17.420***	−5.591***	−1.610*	−18.340***	−1.358
Labor productivity, R&D spillovers (NTCODA), human capital, Gov. stability	−3.447***	−1.645*	−15.230***	−1.12	0.396	−16.310***	1.938**

Note: The reported test statistics are Pedroni, (1999, 2001, 2004), nonparametric (rho-statistic and v) and parametric (augmented Dickey–Fuller (ADF) and V). All test statistics are distributed N (0, 1), under a null of no co-integration, and diverge to negative infinity (save for panel v). Time trend is included. *** $p < .01$, ** $p < .05$, * $p < .10$

coefficient, $x_{i,t}$ are the explanatory variables, and, $\varphi_{i,t}^{*}$ is the residuals term. The β coefficient and associated t-statistics are averaged over the entire panel by using Pedroni's group mean methods [for details, see Neal (2014)].

Pedroni's DOLS is averaged along the between dimension (group mean). Thus the panel test statistic test is specified as $H_0 : \beta_i = \beta_0$ against $H_A : \beta_i \neq \beta_0$, which implies that the alternative hypothesis does not constrain regressors to a constant β_A. Moreover, estimates from panel DOLS are robust to biases related to endogeneity issues, omitted variables, and measurement errors (Baltagi 2013; Baltagi and Kao 2001; Banerjee 1999; Phillips and Moon 2000). Alternatives to DOLS are OLS and fully modified OLS (FMOLS) estimators. While OLS is a consistent estimator, it is inefficient in models with endogenous regressors. On the other hand, FMOLS is an asymptotically efficient estimator for homogenous co-integrating vectors, and adjusts for the effects of endogenous regressors and short-run dynamics of the errors (serial correlation). Nonetheless, Kao et al. (1999) have shown that the fully modified estimator does not improve over OLS estimator.

Data and Descriptive Statistics

The chapter covers 28 SSA and nine OECD member countries over the period 1992–2011. Austria, Canada, France, Germany, Italy, Japan, the Netherlands, United Kingdom, and the United States are the selected OECD member countries whose foreign R&D spillovers via bilateral trade and development aid are assessed. It is true that all OECD member countries maintain relationships with SSA countries in trade and aid; however, only few countries have data on bilateral development aid for 20 years. This limits the number of OECD member countries used in this chapter to nine. A list of the selected SSA countries is presented in Table A.12.1.

The GDP, expressed in 2011 prices, is drawn from the World Development Indicators of the World Bank database. The employment data used to construct the labor productivity variable (GDP divided by employed labor force) is obtained from Penn World Table version 8.0. Data on bilateral imports are from Directions of Trade Statistics of the International Monetary Fund, while total foreign R&D (by business, government, and higher institutions) for each of the nine OECD member countries is obtained from the Science, Technology and Patent section of the OECD database. Disbursed ODA [technical cooperation and non-technical cooperation ODA] is accessed from the development section of OECD database. We use

disbursed instead of committed aid as the former reflects actual aid transfers. Moreover, since non-technical cooperation ODA (NTCODA) is not available in the dataset, we construct NTCODA by subtracting technical cooperation ODA from disbursed ODA.

The HC variable, proxied by gross secondary school enrollment, is drawn from UNESCO education dataset. This data contains information on the share of total secondary school enrollment in the secondary school age population. Finally, GS, which measures government's ability to function effectively, is obtained from the Political Risk Services group of the International Country Risk Guide. The GS variable is measured on a 12-point scale with 0 signifying low stability and 12—high stability. Table 12.3 presents summary statistics for 28 SSA countries.

Country-level summary statistics of labor productivity and human capital over 1992–2011 period are presented in Table 12.4. It is evident that labor productivity has fared consistently across these countries, with average values ranging between 7.1 and 10.3 units per worker. The above average performers include South Africa (10.29), Botswana (10.02), Namibia (9.8), Sudan (9.5), Nigeria (9.3), and Angola (9.1). On the other end of the productivity scale are Mozambique (7.1), Malawi (7.3), Ethiopia (7.4), and Democratic Republic of Congo (7.4). As shown in Table A.12.2, there is a positive and significant correlation between labor productivity and the stock of human capital (*0.65, p-value = 0.000*). In other words, countries with high labor productivity should have relatively higher human capital stock. Evidence in Table 12.4 supports this observation in the cases of South Africa and Botswana, the highest labor productivity performers who equally have the highest average rate of secondary school enrolment. The opposite applies to low productivity performers such as Ethiopia and Uganda. Nonetheless, some countries still have low human capital development regardless of the labor productivity, suggesting that there are other factors that

Table 12.3 Summary statistics (1992–2011, N = 560)

	Mean	*Std. Dev.*	*Min*	*Max*
Labor productivity	8.360	0.870	6.066	10.395
Bilateral imports/GDP	1.804	1.269	0.066	9.399
Tech cooperation/GDP	0.108	0.101	0.001	0.742
Non-technical cooperation/GDP	0.378	0.682	0.000	8.631
Human capital	28.314	19.848	3.050	94.500
Gov. Stability	8.095	2.136	1.000	11.580

Table 12.4 Country-level averages for selected SSA countries (1992–2011)

Country	*Labor productivity*	*Human capital*
Angola	9.085	16.66
Botswana	10.022	70.837
Cameroon	8.672	29.865
DRC	7.406	28.91
Cote d'Ivoire	8.893	15.357
Ethiopia	7.35	15.501
Ghana	8.609	44.626
Kenya	8.513	39.421
Malawi	7.316	28.797
Mali	8.324	22.781
Mozambique	7.115	11.762
Namibia	9.843	54.477
Nigeria	9.305	30.959
Senegal	8.57	21.107
South Africa	10.29	87.494
Sudan	9.483	28.803
Tanzania	7.757	8.029
Uganda	7.742	17.044
Zambia	8.617	16.854
Zimbabwe	8.328	41.703

influence the performance of labor besides the level of human capital development.

Results

While many scholars have provided evidence in support of the presence of foreign R&D spillovers via trade and FDI on labor productivity in advanced countries, only Walley and Cushing (2013) use a sample of African countries. In this chapter, we demonstrate that indeed African countries benefit from advanced countries' R&D spillovers. Also, we show that besides trade, development aid is a viable conduit of foreign R&D spillovers. Moreover, the extent of human capital development and government stability in the recipient country magnifies the effectiveness of foreign R&D spillovers.

Labor Productivity Impact of Foreign R&D Spillovers

The observed significant and positive coefficient of foreign R&D spillovers via imports reported in Table 12.5, confirm that indeed trade is one of the

channels through which foreign R&D impacts labor productivity in SSA. The magnitude of impact is approximately 0.03–0.06 (significant at one percent level). In other words, a ten percent increase in imports from OECD member countries, leads to 0.3–0.6 percent improvement in labor productivity in SSA countries due to R&D spillovers. This finding also supports the international R&D hypothesis that uses endogenous growth theory (Romer 1990) and is consistent with the findings in related studies. For example, Coe and Helpman (1995) reported an estimated coefficient of 0.4–0.6 increase in labor productivity growth with every ten percent increase in R&D spillovers for OECD member countries, and Walley and Cushing (2013), 0.35 for 11 African countries.

Moreover, the coefficients of foreign R&D spillovers via technical cooperation and non-technical cooperation aid are also robust and within theoretically accepted range. In the cases where it is significant at one percent level, we find a magnitude of 0.6 (column 6) and 0.7 (column 9) for R&D spillovers effects on labor productivity via technical and non-technical cooperation aid, respectively. These effects are stronger when human capital development and government stability are controlled for. When these two factors are taken into account, the level of significance and magnitude of effect of R&D spillovers via technical cooperation aid increases from insignificant (column 4, Table 12.5) to significant at one percent level (column 6) and, the magnitude increases from 0.14 to 0.62. For non-technical cooperation aid, the significance level also increases from ten (column 7) to one (column 9) percent and the magnitude, from 0.16 to 0.68. Furthermore, the observed direct positive effects of human capital on productivity are consistent with findings in literature that an increase in human capital development boosts productivity and growth

These findings provide valuable lessons for SSA countries. First, they suggest that, similar to developed nations, African countries can benefit from foreign R&D embedded in imports from developed countries whose R&D sector is well developed. Second, the results reveal that technical cooperation aid—that support consultancy activities, skill development and capacity building—is a conduit in transferring knowledge (R&D) from developed countries into SSA and, hence, playing a crucial role in boosting productivity in Africa. Third, non-technical cooperation aid, which supports infrastructure development and public services and administration, helps to transfer foreign knowledge with meaningful impact on labor productivity. In fact, coefficients reported in Table 12.5 show that R&D spillover effects are bigger when channeled via non-technical cooperation aid, followed by technical cooperation and imports. Finally, the

Table 12.5 Dynamic OLS estimation (within, fixed effects) for labor productivity impact of foreign R&D spillovers through trade and development aid (1992–2011)

Explanatories	*Imports*			*Technical cooperation ODA*			*Non-technical cooperation ODA*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
m.lnFRD	0.057	0.034	0.050						
	(6.146)	(2.920)	(2.748)						
tc.lnFRD				0.137	0.093	0.622			
				(0.027)	(1.713)	(3.547)			
ntc.lnFRD							0.160	0.214	0.678
							(1.778)	(1.010)	(5.448)
Human capital		0.005	0.002		0.004	0.001		0.002	0.008
		(0.79)	(3.140)		(3.206)	(2.800)		(4.364)	(8.285)
Gov. stability			0.018			0.011			0.006
			(8.825)			(6.356)			(4.502)
Observations	448	448	448	448	448	448	448	448	448
R-squared	0.280	0.340	0.770	0.350	0.420	0.770	0.150	0.440	0.680
No. of countries	28	28	28	28	28	28	28	28	28

Note: t-statistics in parentheses and regressions include one lead and lag of the differenced regressors. *m.lnFRD* signifies foreign R&D via imports; *tc.lnFRD*, foreign R&D spillovers via technical cooperation aid; *ntc.lnFRD*, foreign R&D via non-technical cooperation aid

impact of foreign R&D spillovers on productivity is enhanced when human capital and government stability are controlled for, regardless of the transmission channel. This suggests that the two factors are complementary to the effectiveness of foreign R&D spillovers, highlighting the importance of investing in human capital and ensuring government stability to maximize these spillover effects.

Elasticity of Labor Productivity with Respect to Foreign R&D Spillovers

Identifying the extent of the responsiveness of productivity in one country with respect to a foreign country' R&D provides useful insights in understanding the foreign R&D spillover–productivity relationship. For example, it is useful to determine which country's R&D spillovers induce more productivity in SSA and through what channel. This section provides elasticity of labor productivity in selected 20 SSA countries with respect to G7[5] countries' R&D spillovers. Two types of elasticities are estimated: *aggregate* and *bilateral*. The estimations follow the works of Coe and Helpman (1995), Kao et al. (1999), and Zhu and Jeon (2007). The resulting coefficients are interpreted as: when R&D capital stock in a G7 country i increases by one percent, SSA country j's labor productivity rises by $m^j\beta_j \frac{m_i^j S_i^d}{\sum m_i^j S_i^d}$ *percent*, where m^j is country j's import share, m_i^j is a fraction of j's imports coming from country i and, s_i^d is country i's R&D capital stock. Similar interpretation is applied to technical cooperation and non-technical cooperation aid.

Table A.12.3 reports *aggregate elasticity coefficients* of labor productivity in 20 SSA countries with respect to the sum of G7 countries' R&D spillovers via trade, technical, and non-technical cooperation aid in years 1995, 2003, and 2011. In calculating the coefficients, we use the results in columns (1), (4), and (7) of Table 12.5. Coefficients in columns 1–3 (last row) indicate that for every one percent increase in R&D spillovers from G7 countries via trade, labor productivity of SSA countries increased by 0.005, 0.004, and 0.006 percent in 1995, 2003, and 2011, respectively. This shows that labor productivity was more responsive to imports induced foreign R&D spillovers in 2011 than in preceding years. We observe similar trend in the responsiveness of labor productivity to increases in R&D spillovers via non-technical cooperation aid. Specifically, the responsiveness was higher in 2011 (0.015) relative to 1995 (0.006) and 2003 (0.011). For technical cooperation aid, higher elasticity effects are observed in 2003 (0.004), compared to 1995 (0.003) and 2011(0.001). From a country-level perspective, the responsiveness of

productivity in each SSA country varies widely with respect to each foreign R&D spillovers channel (Table A.12.3).

Furthermore, we calculate *bilateral elasticities* for 2003 and 2011. In the interest of space, these results are available from the authors upon request. Similar to Table A.12.3, the elasticities are calculated using regression output in columns 1, 4, and 7 (Table 12.5). It is evident that average elasticity of labor productivity in SSA is more responsive with respect to the United States' R&D spillovers than with any other G7 countries in both 2003 and 2011. This is followed by France's and Germany's R&D spillovers while Canada's R&D spillover to SSA countries is the lowest. The size of the economy or historical legacy may explain why some G7 countries' R&D spillover effects in SSA are relatively higher. For example, United States has strong bilateral trade and extensive aid relationships with SSA countries. By contrast, Canada's export volume to Africa is negligible compared to other G7 countries. This is not surprising given that 77 percent of Canada's export, mostly primary, goes to the USA (de Munnik et al. 2012). The United Kingdom and France have a strong presence in many African countries. Such presence in the form of colonialism- in- absentia can help maintain strong bilateral trade and donor–aid relationships.

Conclusion

This chapter has analyzed the impact of selected OECD member countries' R&D spillovers through imports and development aid on labor productivity in 28 SSA countries over the period 1992–2011. The estimation results based on dynamic ordinary least squares and panel co-integration models reveal that indeed, labor productivity in SSA has benefited enormously from advanced countries' R&D investment activities. The beneficial effects are transmitted via bilateral trade, technical cooperation aid, and non-technical cooperation aid. In addition, the effectiveness of R&D spillovers is enhanced by the presence of strong human capital stock and government stability in the recipient countries. With regard to the elasticity of labor productivity with respect to the R&D of G7 countries, evidence show that spillovers from USA have a higher magnitude of impact followed by France and Germany. Canada's R&D spillovers impact appears to be very minimal. In fact, Canada's bilateral export volume to SSA countries is negligible compared to other G7 countries.

Our findings yield two conclusions. First, bilateral trade between developing and advanced countries and technical and non-technical aid are relevant conduits through which these countries can benefit from R&D activities of developed countries. Second, donor countries that want to

contribute to the productivity of developing countries should focus on activities that facilitate knowledge accumulation and infrastructure development. For example, by helping these countries increase the stock of human capital through training, improve and expand their infrastructure, and increase the efficiency of public services and administration.

In this chapter, we use only 26 percent of the 34 OECD member countries. Lack of data constrained our sample selection. Thus, future studies interested in having more OECD member countries could consider taking a shorter sampling period. In addition, rather than focusing on imports in general, future studies may consider specific components of bilateral trade, such as imports of manufacturing or information and communication technologies goods, as channels of foreign R&D spillovers. This would provide more disaggregated results and, therefore, targeted policy recommendations.

Appendix

Weighted Foreign R&D Spillovers

The construction of import or development aid weighted foreign R&D follows the method developed by Coe and Helpman (1995). For example, in the case of import weights, this is done by measuring foreign R&D capital stock of a Sub-Saharan country *i* as a weighted average of R&D capital stock of an OECD trading partner *j*, where the weights are bilateral import share of country *i* as follows:

$$S_i^{f-biw} = \sum_{j \neq i} w_{ij} S_j^d$$

$$w_{ij} = \frac{M_{ij}}{\sum_{j \neq i} M_{ij}}, \sum_{j \neq i} w_{ij} = 1$$

where, M_{ij} is country *i*'s imports of goods and services from country *j*. S_j^d is the R&D capital stock of trading partner *j*. Foreign R&D spillovers through technical cooperation ODA and non-technical cooperation ODA are constructed using same approach as shown above.

Table A.12.1 List of Sub-Saharan African countries

Angola	Kenya	Sudan
Botswana	Liberia	Tanzania
Burkina Faso	Malawi	Togo
Cameroon	Mali	Uganda
Congo, Dem. Rep.	Mozambique	Zambia
Cote d'Ivoire	Namibia	Zimbabwe
Ethiopia	Niger	
Gambia, The	Nigeria	
Ghana	Senegal	
Guinea	Sierra Leone	
Guinea-Bissau	South Africa	

Table A.12.2 Correlation matric for selected variables, 1992–2011

	Real GDP per worker	*m. lnFRD*	*tc. lnFRD*	*ntc. lnFRD*	*Human capital*	*Gov. stability*
Real GDP per worker	1					
m.lnFRD	−0.1341	1				
	(0.002)					
tc.lnFRD	−0.5223	0.0739	1			
	(0.000)	(0.081)				
ntc.lnFRD	−0.4096	0.0997	0.385	1		
	(0.000)	(0.018)	(0.000)			
Human capital	0.6514	0.1034	−0.3833	−0.1522	1	
	(0.000)	(0.014)	(0.000)	0.0003		
Gov. stability	0.1676	0	−0.17	−0.0751	0.1721	1
	(0.001)	(0.999)	0.0001	0.0758	(0.000)	

Note: p-values are in parentheses. *m.lnFRD* signifies foreign R&D via imports; *tc.lnFRD*, foreign R&D via technical cooperation aid; and, *ntc.lnFRD*, foreign R&D via non-technical cooperation aid

Table A.12.3 Average elasticities of labor productivity in SSA countries with respect to G7 countries' R&D spillovers via trade and development aid (1995, 2003, and 2011): Based on regressions (1), (4), and (7) of Table 12.5

Country	*Imports*			*Technical cooperation ODA*			*Non-technical cooperation ODA*		
	1995	*2003*	*2011*	*1995*	*2003*	*2011*	*1995*	*2003*	*2011*
Angola	0.007	0.006	0.009	0.000	0.001	0.000	0.002	0.005	0.001
Botswana	0.009	0.000	0.001	0.002	0.001	0.000	0.000	0.000	0.006
Cameroon	0.005	0.003	0.006	0.003	0.002	0.002	0.014	0.013	0.003
DRC	0.002	0.002	0.003	0.001	0.003	0.001	0.001	0.109	0.065
Cote d'Ivoire	0.008	0.009	0.005	0.002	0.001	0.000	0.016	0.003	0.012
Ethiopia	0.003	0.003	0.006	0.001	0.003	0.001	0.004	0.025	0.015
Ghana	0.005	0.004	0.011	0.001	0.002	0.000	0.005	0.002	0.007
Kenya	0.004	0.003	0.005	0.001	0.002	0.001	0.006	0.002	0.017
Malawi	0.005	0.002	0.004	0.008	0.011	0.002	0.012	0.010	0.026
Mali	0.007	0.005	0.007	0.005	0.006	0.001	0.010	0.003	0.023
Mozambique	0.005	0.005	0.016	0.013	0.015	0.001	0.016	0.005	0.035
Namibia	0.010	0.000	0.001	0.002	0.003	0.001	0.005	0.001	0.013
Nigeria	0.002	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.001
Senegal	0.009	0.010	0.011	0.005	0.005	0.002	0.013	0.001	0.008
South Africa	0.007	0.007	0.011	0.001	0.000	0.000	0.000	0.000	0.002
Sudan	0.001	0.001	0.001	0.000	0.000	0.000	0.001	0.004	0.001
Tanzania	0.003	0.002	0.003	0.002	0.002	0.001	0.005	0.006	0.015
Uganda	0.002	0.002	0.002	0.003	0.006	0.001	0.004	0.007	0.018
Zambia	0.002	0.001	0.002	0.002	0.004	0.001	0.006	0.015	0.014
Zimbabwe	0.004	0.000	0.002	0.001	0.002	0.002	0.003	0.003	0.017
Average	**0.005**	**0.004**	**0.006**	**0.003**	**0.004**	**0.001**	**0.006**	**0.011**	**0.015**

Notes

1. See Coe and Hoffmaister (1999), Coe et al. (1997, 2009), Keller (1998), Lichtenberg and de la Potterie (1998), Xu and Wang (1999), and Zhu and Jeon (2007).
2. See Burnside and Dollar (2000), Easterly et al. (2004), Rajan and Subramanian (2011).
3. Gomanee et al. (2005), Howard and Dijkstra (2003).
4. In constructing the weighted schemes, we employ the approach of Coe and Helpman (1995).
5. G7 countries consists of Canada, France, Germany, Japan, Italy, United Kingdom, and USA.

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CHAPTER 13

Development Aid and International Trade in Sub-Saharan Africa: EU versus China

Eduard Marinov and Nedyalko Nestorov

Introduction

The European Union (EU) has been the biggest trade partner of Sub-Saharan African (SSA) countries in recent years, as well as their biggest provider of development aid. The same applies to China within BRICS. Half of the total trade flows of SSA countries in 2012 was with EU and China (52% of exports and 47% of imports), while their combined development aid disbursements to SSA was over US$25 billion. Moreover, although EU remains the leading trade partner of SSA countries, there is a definite trend for the redirection of their trade flows towards China.

This chapter aims to analyze the patterns and dynamics of development aid and international trade of the EU and China with SSA countries for the period 2000–2012; in order to determine if there is a positive relation between development aid and international trade.

Studies have shown that both development aid and international trade have positive impact on economic growth and development. Moreover, there is strong empirical evidence that the volume of bilateral aid disbursements of OECD donors are significantly influenced by bilateral trade. On the other hand, official flows from BRICS often go to African countries not targeted by traditional donors such as OECD. A UNECA, report shows

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that the key features of BRICS (especially China) aid to Africa is the use of official flows to promote trade and investment. These facts are interesting and provide rationale, to explore if China's aid to SSA is correlated with bilateral trade similar to OECD member states.

This chapter provides an added value to existing literature in two ways. First, as the most significant representatives of OECD and BRICS, both in international trade and development aid, the study of EU's and China's trends and patterns in international trade and development aid could provide some insights into the OECD–BRICS dichotomy. Second, analyzing the relation between international trade and development aid to SSA for both the EU and China, one could make a justified conclusion about the motivation of development aid provision in the cases of OECD and BRICS countries.

The study covers the years 2000–2012 with a focus on SSA, and uses various data sources to achieve the stated aim. Data on official development aid (ODA) is accessed from OECD stat. However, since data on Chinese aid is not readily available from the OECD database, we use Aid Data that tracks underreported financial flows methodology (for detail see Strange et al. 2013). International trade data for Africa, China, EU, and SSA is obtained from UNComtrade, WITS; and the analysis of trade include the value of total trade flows, exports, and imports.

International trade (total trade, imports, and exports) and development financing (ODA and total official flows (TOF)) are analyzed to identify the main trends, SSA countries (with focus on the main trade and aid destinations). To assess the relation between development aid and international trade, dependence measuring statistical approach—Engle–Granger cointegration—is used.

The rest of the chapter is organized in five sections. The next section presents some theoretical background and literature review on the relationship between international trade and development aid; the third section discusses the dynamics and trends in international trade of SSA countries with EU and China; the fourth section tracks the reimbursements of ODA provided by EU and China; and section five assesses the relation between development aid and international trade in the cases of EU and China.

The Relation Between International Trade and Development Aid

As noted in studies on development aid, there are many reasons why one might expect to observe a correlation between aid and trade flows from a donor to a particular recipient. In the case of tied aid, the link is obvious—the granting of aid is contingent on purchasing goods from the donor. More generally, aid is often given to countries which have strong trading ties with the donor (e.g. ex-colonies). On the other hand, aid could create trade dependency, where recipients purchase goods from donors, granting them large amounts of aid in return, because aid is considered contingent on imports. Aid could also be regarded as trade creating, whereby, it contributes to economic growth in the recipient country that in turn generates subsequent increase in donor exports to the recipient. Such trade creation benefits the donor, and can be a strong factor in maintaining or increasing the value of aid flows.

For a statistical link to exist, aid must culminate in a higher level of donor exports to the recipient country than would be the case without aid, and vice versa. The aid allocation literature does not provide a consensus on the impact of trade on aid flows (McGillivray and White 1993). Several general types of aid-trade links may exist—first, that no relationship exists at all; second, that trade is a determinant of aid (donors grant more aid to those recipients that import more from them); third, that aid impacts trade ("aid causes trade"); fourth, that the link between trade and aid is bidirectional (aid and trade form parts of a mutually reinforcing cycle—the presence of one increases the likelihood of the other); and last but not least, that a third common factor is responsible for the observed temporal correlation between aid and trade.

Many studies try to identify whether donors tend to allow political and economic goals to influence their aid allocation decisions or whether they instead select recipients on the basis of their objective development needs (Berthélemy 2006; Fleck and Kilby 2006; Lewis 2003; Maizels and Nissanke 1984; Neumayer 2003; Schraeder et al. 1998). While existing work suggests that the motives underlying aid decisions are mixed, these studies point to a range of donor interests, such as the maintenance of colonial ties, military alliances, the protection of spheres of influence, and trade and investment ties, as central determinants of patterns of aid flows. The commercial dimension of national interest, reflected in trade ties of the donors with the developing world, represents a consistent benchmark to

evaluate the self-interested attributes of aid allocations because the meaning of the concept itself does not vary across donors or over time (Lundsgaarde et al. 2010). The relevance of commercial interests as a determinant of aid flows has not been neglected entirely by aid researchers. Schraeder et al. (1998) investigate the influence of commercial interests over aid decisions in their study of aid allocations from four donor countries to African recipients between 1980 and 1989, while Neumayer (2003) includes trade ties as a covariate in his recent analysis of patterns of aid flows between donor–recipient pairs in the post-Cold War period. McGillivray and Morrissey (1998) place the link between trade and aid at the center of their analysis of aid allocation patterns but restrict their focus to East Asia. Three main motives for donors disbursing foreign aid to their trading partners are identified: strengthening export markets, supporting the implantation of donor firms in recipient economies, and maintaining access to essential imports.

Aid flows may induce donor exports either because of the general economic effects on the recipient or because aid is directly linked to trade, or because it reinforces bilateral economic and political links, or a combination of the three. However, according to Lloyd et al. (1998), each of the reasons linking aid to trade can operate in reverse, such that aid reduces trade.

Aid is often linked to the implementation of structural economic reforms, especially the liberalization of foreign trade regimes (Morrissey 1995). This can have an effect on donor exports as reductions in trade barriers can increase donors' access to markets in developing countries. Therefore, there are a number of economic mechanisms through which aid can induce donor exports by increasing recipient import capacity, notably through economic growth.

The most direct link between aid and trade is formal tying, where the provision of aid is dependent upon the recipient purchasing goods from the donor—this usually means that aid is provided in the form of goods and services procured in the donor country. In this way, aid is used as an instrument of trade policy (Morrissey 1993). A less direct form of tying is informal, where donors direct aid toward projects, goods, or countries in which its own industries have a strong competitive advantage. There is a related argument that aid generates political goodwill, from the recipient toward the donor; such that the recipients may feel more disposed, if not obliged, to purchase goods from the donor (Lloyd et al. 1998).

On the other hand, empirical studies have shown that exports provided under tied aid are overpriced, compared to prevailing world prices, by

between 10% and 40% (Jepma 1991). Moreover, the goods offered are of low priority to the recipient, are excessively capital-intensive, are highly dependent on Western technologies and are import biased (Jepma 1989, p. 10). There is also an argument that tying has a detrimental economic impact on donors as tied aid often supports inefficient industries (Morrissey et al. 1992).

Even in the absence of tied aid, there are ways in which aid can induce recipient dependence on donors for the supply of goods and services. For example, where equipment and machinery are involved, replacement parts are often only available in the original source country. Another example is food aid. Some researchers claim that food aid distorts the allocation of resources in recipient countries away from the production of food, distorting domestic consumption patterns and prolonging the very shortages it is intended to overcome (Maxwell and Singer 1977).

The view that trade can lead to aid is generally attributed to effects of aid allocation policies of donors. Trade can lead to further aid if donors give preference in the allocation of their aid to countries with which they have the greatest commercial links (Morrissey et al. 1992) or when the donor is rewarding the recipient country for purchasing its goods, or seeking to consolidate and/or expand its market in the country through the expectation that aid will have a trade-inducing effect (Lloyd et al. 1998).

Cross-section data also indicates cases where a negative relationship between aid and donor exports may be observed. A donor may well decide to pursue a more aggressive and indeed risky strategy. Rather than focusing on established export markets, it could instead use aid to promote export ties in those countries which currently are lesser markets (McGillivray and Oczkowski 1992). Despite the claim of most researchers (both in theoretical and empirical studies) that a link between aid and trade actually exists, the fact that many forms of relation are, represents a problem with existing empirical work. Since most studies limit attention to one (or a subset) of these possible cases, one cannot draw general conclusions.

This chapter tries to identify the existence of a relation of EU and China trade with Africa and specifically, Sub-Saharan Africa, as well as its causal direction by using Engle–Granger cointegration approach. More specifically, the study aims to answer the question whether the relation between aid and trade of EU and China with SSA is identical or different.

International Trade of Sub-Saharan African Countries

Trade is a major contributor to the revenues of most developed and developing countries. It allows them to specialize and to export goods produced more efficiently at the expense of other products that could be imported cheaper than their own production costs. International trade is also a way for acquisition of fixed assets, equipment, materials, and processed goods that are critical to economic growth. Trade is one of the main drivers of growth and a means to achieve development, thus the elimination of barriers to it would only help increase its positive effects.

African countries' main trade flows are highly dependent on their historical ties with the rest of the world, and especially with Europe. Over 80% of Africa's exports are directed toward markets outside the continent. The share of imports coming from external sources is also similar (78%). The majority of African counties' trade flows for the period 2000–2012 are directed toward the EU (33% in 2012), People's Republic of China (16%), intra-continental trade (10%), the USA (8%), India (6%), Japan (3%), and Russia (1%).

Although the EU is the main trading partner of African economies, its share in their international trade declined from 48% to 33% during the 2000–2012 period. The value of trade increased from 137 to US$423 billion with an average annual growth of 17% (see Fig. 13.1). Imports for the EU increased with one percentage point slower than exports, but their increase in value was somewhat higher—with US$155 billion and US $131 billion over the study period. The trade balance was negative for the entire period, with deficit increasing from US$17 to US$40 billion in 2012. For the same year, the value of imports and exports were US$176 billion and US$224 billion, respectively. The only moment in which the value of trade (both imports and exports) was reduced is in the World financial crisis year 2009 (from US$396 to US$300 billion), when exports fell lesser than imports. This reduction was compensated, but relatively slow.

China had a very fast growth in the value of trade during the study period (over 20 times) and by 2012 it had reached US$194 billion. Imports increase more slowly than exports (with US$78 and US$107 billion, average annual growth of 197 and 136%, respectively), and the values for 2012 were US$83 billion and US$111 billion, for imports and exports, respectively. The increase in both imports and exports was consistent throughout

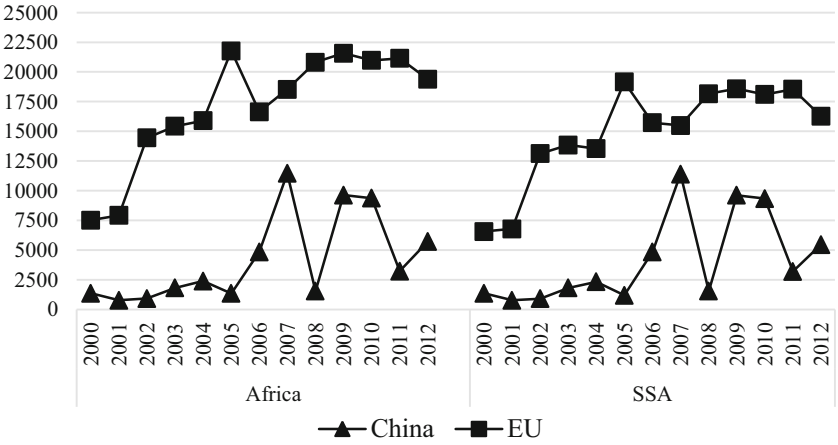

Fig. 13.1 Value of trade flows of EU and China to Africa (2000–2012, Million US$) (*Source:* Own calculations based on UNComtrade for WITS data)

the period. During this period, the trade balance of African economies with China had certain interesting features. For 2000–2010 period, it was almost zero, while in 2011 it rose sharply to reach a negative value of 28 billion by 2012. There was also a decline during the World financial crisis year (2009), but it was far smaller than the trade between EU and African countries—with US$3 billion in exports, and US$10 billion in imports.

The share of Sub-Saharan African countries in China's trade with the Africa was significantly higher than that of EU (79–85% and 48–55%, respectively), both being lowest in the 2005–2007 period and highest in 2011 (see Fig. 13.2). In terms exports, these differences were lower (10–15%), relative to those of imports (45–50%); with China's exports to SSA having a share of around 90–92% of total exports to Africa throughout the study period. In 2012, the share of SSA in China's trade flows to Africa were 75% in imports, and 90% in exports; while for EU, they were 59% and 44%. These shares remained relatively constant throughout the study period, declining slightly in the crisis years 2009–2010 (by 2–3 percentage points) but then returning to their previous levels.

The general picture of EU's and China's trade with SSA for the period 2000–2012 was almost the same as with the whole continent. The EU remained the main trade partner of SSA, while China's trade started low and

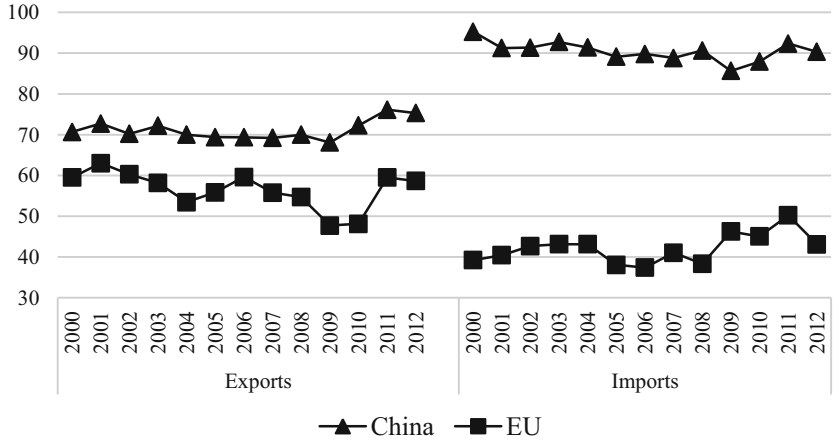

Fig. 13.2 Share of trade flows of EU and China to Sub-Saharan Africa (2000–2012, % of Africa) (*Source:* Own calculations based on UNComtrade for WITS data)

grew faster during the study period. Major differences are observed in the dynamics of imports (see Fig. 13.3).

The value of EU's trade flows with SSA in 2012 was US$212 billion, increasing by an average of 18% annually over the 2000–2012 period. Imports increased slower than exports (with 8% and 18% annually, respectively) reaching a value of US$100 and US$112 billion in 2012. Trade balance remained positive for the period (except for 2008 and 2009 when its value was just below 0). Both exports and imports increased steadily up to 2008, then there was a decrease in 2009, but unlike the situation for Africa as a whole, the exports to SSA fell more sharply than imports.

Similar in pattern to the trade with Africa, the increase of China's trade with SSA was extremely fast—over 20 times for study period-starting from US$7.5 billion in 2000 to US$163 billion in 2012. Unlike EU, the value of import increased faster than that of exports; with 178% and 146% annual average growth, respectively. The growth in imports was extremely fast (with over US$20 billion annually) after a decrease in 2009 (with US $10 billion). Thus, China' imports from SSA in 2012 were equal to EU's. The decrease in exports in 2009 was significantly smaller (US$3 billion) and was also compensated in 2010. The fast increase in imports led to a significant deficit in trade balance after 2010.

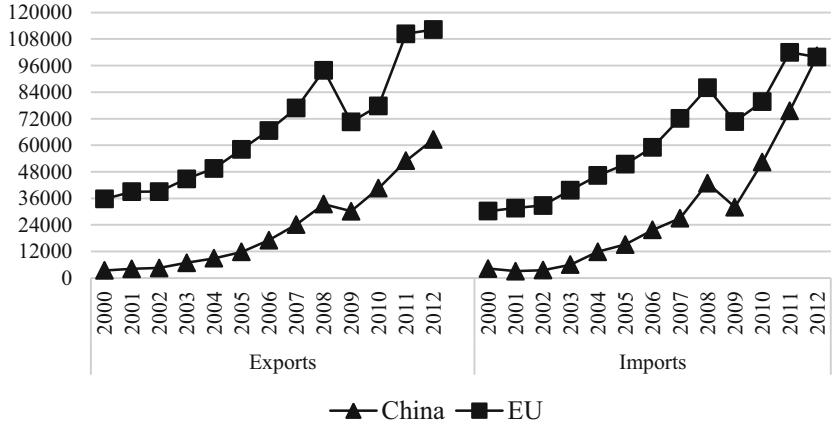

Fig. 13.3 Value of trade flows of EU and China to Sub-Saharan Africa (2000–2012, Million US$) (*Source:* Own calculations based on UNComtrade for WITS data)

There are also some differences between EU and China regarding their main trade partners in SSA. Both traded mostly with South Africa (the biggest economy in the region)—37% for China and 28% for the EU. Also, both, had Nigeria, Ghana, and Angola as their top five partners. However, China's exports to South Africa was 24% of its total exports to SSA, and the imports were 45%. Conversely, the shares of EU's trade flows were relatively lower. Nigeria was EU's second trade partner in the region with 27% of total trade to SSA, while China's trades was significantly lower—7%. On the other hand, Angola receives 23% of China's trade with SSA, while its share in EU's trade is 8%. The share of trade with Ghana is almost equal for both the EU and China—4% of Sub-Saharan trade. The last of the top five trade partners was different for the EU and China (with 3% share for both)—Cote d'Ivoire and Congo, respectively.

The main trend observed in both Africa and SSA is the shift of trade flows from EU to China, although in almost all cases, EU maintains its leading position as trade partner. Another noticeable fact is that China's trade with Africa (especially regarding imports) is concentrated in SSA countries, while EU trades almost equally with SSA and North Africa. From the abovementioned, one can conclude that while EU has traditional trade

relations and interests in Africa, the relationship is stronger with North Africa. On the contrary, China's trade links are concentrated in SSA.

EU and China Development Aid to SSA

Africa has been a test-bed for development aid over the past 50 years, reflecting shifts in donor policies and practices as well as changes in the geopolitical climate (Kaberuka 2011). More than US$650 billion in foreign aid—the equivalent of four Marshall Aid Plans—was pumped into Africa between 1960 and 2010. EU and China combined provided over US$25-billion of development aid disbursements to Africa in 2012.

Almost all of the Official development aid provided by EU and China to Africa over the period 2000–2012, was directed to countries in SSA (see Fig. 13.4). For EU the share in ODA was over 85%, while for China it was almost 99%. Moreover, there were no significant fluctuations in this shares throughout the period, thus the analysis will focus only on development aid to SSA.

In 2012, EU provided US$18 billion ODA to Sub-Saharan Africa. This value has increased nearly three times during the period 2000–2006 (from US$6.5 to US$22.5 billion). A decline (by over US$4 billion) is observed in 2007, then in 2008–2011 the values increased slowly to reach US$19.5

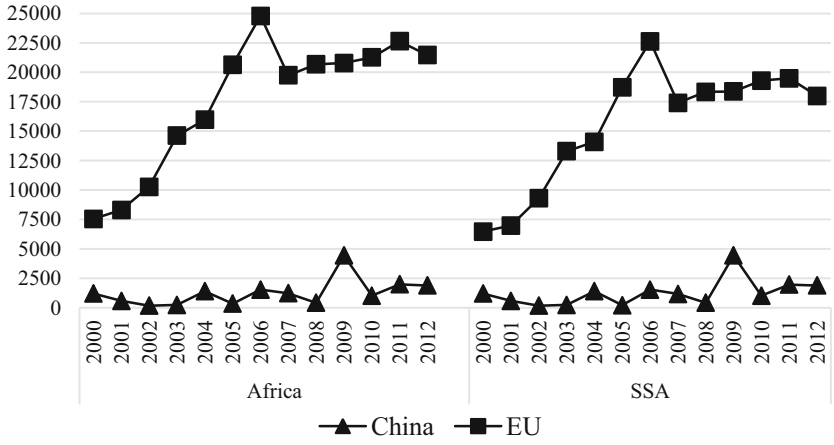

Fig. 13.4 Value of ODA flows of EU and China to Africa (2000–2012, Million US$) (*Source:* Own calculations based on OECD.Stat and AidData)

billion, falling again in 2012. These changes in the dynamics of ODA reimbursements from the EU to Africa could be explained by global financial crisis and the Euro zone sovereign debt crisis. Almost all EU members countries had to oblige to serious budgetary restrictions and maintain fiscal discipline that caused them to reduce their aid spending. The biggest donors from EU for 2012 were France (3.2 billion), UK (3.1 billion), Germany (US$2.4 billion), and Sweden (US$1 billion). For the 2010–2012 period, the decline was biggest for the Netherlands (US $667 million), Spain (655 million), Belgium (US$463 million), and France (US$448 million). While despite the pronounced cut in public spending, ODA provided to SSA by Germany and Sweden increased with US $750 and US$110 million, respectively. Nevertheless, EU remains the biggest ODA donor, providing more than 42% of all development aid to SSA.

China's development aid to Africa has increased rapidly, yet this might be the only fact on which we have widespread agreement when it comes to Chinese aid. Analysts disagree about the nature of China's official development aid, the countries that are its main recipients, the reasons for providing aid, the quantity of official aid, and its impact. China provides the equivalent of ODA through three instruments: grants, zero-interest loans, and concessional (fixed-rate, low-interest) loans. Chinese aid agreements follow diplomatic ties. All countries in SSA with which Beijing has diplomatic ties received foreign aid from China, even if (as in South Africa) it was symbolic. Furthermore, ODA does not appear to be given in larger amounts to resource-rich countries, as in the cases of Nigeria and the Democratic Republic of Congo (DRC). Grants and zero-interest loans are distributed fairly evenly around the continent, while concessional loans fit a country's ability to pay, either because it is middle income (Mauritius, Namibia, Botswana) or because it will finance an income-generating project (Brautigam 2011).

The amount of ODA provided to Africa by China in recent years has grown sharply, but it is still not large. Compared to the EU, China provided nearly 10 times less ODA to Sub-Saharan Africa in 2012 (US$1.9 billion), and the value of aid provided shows great fluctuations over the study period—from US$200 million in 2002, 2003, and 2005, through US$1–1.5 billion in 2000, 2004, 2006, and 2010 to US$4.4 billion in 2009. Obviously, the global financial crisis did not influence China's aid to SSA, but there are other factors that made ODA remittances volatile.

Total official flows represent the sum of Official Development Assistance and Other Official Flows—official sector transactions that do not meet ODA criteria. Besides ODA, TOF include grants for representational or essentially commercial purposes; official bilateral transactions intended to promote development, but having a grant element of less than 25%; and official bilateral transactions, whatever their grant element, that are primarily export-facilitating in purpose.

The trends in TOF provided by the EU and China to Africa and Sub-Saharan Africa are similar to these in ODA (see Fig. 13.5). The main difference here is in the amount of aid provided by China (reaching US$5.7 billion in 2012), as well as in the ratio of aid to SSA compared to aid to Africa. It was around 85% for EU, and over 96% for China during the study period. In 2012, the amount of TOF provided by EU to Africa and SSA was US$19.4 and US$16.3 billion, repectively, while China provided US$5.7 and US$4.4 billion. China's TOF for Africa and SSA has grown at an average of 27% and 25% annually, while EU's growth was slower (at 12% and 13% annually). Moreover, while EU's TOF had a relatively steady trend, those from China were much more volatile, reaching over US$11 billion in 2007, then falling to US$1.5 billion in 2008, and then up to 9.5 billion in 2009–2010, then fall again in 2011.

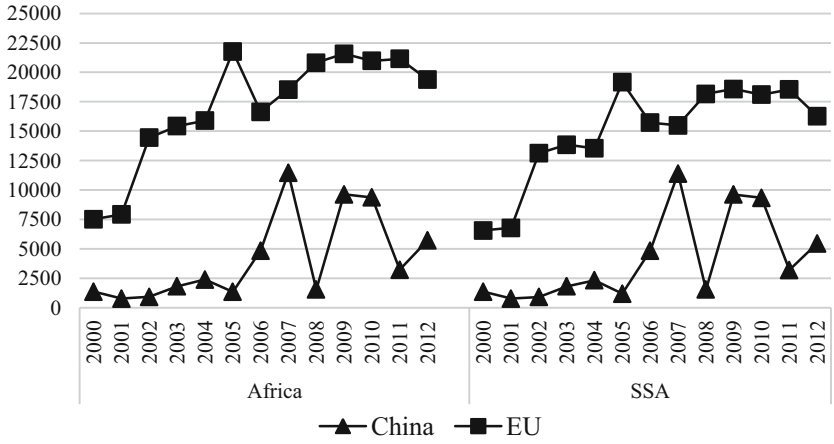

Fig. 13.5 Value of TOF of EU and China to Africa (2000–2012, Million US$) (*Source:* Own calculations based on OECD.Stat and AidData)

Evidence from the preceding analysis indicate that while the global financial crisis had a serious impact on EU's TOF to Africa and SSA, it did not influence China's aid to SSA.

Relation Between International Trade and Development Aid: Empirical Model

A study by Nowak-Lehmann et al. (2010) finds huge differences of the long-run coefficients of bilateral aid and its average impact on recipient exports, with one dollar of aid increasing SSA and MENA exports by US $0.41 and US$0.31, respectively; whereas exports increase by US$5.56 in Asia and US$4.41 in Latin America and the Caribbean for each dollar received as aid.

Problems with "spurious regression" make difficult the modeling of relations using time series data. Classical econometric algorithm assumes that time series data must be processed to stationarity (Gujarati 2007). This leads to the loss of information for long-run relations between time series. However, the cointegraion approach settles this problem. Based on the assumption that series are integrated, it can mold nonstationary time series. In this chapter, we use cointegration approach to study the relationship between development aid and foreign trade. Specifically, we use the Engle–Granger (1987) cointegration approach over Johansen's procedure as its results are more intuitive and easily applicable.

In the first step, we define long-run equations for cointegration. As already mentioned, for a statistical link to exist, aid must culminate in a higher level of donor trade to the recipient than would be the case without aid, or alternatively, the bilateral trade must result in a higher level of aid to the partner than would otherwise be the case. Thus, firstly, we assume that the volume of foreign trade could depend on the value of aid provided by the donor:

$$Trade = f\ (ODA) \tag{13.1}$$

$$Import = f\ (ODA) \tag{13.2}$$

$$Export = f\ (ODA) \tag{13.3}$$

On the other side, we assume that the value of aid could depend on the volume of foreign trade with the recipient country:

$$ODA = f\ (Trade) \tag{13.4}$$

$$ODA = f\ (Import) \tag{13.5}$$

$$ODA = f\ (Export) \tag{13.6}$$

In the equations above, *trade* denotes the total trade flows between the two reviewed parties (Africa and SSA on one side, and China and EU—on the other), *import* is the value of imports (of China and EU from Africa and SSA), *export* is the value of exports, while *ODA* is the value of development assistance (provided by China and EU). These equations are based on the assumption that there is a positive relation between foreign trade and development assistance—Eqs. 13.1, 13.2, and 13.3 express the "aid causes trade" hypothesis, while Eqs. 13.4, 13.5, and 13.6 express the hypothesis that "trade creates aid".

The second step of the model is to investigate the order of integration of each one-time series. We choose to use ADF test. It is simple and most used. There are three models for ADF. Model A, without trend and intercept; Model B with intercept; and Model C, with trend and intercept. In Model A, most of the series are nonstationary integrated. Model B and C find stationary series that are integrated in an order higher than fourth (see Annex 13.1). Nonstationary series are used in Engle–Granger algorithm.

The third step is testing for cointegration. The generalization results for dependent "trade" and independent "aid" are shown in Table 13.1. There are no cointegration relations between the series.

The generalization results for dependent "aid" and independent "trade" are in Table 13.2.

Ten cointegration equations are identified. Their characteristics are presented in Annex 13.2. Each equation is tested with Durbin–Watson for serial correlation. All equations pass the test.

There is also information about determination of equations. Average determination is 0.55. This means that around 55% of changing of aid is result of changing of foreign trade.

The cointegration equations are:

$$\text{China ODA to Africa} = 0.0143 * \text{China trade with Africa} \tag{13.7}$$

$$\text{China TOF to Africa} = 0.0483 * \text{China trade with Africa} \tag{13.8}$$

Table 13.1 Generalization scores for cointegration (dependent "trade")

	Dependent variable	*Independent variable*	*Model A—without trend and intercept*	*Model B—with intercept*	*Model C—with trend and intercept*
1	China trade with Africa	China ODA to Africa	No cointegration	No cointegration	Test n.a.
2	China trade with Africa	China TOF to Africa	No cointegration	No cointegration	No cointegration
3	China imports to Africa	China ODA to Africa	No cointegration	Test n.a.	Test n.a.
4	China imports to Africa	China TOF to Africa	No cointegration	Test n.a.	Test n.a.
5	China exports to Africa	China ODA to Africa	No cointegration	No cointegration	Test n.a.
6	China exports to Africa	China TOF to Africa	No cointegration	No cointegration	Test n.a.
7	China trade with Sub-Saharan Africa	China ODA to Sub-Saharan Africa	No cointegration	Test n.a.	Test n.a.
8	China trade with Sub-Saharan Africa	China TOF to Sub-Saharan Africa	No cointegration	Test n.a.	Test n.a.
9	China imports from Sub-Saharan Africa	China ODA to Sub-Saharan Africa	No cointegration	No cointegration	Test n.a.
10	China imports from Sub-Saharan Africa	China TOF to Sub-Saharan Africa	No cointegration	No cointegration	Test n.a.
11	China exports from Sub-Saharan Africa	China ODA to Sub-Saharan Africa	No cointegration	No cointegration	Test n.a.
12	China exports from Sub-Saharan Africa	China TOF to Sub-Saharan Africa	No cointegration	No cointegration	No cointegration
13	EU trade with Africa	EU ODA to Africa	No cointegration	No cointegration	No cointegration
14	EU trade with Africa	EU TOF to Africa	No cointegration	Test n.a.	No cointegration
15	EU imports to Africa	EU ODA to Africa	No cointegration	No cointegration	Test n.a.
16	EU imports to Africa	EU TOF to Africa	No cointegration	Test n.a.	Test n.a.
17	EU exports to Africa	EU ODA to Africa	No cointegration	No cointegration	No cointegration

(*continued*)

Table 13.1 (continued)

	Dependent variable	*Independent variable*	*Model A—without trend and intercept*	*Model B—with intercept*	*Model C—with trend and intercept*
18	EU exports to Africa	EU TOF to Africa	No cointegration	Test n.a.	No cointegration
19	EU trade with Sub-Saharan Africa	EU ODA to Sub-Saharan Africa	No cointegration	No cointegration	Test n.a.
20	EU trade with Sub-Saharan Africa	EU TOF to Sub-Saharan Africa	No cointegration	Test n.a.	Test n.a.
21	EU imports from Sub-Saharan Africa	EU ODA to Sub-Saharan Africa	No cointegration	No cointegration	Test n.a.
22	EU imports from Sub-Saharan Africa	EU TOF to Sub-Saharan Africa	No cointegration	Test n.a.	Test n.a.
23	EU exports to Sub-Saharan Africa	EU ODA to Sub-Saharan Africa	No cointegration	No cointegration	No cointegration
24	EU exports to Sub-Saharan Africa	EU TOF to Sub-Saharan Africa	No cointegration	Test n.a.	No cointegration
25	Total trade with Africa	Total ODA to Africa	No cointegration	No cointegration	Test n.a.
26	Total trade with Africa	Total TOF to Africa	No cointegration	No cointegration	Test n.a.
27	Total imports to Africa	Total ODA to Africa	No cointegration	No cointegration	Test n.a.
28	Total imports to Africa	Total TOF to Africa	No cointegration	No cointegration	Test n.a.
29	Total exports to Africa	Total ODA to Africa	No cointegration	No cointegration	No cointegration
30	Total exports to Africa	Total TOF to Africa	No cointegration	No cointegration	No cointegration
31	Total trade with Sub-Saharan Africa	Total ODA to Sub-Saharan Africa	No cointegration	No cointegration	No cointegration
32	Total trade with Sub-Saharan Africa	Total TOF to Sub-Saharan Africa	No cointegration	No cointegration	No cointegration

(*continued*)

Table 13.1 (continued)

	Dependent variable	*Independent variable*	*Model A—without trend and intercept*	*Model B—with intercept*	*Model C—with trend and intercept*
33	Total imports from Sub-Saharan Africa	Total ODA to Sub-Saharan Africa	No cointegration	No cointegration	No cointegration
34	Total imports from Sub-Saharan Africa	Total TOF to Sub-Saharan Africa	No cointegration	No cointegration	No cointegration
35	Total exports to Sub-Saharan Africa	Total ODA to Sub-Saharan Africa	No cointegration	No cointegration	No cointegration
36	Total exports to Sub-Saharan Africa	Total TOF to Sub-Saharan Africa	No cointegration	No cointegration	No cointegration

$$\text{China ODA to Africa} = 0.0257 * \text{China imports from Africa} \tag{13.9}$$

$$\text{China ODA to Africa} = 0.0317 * \text{China exports to Africa} \tag{13.10}$$

$$\text{China TOF to Africa} = 0.1079 * \text{China exports to Africa} \tag{13.11}$$

$$\text{China ODA to Sub-Saharan Africa} = 0.0169 * \text{China trade with Sub-Saharan Africa} \tag{13.12}$$

$$\text{China TOF to Sub-Saharan Africa} = 0.0564 * \text{China trade with Sub-Saharan Africa} \tag{13.13}$$

$$\text{China ODA to Sub-Saharan Africa} = 0.0280 * \text{China imports from Sub-Saharan Africa} \tag{13.14}$$

$$\text{China ODA to Sub-Saharan Africa} = 0.0422 * \text{China exports to Sub-Saharan Africa} \tag{13.15}$$

$$\text{China TOF to Sub-Saharan Africa} = 0.1423 * \text{China exports to Sub-Saharan Africa} \tag{13.16}$$

Equations (13.7) and (13.8) show that changing China's trade with Africa by US$1000, will change China's ODA by US$14 and TOF by US $48 in the same direction. Equation (13.9) shows that changing China's imports from Africa by US$1000 will change China's ODA by US$26 in the same direction. Equations (13.10) and (13.11) show that when China

Table 13.2 Generalization scores for cointegration (dependent "aid")

	Dependent variable	*Independent variable*	*Model A – without trend and intercept*	*Model B – with intercept*	*Model C – with trend and intercept*
37	China ODA to Africa	China trade with Africa	Cointegration	No cointegration	Test n.a.
38	China TOF to Africa	China trade with Africa	Cointegration	No cointegration	No cointegration
39	China ODA to Africa	China imports to Africa	Cointegration	Test n.a.	Test n.a.
40	China TOF to Africa	China imports to Africa	No cointegration	Test n.a.	Test n.a.
41	China ODA to Africa	China exports to Africa	Cointegration	No cointegration	Test n.a.
42	China TOF to Africa	China exports to Africa	Cointegration	No cointegration	Test n.a.
43	China ODA to Sub-Saharan Africa	China trade with Sub-Saharan Africa	Cointegration	Test n.a.	Test n.a.
44	China TOF to Sub-Saharan Africa	China trade with Sub-Saharan Africa	Cointegration	Test n.a.	Test n.a.
45	China ODA to Sub-Saharan Africa	China imports from Sub-Saharan Africa	Cointegration	No cointegration	Test n.a.
46	China TOF to Sub-Saharan Africa	China imports from Sub-Saharan Africa	No cointegration	No cointegration	Test n.a.
47	China ODA to Sub-Saharan Africa	China exports from Sub-Saharan Africa	Cointegration	No cointegration	Test n.a.
48	China TOF to Sub-Saharan Africa	China exports from Sub-Saharan Africa	Cointegration	No cointegration	No cointegration
49	EU ODA to Africa	EU trade with Africa	No cointegration	No cointegration	No cointegration
50	EU TOF to Africa	EU trade with Africa	No cointegration	Test n.a.	No cointegration
51	EU ODA to Africa	EU imports to Africa	No cointegration	No cointegration	Test n.a.
52	EU TOF to Africa	EU imports to Africa	No cointegration	Test n.a.	Test n.a.
53	EU ODA to Africa	EU exports to Africa	No cointegration	No cointegration	No cointegration

(*continued*)

Table 13.2 (continued)

	Dependent variable	*Independent variable*	*Model A – without trend and intercept*	*Model B – with intercept*	*Model C – with trend and intercept*
54	EU TOF to Africa	EU exports to Africa	No cointegration	Test n.a.	No cointegration
55	EU ODA to Sub-Saharan Africa	EU trade with Sub-Saharan Africa	No cointegration	No cointegration	Test n.a.
56	EU TOF to Sub-Saharan Africa	EU trade with Sub-Saharan Africa	No cointegration	Test n.a.	Test n.a.
57	EU ODA to Sub-Saharan Africa	EU imports from Sub-Saharan Africa	No cointegration	No cointegration	Test n.a.
58	EU TOF to Sub-Saharan Africa	EU imports from Sub-Saharan Africa	No cointegration	Test n.a.	Test n.a.
59	EU ODA to Sub-Saharan Africa	EU exports to Sub-Saharan Africa	No cointegration	No cointegration	No cointegration
60	EU TOF to Sub-Saharan Africa	EU exports to Sub-Saharan Africa	No cointegration	Test n.a.	No cointegration
61	Total ODA to Africa	Total trade with Africa	No cointegration	No cointegration	Test n.a.
62	Total TOF to Africa	Total trade with Africa	No cointegration	No cointegration	Test n.a.
63	Total ODA to Africa	Total imports to Africa	No cointegration	No cointegration	Test n.a.
64	Total TOF to Africa	Total imports to Africa	No cointegration	No cointegration	Test n.a.
65	Total ODA to Africa	Total exports to Africa	No cointegration	No cointegration	No cointegration
66	Total TOF to Africa	Total exports to Africa	No cointegration	No cointegration	No cointegration
67	Total ODA to Sub-Saharan Africa	Total trade with Sub-Saharan Africa	No cointegration	No cointegration	No cointegration
68	Total TOF to Sub-Saharan Africa	Total trade with Sub-Saharan Africa	No cointegration	No cointegration	No cointegration

(*continued*)

Table 13.2 (continued)

	Dependent variable	*Independent variable*	*Model A – without trend and intercept*	*Model B – with intercept*	*Model C – with trend and intercept*
69	Total ODA to Sub-Saharan Africa	Total imports from Sub-Saharan Africa	No cointegration	No cointegration	No cointegration
70	Total TOF to Sub-Saharan Africa	Total imports from Sub-Saharan Africa	No cointegration	No cointegration	No cointegration
71	Total ODA to Sub-Saharan Africa	Total exports to Sub-Saharan Africa	No cointegration	No cointegration	No cointegration
72	Total TOF to Sub-Saharan Africa	Total exports to Sub-Saharan Africa	No cointegration	No cointegration	No cointegration

changes its exports to Africa with US$1000, it will change China's ODA by US$32 and TOF by US$108 in the same direction.

Equations (13.12, 13.13, 13.14, 13.15, and 13.16) focus on SSA. Equations (13.12) and (13.13) show that a change in China's trade with Sub-Saharan Africa by US$1000 will change China's ODA for the region by US$17 and TOF by US$56 in the same direction. Equation (13.14) shows that a change in China's imports from SSA by US$1000 will change China's ODA for SSA by US$28 in the same direction. Equations (13.15) and (13.16) show that a change in China's exports for SSA by US$1000 will change China's ODA for SSA by US$42 and China's TOF for SSA by US $142 in the same direction.

The analysis of the relation between aid and trade of the EU and China with SSA could not identify the existence of direct impact of international trade on development aid of African and SSA countries, both for EU and China. On the other hand, while there is no evidence for a relation between EU's trade and development aid to Africa and SSA, that is not the case for China—changes in the volume of trade both in terms of imports and exports have direct impact on development aid flows. Given the specifics of China's aid granting and the rapid increase of aid provided to Africa and specifically to SSA (see section "EU and China Development Aid to SSA"),

one could regard the impact of trade over aid as evidence for the strong and complex geoeconomic interest China shows to the region.

The causal relation is stronger (in higher volume) for exports than for imports for both Africa and SSA. This could be interpreted as evidence in support for the findings in the theoretical literature that the link between aid and trade is stronger regarding exports—that is, by providing aid the donor creates stronger ties with the recipient country, which positively impacts imports from the donor country. The direction of the relation, however, once again shows the different concept of China's aid giving—namely, to support specific countries where the country has already established strong trade (and other) relations. Moreover, as the causal relation is stronger for TOF than for ODA, China uses trade to strengthen its position in its main trade partners through export-facilitating transactions and grants for representational or essentially commercial purposes.

The impact of trade on aid is stronger in Sub-Saharan Africa than in Africa as a whole. The stronger impact of development assistance of foreign trade in Sub-Saharan Africa further supports the conclusion that China's interests, as well as the country's trade links with the continent, are concentrated primarily in this part of Africa.

A possible explanation for the difference between the EU and China is that while the EU, which is the largest donor of ODA, directs its actions toward promoting integration efforts and the implementation of development objectives since the benefits for economic effectiveness from integration prove to be positive (Stefanova 2014), China (and the "new" world powers in general) prefers bilateral negotiations and the support of specific countries according to their own economic and geopolitical benefits. Moreover, many European countries provide additional support to their African partners (and former colonies), driven primarily by their own national interest rather than by the stated EU objectives and principles in its role as a global player. This, together with the aggressive penetration of new global economic players in Africa requires a thorough rethinking of the policy toward the countries on the continent.

Conclusion

International trade and foreign aid are the two main instruments for generating and reallocating wealth in the world economy and represent important ways through which industrialized countries can contribute to the development of poorer nations.

There are many reasons why one might expect to observe a relation between aid and trade flows from a donor to a particular recipient. Several general types of aid-trade links may exist—first, no relationship exists at all; second, trade is a determinant of aid (donors grant more aid to those recipients that import more from them); third, aid impacts on trade ("aid causes trade"); fourth, the link between trade and aid is bidirectional (aid and trade form parts of a mutually reinforcing cycle—the presence of one increases the likelihood of the other); and last but not least, a third common factor is responsible for the observed temporal correlation between aid and trade. However, despite many (theoretical and empirical) studies that claim a link between aid and trade actually exists, the fact that many forms of relation are possible represents a problem with existing empirical work. However, one cannot draw general conclusions because most of the empirical studies focus on a single (or a subset) of these possible cases.

The main trend observed in all SSA countries is the shift of trade flows from EU to China, although EU still maintains its leading position as trade partner. China, on the other hand, started to develop more intense trade relations in the period under review (given the low value of trade in 2000) to become one of African countries' main partners. Another noticeable fact is that China's trade with Africa (especially regarding imports) is concentrated in Sub-Saharan African countries, while EU trades almost equally with SSA and North Africa.

As indicated in section "EU and China Development Aid to SSA", the global financial crisis and the Eurozone sovereign debt crisis have led to a reduction in the development assistance, provided by the EU to SSA. On the other hand, the amount of ODA provided to Africa by China in recent years has grown sharply, but it is still not large. Moreover, ODA flows from China are extremely volatile in the period under consideration.

The general conclusion of the empirical analysis is that there is no evidence for a causal relation between EU's development aid (both ODA and TOF) and international trade (both total trade, imports and exports). This is valid both for Africa as a whole and for Sub-Saharan Africa. Thus, in the case of EU the first theoretical type of aid-trade link is observed (no relation). In the case of China, "trade creates aid" (the second theoretical type of link). Moreover, the impact of trade on development aid is stronger for Sub-Saharan Africa than for Africa as a whole, as well as for exports than for imports and for TOF than for ODA.

If one regards EU and China as representative for respectively OECD and BRICS, one of the conclusions of the analysis would be that in the case

of Sub-Saharan Africa there is a shift of trade flows from the developed to the emerging economies. Another conclusion is that different factors influence aid flows from OEDC and BRICS. Based on the empirical model, one could conclude that there is no causal relation between aid and trade flows in the case of the EU which is indicative for the compelling change of the Union's policy toward Africa. For China, however, trade with Sub-Saharan Africa is a determinant of the quantity of international aid provided with around 55% of the change of aid being a result of changes in foreign trade which is an evidence for the strong and complex geoeconomic interest China shows to this region.

Annex

Annex 13.1 Order of integration at Models A, B, and C

Integrated variable	*Order of integration*		
	Model A—without trend and intercept	*Model B—with intercept*	*Model C—with trend and intercept*
China ODA to Africa	2	1	0
China ODA to Sub-Saharan Africa	2	1	0
China TOF to Africa	2	2	2
China TOF to Sub-Saharan Africa	2	2	2
China exports to Africa	2	2	>4
China exports to Sub-Saharan Africa	2	2	2
China imports from Africa	2	>4	>4
China imports from Sub-Saharan Africa	2	2	>4
China total trade with Africa	2	>4	>4
China total trade with Sub-Saharan Africa	2	2	>4
EU ODA to Africa	3	2	2
EU ODA to Sub-Saharan Africa	2	2	2
EU TOF to Africa	3	0	3
EU TOF to Sub-Saharan Africa	3	0	3
EU exports to Africa	2	1	1
EU exports to Sub-Saharan Africa	2	1	2
EU imports from Africa	2	2	>4
EU imports from Sub-Saharan Africa	2	1	0
EU total trade with Africa	2	1	>4
EU total trade with Sub-Saharan Africa	2	1	0
Total ODA to Africa	4	4	4
Total ODA to Sub-Saharan Africa	3	3	3
Total TOF to Africa	2	2	2
Total TOF to Sub-Saharan Africa	2	2	1
Total exports to Africa	2	1	1

(*continued*)

Annex 13.1 (continued)

Integrated variable	*Order of integration*		
	Model A—without trend and intercept	*Model B—with intercept*	*Model C—with trend and intercept*
Total exports to Sub-Saharan Africa	2	1	1
Total imports from Africa	2	2	>4
Total imports from Sub-Saharan Africa	2	2	2
Total trade with Africa	2	1	>4
Total trade with Sub-Saharan Africa	2	1	2

Annex 13.2 Cointegration equations

Equations	*Determination (R^2—proportion of the variance in the dependent variable that is predictable from the independent variable)*	*Durbin–Watson test statistics*
China ODA to Africa = **0.0143 *** China trade with Africa	0.56	2.46
China TOF to Africa = **0.0483 *** China trade with Africa	0.58	1.91
China ODA to Africa = **0.0257 *** China imports from Africa	0.52	2.32
China ODA to Africa = **0.0317 *** China exports to Africa	0.60	2.62
China TOF to Africa = **0.1079 *** China exports to Africa	0.64	2.10
China ODA to Sub-Saharan Africa = **0.0169 *** China trade with Sub-Saharan Africa	0.54	2.43
China TOF to Sub-Saharan Africa = **0.0564 *** China trade with Sub-Saharan Africa	0.55	1.84
China ODA to Sub-Saharan Africa = **0.0280 *** China imports from Sub-Saharan Africa	0.50	2.32
China ODA to Sub-Saharan Africa = **0.0422 *** China exports to Sub-Saharan Africa	0.58	2.57
China TOF to Sub-Saharan Africa = **0.1423 *** China exports to Sub-Saharan Africa	0.60	1.99

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CHAPTER 14

Changing International Trade Linkages in Sub-Saharan Africa: BRIC versus OECD Countries

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Introduction

Advanced economies, mainly OECD countries, have been traditional trading partners of the Sub-Saharan African countries for decades. But in recent years, the relative importance of advanced countries has been declining in the region. On the contrary, BRIC Brazil, Russia, India, and China (BRIC) countries, have been playing major roles in determining the direction of international trade in Sub-Saharan Africa (SSA). With the changing structure and direction of trade, it is also observed that growth rates of many countries in SSA have been significantly higher in recent years.

In light of these observations, this chapter analyzes the increasing trade shares of BRIC relative to those of OECD countries in SSA, and the impact of these changes on the growth performance of the countries in the region. The research question is "what is the role of the changing direction of trade in determining higher growth rates in SSA?" In other words, is the increasing share of trade with BRIC more effective in improving the growth performance of countries in SSA, compared to the role of OECD countries?

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Dramatic changes in the direction of trade can have many implications for SSA, as well as for its Asian and European trading partners. Changes in the direction of trade can affect many macro indicators, and in turn, economic development. International trade linkages of a country are expected to play an important role in determining its growth rates. Stronger trade linkages increase the dimensions of available markets and help countries earn much needed foreign currency. The changing direction of trade also determines the structure of exports and imports, trade balance, and terms of trade index. Most importantly, international trade also determines the direction of international capital flows for SSA countries.[1]

International trade is measured by exports and imports, using country-level data from 1980 to 2014 for 42 Sub-Saharan African countries. The data sources are the International Monetary Fund's Direction of Trade Database and World Bank's World Development Indicators. Economic growth is measured by growth rate of real GDP per capita.

In addition to the descriptive analyses, regression results are included to better understand the importance of increasing trade of SSA countries with BRIC. In the benchmark regression specification, economic growth is the dependent variable, while different trade indicators are the main variables. Trade indicators include share of OECD countries and BRIC in total exports and imports of SSA countries, trade openness, and terms of trade. Control variables include political and institutional determinants of growth, as well as investment, human capital, and a measure of macroeconomic stability. While the independent variables are expected to have an impact on growth, there is the possibility that growth might also impact these variables, leading into endogeneity problem. Thus, we apply two-step system GMM estimator to minimize the endogeneity problem.

The regression findings support the existence of a strong link between growth and international trade indicators. The results show that the rising share of SSA countries' trade with BRIC does not only have a direct effect on growth through higher exports and imports but also an indirect effect working through improvements in terms of trade index. The impact of increasing trade with BRIC on SSA countries' growth rates is stronger than that with OECD countries. In terms of magnitude of effect, a 10-percent increase in the share of SSA countries' exports to BRIC leads to approximately 0.63-percent rise in growth rates. Moreover, the same percentage increase in the share of SSA's imports from BRIC increases growth by 0.52-percent. These results are robust to alternative regression techniques and model specifications.

The rest of the chapter is structured as follows: The next section provides brief literature review, followed by a description of the changing direction of SSA countries' international trade. The last two sections focus on the discussion of regression results and concluding remarks, respectively.

Literature

In the recent years, a number of studies have investigated the economic relationship between BRIC and other developing countries. However, empirical studies on the specific link between BRIC and the SSA are limited. Available studies mostly support the importance of higher involvement of BRIC in developing countries, including SSA. But, there are also common concerns about how the presence of BRIC, especially China, would affect the competitiveness of lower-income countries in international markets.

One of the earlier studies on the issue of the increasing influence of BRIC in the world markets was by Jenkins and Edwards (2006). They investigated the economic effects of China and India on SSA and pointed out the increasing role of trade between these two Asian countries and Africa. They further studied exports from Africa to China and India as well as Africa's imports from China and India, and found that for some African countries the impact was robust. Angola, Nigeria, and Sudan turned out to be important exporters to BRIC; while Ghana, Ethiopia, Kenya, Tanzania, and Uganda became the main export countries for China and India.

Another interesting contribution is by Wang (2007), whose study focused on understanding the driving force of China's growing role in Africa's development. The study demonstrated China's influence as a donor, financer, and investor. Most importantly, it identified access to large market as the main determining factor of the bilateral relationship between China and SSA.

Similarly, Kaplinsky and Messner (2008) studied the importance of Asian countries, especially China and India, in determining growth performances in the different regions of the world, including SSA. They showed the increasing impact of China and India in different areas, and also provided a framework for assessing these impacts (interaction, complementary, competitive, and direct and indirect impacts).

In a follow-up paper, Kaplinsky and Morris (2008) focused specifically on the link between Asia and SSA. They found that export-oriented manufacturing is commonly seen as an appropriate developmental path for SSA after the success of China and other earlier generations of Asian

newly industrialized countries. However, the entry of Asian countries, especially China and India, into the world economy as a significant exporter of manufactures can cause serious problems for export-oriented growth in SSA. As an example, the authors presented SSA's recent experience in clothing and textile sectors, which are often considered to be the first step in successful export-oriented manufacturing growth. They predicted that without sustained trade preferences over Asian producers, the clothing and textile industries in SSA would be largely excluded from the world markets as well as from their own domestic markets.

Samake and Yang (2011) who attempted to answer the question of whether low-income countries and BRIC linkages lead to any growth spillovers found direct and significant spillovers. Drummond and Liu (2013), on the other hand, found that SSA countries became more responsive to spillovers from China, where a one-percentage point rise in China's domestic investment growth is associated with an average of 0.6-percent rise in SSA countries' export growth. They also found that the link is stronger in resource-rich SSA countries.

More recently, Kummer-Noormamode (2014) who employed panel data over 1985–2014 period for 37 African countries showed that trade with China has an important impact on African countries' growth, and that trade with China had a stronger effect on African economies than trade with European countries. Diallo and Tapsoba (2014) who investigated the link between the rising role of BRIC and changes in Sub-Saharan Africa's business suggest that SSA's business cycles are in tandem with those of BRIC. They find that international trade with BRIC is the strongest driver of this shift. Agyekum et al. (2015) review of the impact of China's trade on Ghana's growth also showed positive link.

A United Nations Economic Commission for Africa (2013) study on the cooperation between Africa and BRIC and its implications for growth, employment, and structural transformation in Africa, concluded that the two groups have benefited from their cooperation. The study also pointed out the possible problems that may damage the positive effects in the future. For example, it reported that most export earnings have accrued to foreigners rather than benefiting Africa's development. African countries' international competitiveness has also been declining as China's trade share increases in the world. But the report indicated that this concern on SSA's competitiveness may change soon with rising wages in China.

In light of these studies, the main contribution of this chapter lies in its analysis of the role of BRIC and OECD countries' trade on the growth

performance of SSA. Another contribution of the chapter is the consideration of the impact of the terms of trade index in determining growth. Given that improving terms of trade is one of the main channels through which increasing trade can contribute to growth, it is important to include this variable while investigating the link between trade and growth in SSA. The inclusion of policy and quality of governance indicators as possible factors of growth is also important.

International Trade Linkages and Growth in SSA

The contributions of developing countries to the world economy have increased significantly in recent decades. This observation is true especially for BRIC countries. With impressive growth rates (11% between 1980 and 2014), China is definitely the rising star of the group. Through stronger international trade linkages, improvements in BRIC have started to spread toward other regions of the world, including the SSA. In this process, higher international trade has led to undeniable positive effects on developing countries' growth performance.

This section, investigates the impact of the changing direction of international trade and improving terms of trade (TOT) on SSA's growth performance. The data analysis shows that while the role of OECD countries has been declining continuously, the trade share of BRIC, especially China's, has been increasing at impressive rates.

International Trade in the SSA Region: OECD Countries versus BRIC

The first panel of Fig. 14.1 presents the share of SSA's exports to the BRIC versus OECD countries as a percentage of SSA's total exports; while the second panel is for the share of SSA's imports from the BRIC versus OECD countries as a percentage of SSA's total imports. The trade links with BRIC were low but stable in the 1980s. OECD countries were the dominant trading partners of SSA countries during the same period. The trade share of OECD countries in total exports and imports of SSA was almost 20 times larger than the share of BRIC.

The trend started to change quickly in the early 1990s. Figure 14.1 shows that the share of the BRIC countries in SSA's total exports and imports has continuously been increasing since the 1990s. The opposite is observed for OECD countries. While the share of exports to BRIC in total exports of SSA was only 2.2% in 1990, the share of exports to OECD countries was 76.2% in the same year. The share of exports to BRIC in

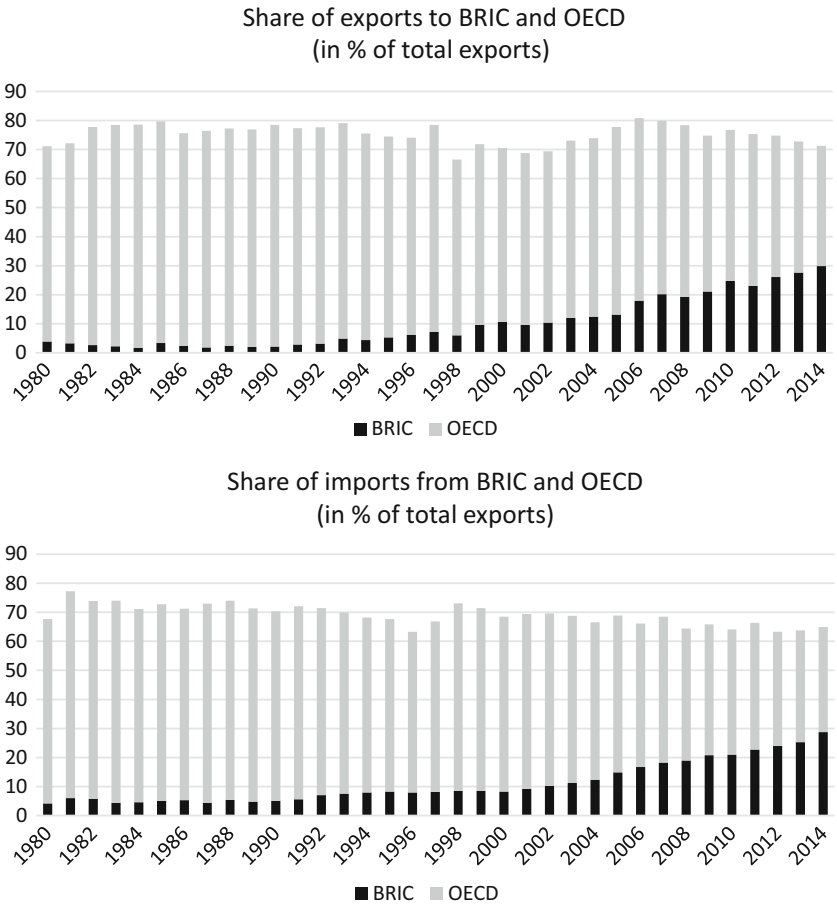

Fig. 14.1 The SSA's share of exports to, and Imports from, OECD and BRIC (*Source*: IMF's *Direction of Trade* and the author's calculation)

2000, at 10.65%, was almost five times larger than the share in 1990; while that to OECD countries declined by 16.4 percentage points to 59.8%. Overall, evidence in Fig. 14.1 show that SSA's exports to BRIC has been increasing over time, and that to OECD has been declining.

In the second panel of Fig. 14.1, the declining trend in the share of SSA's imports from OECD countries is evident. The share of imports from OECD

countries was 65.16% in 1990, while that from BRIC was quite low at 5.1%. In 2000, these values were 60.15% for OECD countries and 8.28% for BRIC. In 2014, the share of imports from BRIC was 28.72% of SSA's total imports, while only 36.19% for OECD countries, corresponding to a sharp drop from its values in the 1980s (of around 65%). It is clear that the traditional trading partners of the SSA countries, mainly the advanced European countries, are about to lose their dominance in the region because of higher trade competition from BRIC.

The share of BRIC in SSA's exports and imports obviously has been increasing. Figure 14.2 presents trade volume in billions of US dollars. The upper and lower panels of the figure are for exports and imports from SSA, respectively. There is no much change in the volume of trade in the 1980s and 1990s; but the trend starts to move upwards in the 2000s. For example, in 2014, the volume of SSA's international trade volume was almost six times larger than the 2000 value. This evidence suggest that SSA countries have become economically more open in the last 15 years. In 2014, the value of total exports and imports of SSA countries increased to US$362 billion and US$428 billion, respectively. The direction of trade has changed considerably with higher trade openness. While SSA's exports to OECD countries have been declining, that to BRIC has increased remarkably in the past 15 years. The value of SSA's exports to BRIC in 2014 increased to US $108 billion relative to that in 2000, while the total value of exports to OECD countries declined to nearly US$150 billion (Fig. 14.2). Another interesting observation from Fig. 14.2 is that SSA countries' exports to "other" countries have been increasing as well. This "other" category includes interregional trade for SSA countries.

As reported in the second panel of Fig. 14.2, the value of SSA's imports increased rapidly compared to exports in the 2000s, leading to a higher trade deficit for the region. The 2014 value of imports from BRIC was US $123 billion, making BRIC the dominant importing market for SSA. On the contrary, the value of imports from OECD countries has been decreasing in recent years. It dropped to US$155 billion in 2014, suggesting that OECD countries face a step competition from BRIC in their access to SSA market. In Fig. 14.2, it is also evident that imports from the interregional markets have been rising as well.

Figure 14.3 presents the data for individual BRIC countries. Compared to other BRIC countries, China has the strongest trade links with SSA. Its share in SSA's exports and imports has been continuously increasing. In 2014, the share of exports to China in total SSA's exports was 17.81%. In

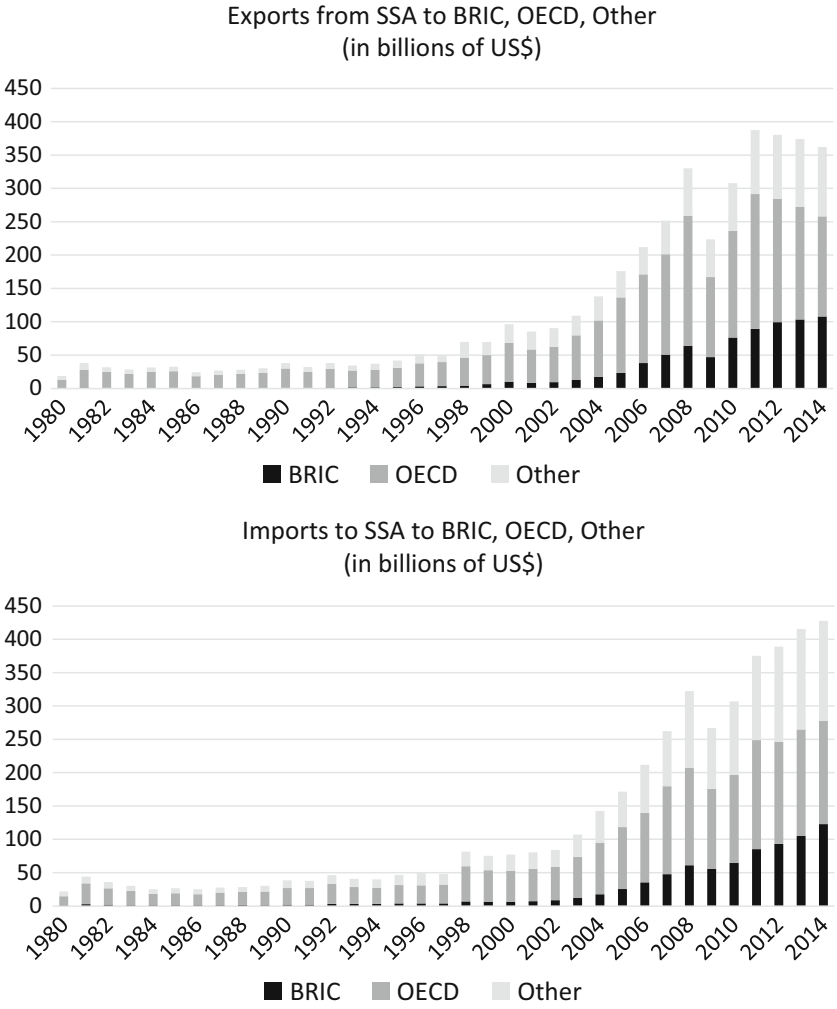

Fig. 14.2 SSA's exports to and imports from BRIC and OECD countries (in levels) (*Source*: IMF's *Direction of Trade* and the author's calculation)

the same year, the share of imports from China as a percentage of total SSA's imports was 20.13%. India is SSA's second largest trading partner among the BRIC countries. For example, the proportion of India's exports to and

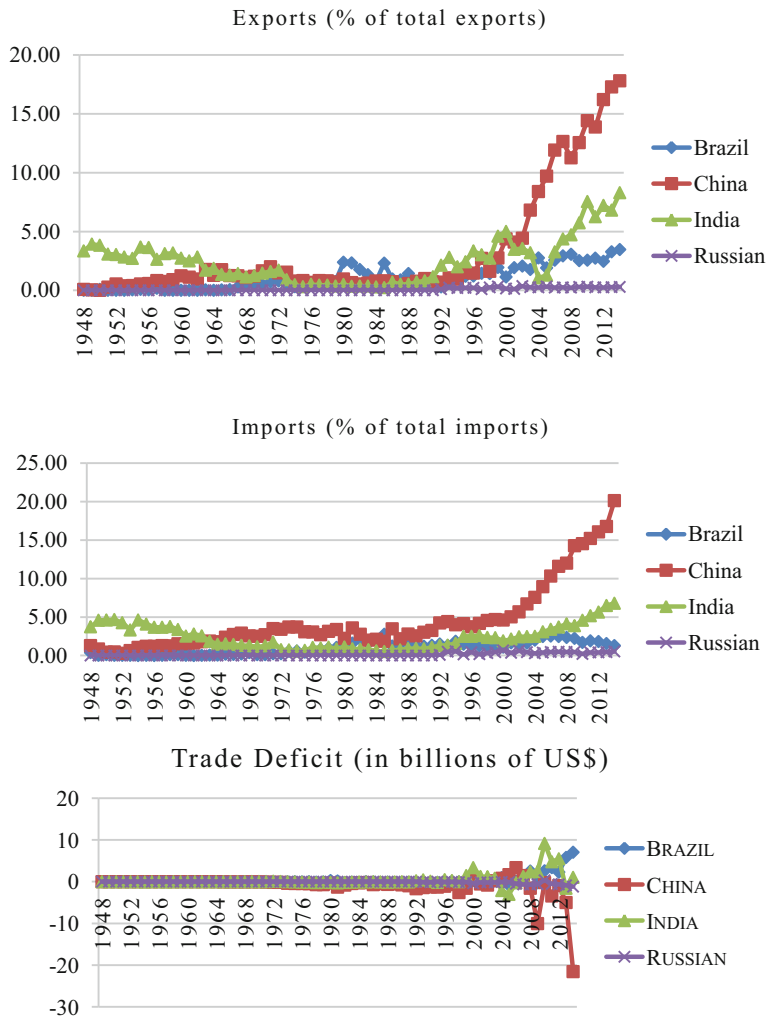

Fig. 14.3 The share of SSA's exports to and imports from BRIC, and trade deficit (*Source*: IMF's *Direction of Trade* and the author's calculation)

imports from SSA in the region's total imports and exports in 2014 was 6.78% and 8.3% respectively. The trade link between the SSA countries and Brazil is also getting stronger, but it is still limited compared to the links

with China and India; as evidenced by a relatively smaller share of its imports from and exports to SSA of 3.46% and 1.26%, respectively, in 2014. On the other hand, the trade linkages between Russia and SSA is very minimal; given a lower of trade of around 1% between 1980 and 2014.

The last panel of Fig. 14.3 reports the trade balance between SSA countries and individual BRIC countries. It is evident that SSA's imports from China have been rising relative to their exports to China, leading to a large trade deficit for SSA countries. On the contrary, SSA countries' exports to Brazil have been larger than imports. For example, in 2014 alone, there was a US$7.04 billion trade surplus for the SSA region. The trade with India has also produced largely positive net exports for SSA. Conversely, Russia has had a trade deficit with SSA countries.

The experience of bilateral trade for individual SSA countries has differed remarkably across the region. The table which summarizes the changes in the direction of trade for each SSA country between 1990 and 2014 is available upon request.

Nigeria is the largest economy in the region. This country heavily depends on exports of natural resources, especially oil. As a trading partner, Nigeria is equally important for BRIC and OECD countries. The share of exports to BRIC in total exports of Nigeria increased from 0.21% in 1990 to 28.14% in 2014. During the same period, the share of exports to OECD countries from Nigeria dropped from 84.82% to 33.1%. Similarly, the share of imports from BRIC to Nigeria increased from 10.83% in 1990 to 33.22% in 2014. Between 1990 and 2014, the share of imports from the OECD countries to Nigeria dropped by approximately 50%; from 77.65% in 1990 to 36.58% in 2014.

We observe a similar trend for South Africa, the second largest economy in SSA. Throughout its history, South Africa has had a strong trade relationship with advanced economies. This situation has been changing in recent years. Moreover, South Africa's trade links with BRIC improved dramatically between 2000 and 2014. The share of the country's exports to BRIC was only 4.17% in 2000, but by 2014, it had increased to 16.95%. The share of imports from BRIC also increased to 22.23% in 2014 from the 2000 value of 7.13%. On the contrary, OECD's exports and imports share in SSA's trade has been decreasing over the years.

The changing direction of trade is even more dramatic in Angola, the third largest economy in SSA. This resource-rich country is one of the fastest growing economies in the world. The role of stronger trade links, especially with BRIC, in Angola's growth miracle cannot be denied; as evidenced by

increasing trade share since the 1990s. For example, the share of Angola's exports to BRIC in 1990, was only 2.73%, but they 2014, it had increased to 58.95%. Similarly, BRIC's exports to Angola rose from 7.85% of Angola's total imports in 1990 to 31.95% in 2014. On contrary, the share of Angola's exports to and imports from OECD countries was 31.76% and 53.80%, respectively, in 2014; which was a considerable drop from 82.88% and 81.97% in 1990.

The above trend is very similar in other large economies of the region such as Tanzania, Kenya, and Ethiopia. They exemplify stronger international trade links with BRIC, with declining importance of OECD countries. These findings clearly indicate that OECD countries are losing their dominance in the SSA market.

Ranking SSA countries by share of their exports to BRIC in 2014, Sierra Leone takes the lead with 80% of its exports going to BRIC. Similarly, the Gambia's and Guinea-Bissau's shares of exports to BRIC are high; 67.39% and 70.05%, respectively. Countries with the lowest export shares to BRIC include: Sao Tome and Principe, Seychelles, and Cape Verde, exporting only 1% of their total exports to BRIC. When ranked by share of imports from BRIC; Kenya, the Gambia, Benin, and Tanzania are the biggest importers with shares as high as 50% in their total imports. Central African Republic has the least imports from BRIC as evidenced by a proportion of only 4.05% of its total imports.

With reference to OECD countries, Seychelles, Cape Verde, Chad, and Sao Tome and Principe are the dominant exports with a share of around 70–90% of their total exports in 2014. Sao Tome and Principe and Cape Verde also heavily depend on imports from OECD countries; importing between 70% and 80% of their total imports.

Overall, it is very clear that the importance of BRIC, especially China and India, has been increasing in SSA's international trade in recent years. The opposite is observed for OECD countries, the traditional trade partners of SSA countries. Both exports and imports with the BRIC have been on a rise, leading to significant changes in the direction of trade for SSA. Such changes in trade can lead to important developments in other economic variables.

Growth Performance in SSA and the Possible Role of International Trade

Throughout the 1980s and the most of the 1990s, average growth rates in SSA were mostly lower than the growth rates observed in other developing

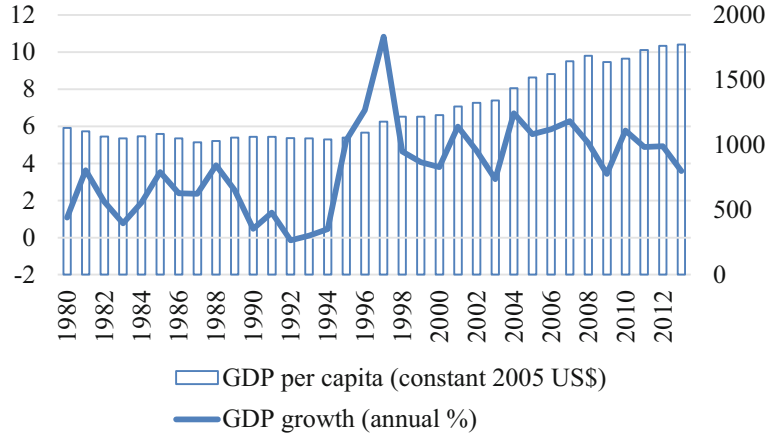

Fig. 14.4 SSA's growth rates and GDP per capita (*Source*: World Bank's *World Development Indicators* and the author's calculation)

regions. Low growth rates led to declining GDP per capita in real terms. Figure 14.4 presents the average growth rate and GDP per capita (in constant 2005 US dollars) in SSA. The average growth rate was approximately 5% between 2000 and 2014, which was higher than the World's average during the same period. This translated into higher GDP per capita, which increased from US$1200 in 2000 to almost US$1800 in 2014. This impressive performance of both GDP growth rate and GDP per capita is a welcomed development after a long stagnation period in the 1980s and 1990s.

Figure 14.5 shows the link between GDP per capita growth and changing international trade links. The upper panel plots annual average growth rate in SSA and average share of exports to BRIC and OECD countries. A positive link between the average growth rate and share of exports to BRIC is evident. The fitted trend line in the graph confirms the positive link.[2] On the other hand, there is a negative link between the average growth rate in SSA and the share of exports to OECD countries. The fitted trend line also confirms the negative link.

The lower panel of Fig. 14.5 presents the link between average growth rate and the share of imports from the BRIC versus OECD countries. Similar to what is documented above, there is a positive link between

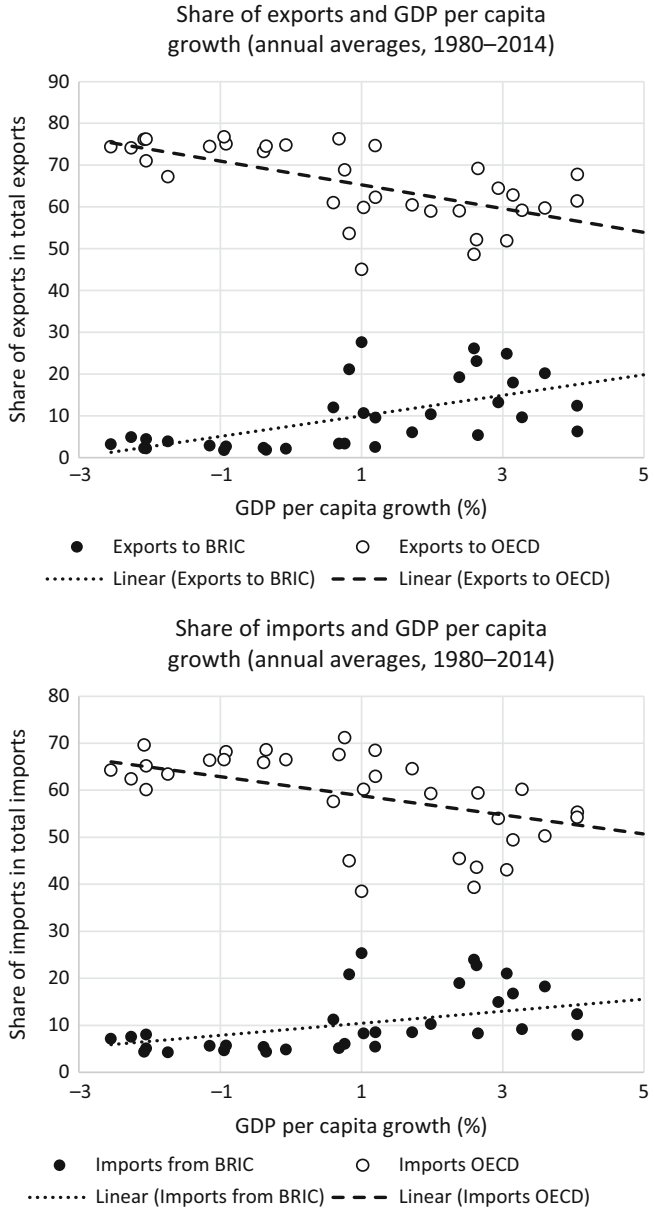

Fig. 14.5 The average share of SSA's exports to and imports from BRIC and growth rates, 1980–2014 (*Source*: IMF's *Direction of Trade* and World Bank's *World Development Indicators* and the author's calculation)

growth rates and share of imports from BRIC; and a negative link for the OECD countries.

In Fig. 14.6, we plot the relationship between average real GDP per capita in SSA and shares of exports and imports for BRIC and OECD countries. When income is used instead of growth rate, a much stronger positive link between the changing direction of trade and economic performance of SSA is observed (first panel of Fig. 14.6). On the other hand, a negative link is observed between average income and the share of exports to OECD countries. In the second panel of Fig. 14.6, evidence shows that as the share of imports from BRIC increases, average real income in SSA also increases; while the opposite is observed for OECD countries.

One possible explanation for the positive link between average growth rate and increasing trade with BRIC could be attributed to improvements in terms of trade (TOT) during this period. TOT is defined as the ratio of the exports price index to imports price index. Increasing value of TOT indicate improvements in exports prices, declining value denotes relatively increases in prices of imported products. With increasing demand of SSA exports by BRIC, the TOT index is expected to rise. Increasing TOT in favor of SSA countries means higher values of exports for SSA, and in turn higher GDP growth rate.

Figure 14.7 plots SSA's annual averages of TOT index versus BRIC's trade share in SSA's total trade. Evidence show that the relationship is positive, implying that trade with BRIC is improving the average value of TOT index for SSA countries. While the increasing demand for SSA's exports by BRIC raises export prices (numerator of the TOT index), cheap imported products from BRIC help to keep imports prices low (denominator of the TOT index). Cheap imported products not only increase the value of TOT index but also, lowers overall inflation, and the cost of production in SSA, all of which are expected to have significant and positive effects on growth. Indeed, while growth rates have been increasing in many countries in SSA in recent years, average inflation rates have also been historically low.

For many years, OECD countries had been dominant trading partners of SSA countries. During that period, SSA countries were more fragile because they depended on one group of countries for their exports and imports. However, the presence of BRIC has strengthened the international competition for SSA's international trade. With improvements in trade,

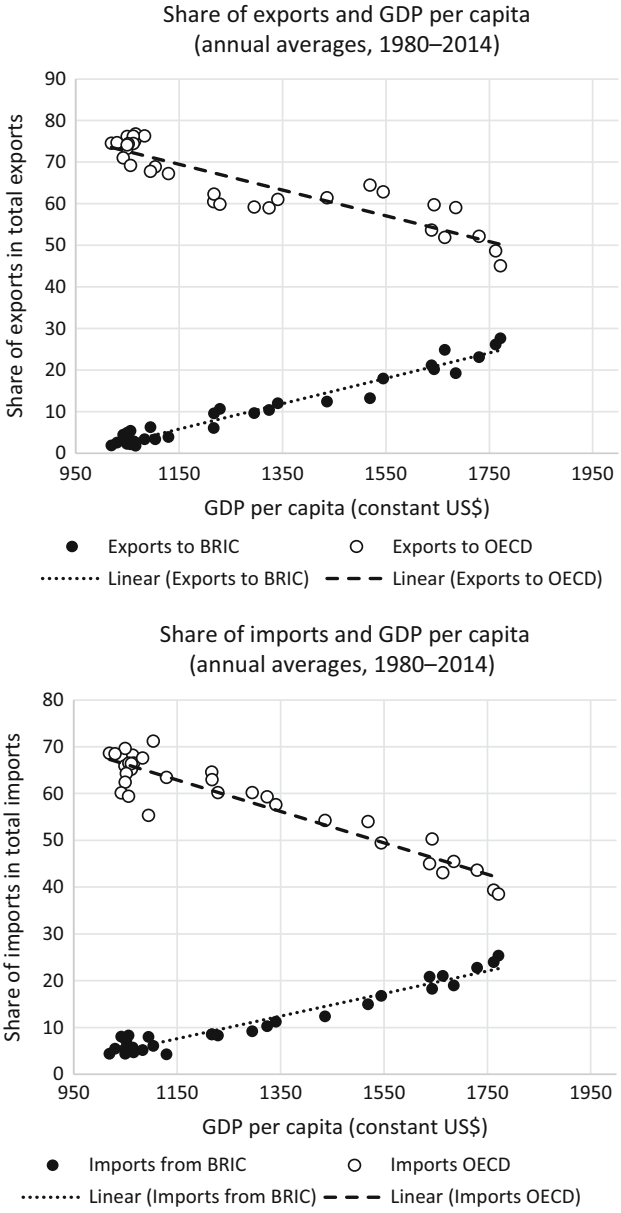

Fig. 14.6 The average share of SSA's exports to and imports from BRIC and GDP per capita, 1980–2014 (*Source*: IMF's *Direction of Trade* and World Bank's *World Development Indicators* and the author's calculation)

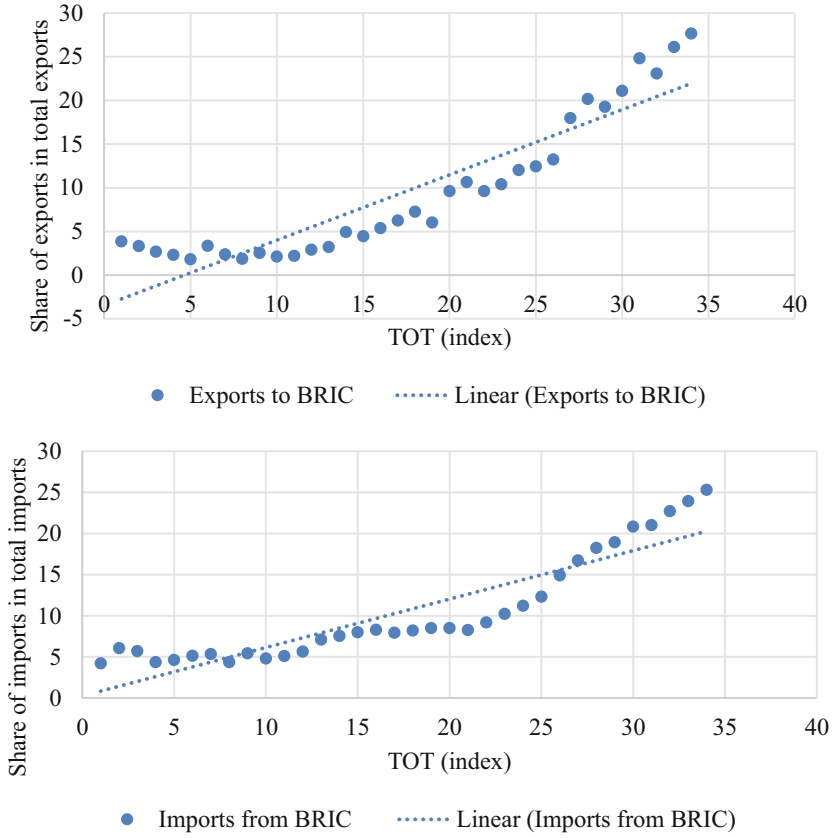

Fig. 14.7 The average share of SSA's exports to and imports from BRIC, and terms of trade (TOT), 1980–2014 (*Source*: IMF's *Direction of Trade* and World Bank's *World Development Indicators* and the author's calculation)

exports prices and the TOT index has remarkably increased in favor of SSA countries. The consequence of these developments is higher growth rates and income in SSA. Consistent with this analysis, we expect positive contributions of higher TOT and the changing direction of trade on growth. In the next section, these relationships are investigated in regression analyses.

Estimation Strategy and Results

Estimation Strategy

This chapter employs two-step system GMM technique as it allows for a treatment of the endogeneity problem that arises in the trade – growth relationship (Arellano and Bond 1991; Arellano and Bover 1995; Blundell and Bond 1998). The two-step system GMM requires first differencing and the use of instrumental variables, which control for possible endogeneity among regressors. The set of instruments includes lagged values of dependent and independent variables where only the first and second lags of the variables are included as instruments.

In the model specified in Eq. 14.1, we assume that the growth rate of SSA countries are determined by changes in the direction of trade, fixed capital investment, trade openness, human capital, institutions and quality of governance, and macroeconomic stability (inflation). We also test alternative regression specifications to check the relevance of the empirical results.

$$\widehat{y}_{it} = b_1\widehat{y}_{it-1} + b_2 TRADE\_SHARE_{it} + b_3 TOT_{it} + b_4 OPEN_{it} + b_5 HC_{it} + b_6 CAP_{it} + b_7 BUREAUC_{it} + b_8 CPIINF, \quad (14.1)$$

Where,

i and t refers to country i and year t, respectively; $\widehat{y}$ is the rate of growth of real GDP per capita, and *TRADE_SHARE* a measure of trade, which takes 4 forms: share of SSA exports to BRIC, share of SSA exports to OECD countries, share of SSA imports from BRIC, and share of SSA imports from OECD countries. These variables are introduced one by one in the regression model due to high correlations[3] among them. The control variables are selected based on growth literature, and include: terms of trade (TOT), ratio of sum of exports and imports to GDP (OPEN), human capital (HC), share of fixed capital investment to GDP (*CAP*), quality of bureaucracy (*BUREAUC*), and inflation rate (*CPIINF*) (Edwards 1993; Barro 1996; Barro and Sala-i-Martin 2003; Bayraktar and Moreno-Dodson 2015). $b_1 \ldots b_8$ are coefficients of explanatories, and the lagged value of the dependent variable is also included.

In addition, we include time dummies to capture time-related shocks. Total share of exports and imports (trade openness) in GDP is considered as an important determinant of growth (Sachs and Warner 1995). This is

especially true for the lower-income countries where domestic markets are limited to support economic growth.

Estimation Results

The estimation results are presented in Table 14.1. In each column, a different *TRADE_SHARE* variable is introduced in the regression. In the first panel of the table, the results are estimated using two-step system GMM, while panel OLS technique is used in the second panel.

In the first panel of Table 14.1, the results show that, after controlling for relevant growth determinants, increasing shares of trade with BRIC have statistically significant impact on growth rates of SSA region. As reported in column 1, the estimated coefficient of the share of exports to BRIC is 0.063; implying that a 10-percent increase in the share of exports to BRIC boosts SSA growth by 0.63-percent annually. There is no significant effect of exports to OECD countries on growth (column 2).

Similar results are observed for the share of imports from the BRIC versus OECD countries. In column 3, the estimated coefficient of the share of SSA's imports from BRIC is found to 0.052, where 10-percent rise in the share of imports from BRIC leads to 0.52-percent increase in per capita GDP growth rate.

The share of imports from OECD countries has negative impact on growth, indicating that lower shares of imports from OECD countries are good for improved growth performance. The most plausible explanation for this result is that as cheap imported products from BRIC replace expensive ones from OECD countries, this improves the growth performance of SSA countries. These findings are consistent with the results reported in similar studies by Kummer-Noormamode (2014), Diallo and Tapsoba (2014), and Agyekum et al. (2015), who also find a positive growth impact of stronger trade links between the BRIC and SSA countries.

The TOT index has a statistically significant and positive effect on growth in all cases. The result indicates that a 10-percent improvement in TOT leads to approximately 0.14-percent rise in growth rates. This suggests that SSA countries benefit from relatively higher exports prices for their products in international markets. Similarly, trade openness has a positive and robust effect on growth.

Other control variables have the expected signs. While fixed capital formation and human capital accumulation have positive effects on growth, inflation and bureaucracy have negative effects.

Table 14.1 Regression results

Dependent variable: GDP per capita growth				
Results with panel dynamic GMM				
	(1)	(2)	(3)	(4)
GDP per capita (−1)	0.296	0.234	0.272	0.229
	(0.09)***	(0.05)***	(0.07)***	(0.07)***
Trade shares				
Exports share of BRIC (in total exports)	0.063 (0.25)**			
Exports share of OECD (in total exports)		−0.012 (0.01)		
Imports share of BRIC (in total imports)			0.052 (0.02)**	
Imports share of OECD (in total imports)				−0.041 (0.01)***
Trade openness (in % of GDP)	0.01	0.02	0.02	0.04
	(0.004)**	(0.01)*	(0.008)**	(0.022)*
Fixed K formation (in % of GDP)	0.107	0.127	0.105	0.143
	(0.06)*	(0.03)***	(0.06)*	(0.03)***
Inflation rate	−0.001	−0.001	−0.001	−0.001
	(0.001)	(0.001)*	(0.001)	(0.001)*
TOT	0.014	0.011	0.017	0.012
	(0.003)***	(0.004)**	(0.004)***	(0.005)**
Human capital	0.003	0.007	0.001	0.008
	(0.002)*	(0.004)*	(0.001)*	(0.004)*
Bureaucracy quality index	−0.36	−0.32	−0.29	−0.31
	(0.211)*	(0.188)*	(0.161)*	(0.177)*
Period	1984–2014	1984–2014	1984–2014	1984–2014
Observations	309	309	309	309
J-statistics	1.43	1.63	1.94	1.38
Arellano-Bond serial correlation test AR(1)	1.71	1.87	1.96	1.78
Arellano-Bond serial correlation test AR(2)	0.47	0.51	0.77	0.98
Jarque-Bera normality test	1.33	1.55	1.34	1.44
Results with panel OLS				
	(5)	(6)	(7)	(8)
GDP per capita (−1)	0.116	0.121	0.142	0.103
	(0.028)***	(0.023)***	(0.037)***	(0.027)***
Trade shares				
Exports share of BRIC (in total exports)	0.041 (0.015)**			

(*continued*)

Table 14.1 (continued)

Dependent variable: GDP per capita growth				
Exports share of OECD (in total exports)		−0.021 (0.011)*		
Imports share of BRIC (in total imports)			0.037 (0.01)***	
Imports share of OECD (in total imports)				−0.031 (0.011)**
Trade openness (in % of GDP)	0.008 (0.002)***	0.007 (0.002)***	0.009 (0.002)***	0.01 (0.004)**
Fixed K formation (in % of GDP)	0.127 (0.047)**	0.111 (0.027)***	0.097 (0.038)**	0.151 (0.033)***
Inflation rate	−0.001 (0.001)	−0.001 (0.001)	−0.001 (0.001)	−0.001 (0.001)
TOT	0.009 (0.005)*	0.012 (0.007)*	0.011 (0.006)*	0.008 (0.007)*
Human capital	0.003 (0.003)	0.005 (0.003)*	0.001 (0.001)	0.004 (0.002)*
Bureaucracy quality index	−0.47 (0.118)***	−0.52 (0.21)**	−0.37 (0.168)**	−0.42 (0.175)*
Period	1984–2014	1984–2014	1984–2014	1984–2014
Obs	309	309	309	309
Adjusted R-squared	0.62	0.59	0.71	0.68

Note: Thirty-five SSA countries are included in regressions. Standard errors are given in parenthesis. * indicates 10% significance level, ** indicates 5% significance level, and *** indicates 1% significance level

We also run alternative regressions using panel OLS. The results in the second panel of Table 14.1 that uses panel OLS are consistent with those of dynamic GMM.

Conclusion and Implication

The main finding of this chapter is that increasing trade linkages with BRIC has both direct and indirect effects on the growth performance of SSA countries.

Despite some improvements in SSA, there are still many challenges related to the changing trade linkages with BRIC. One of the main challenges for SSA policymakers is how to respond to the increased competitive strength of BRIC. SSA countries need to be careful about the nature of

bilateral trade with BRIC. Similar to the international trade structure with OECD countries, trade with BRIC can reproduce the core-periphery pattern of exchange of manufactures for raw materials. The other important question for the SSA is the long-term social, ecological, and economic sustainability of exports from the SSA to BRIC. Exports to BRIC may not continue with the same dynamism even in the short and medium terms. Recent declining growth rates in BRIC, especially in China, have already started to negatively affect many countries in SSA.

Exporters of primary commodities to BRIC need to diversify the range of products exported. They need to deal with potential Dutch disease effects associated with higher exports. Higher domestic prices and wage levels can lower their international competitiveness.

How to distribute the gains from trade in the SSA region is another important question. Growth rates and average income are higher in SSA countries, but there is no improvement in the living standards for lower-income households of the region. Compared to the other developing countries, poverty rates are still significantly higher in SSA. In order to lower poverty, special attention needs to be given to the distribution of the gains from increased exports.

NOTES

1. The direction of international trade is one of the most important determinants of the direction of capital flows. By an accounting identity, net capital outflows (outflows of capital minus inflows of capital) in a country is equal to its net exports (exports minus imports). Thus, the changing direction of trade for SSA countries has direct implications for the changing direction of capital flows.
2. It should be noted that the possible link observed in the graph does not necessarily mean any causality between two variables. As it will be explained in section "Estimation Strategy and Results", we need to run regression analyses to better understand the link between these variables.
3. Before running regressions, the correlation matrix among the variables used in the regressions is calculated to check for any multi-collinearity problems (the table is available upon request). The pairwise correlation coefficients among the independent variables of the regressions are not high enough to cause any multi-collinearity problems.

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PART VI

Revisiting Aid Effect on Social Sector, Growth, and Structural Change in Africa

CHAPTER 15

Growth Impact of Aid Quantity and Quality in Africa

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Introduction

Foreign aid has been the main avenue for providing development assistance to low- and middle-income countries for over 50 years. While some rapidly growing emerging economies have turned from recipients to donors over the past decade, foreign aid remains a major source of external financing for most developing countries. Its primary objective is to promote growth and development by providing financial assistance to countries with a weak domestic capital base and low levels of foreign direct investment. However, the amounts necessary to stimulate growth as well as the effectiveness of foreign aid have long been the subject of a vigorous debate.

Some empirical studies have shown that foreign aid exhibits growth-enhancing effects (Hansen and Tarp 2000; Karras 2006; Loxley and Sackey 2008; Minoiu and Reddy 2009; Moreira 2005), providing support for the argument that current flows of development assistance (*henceforth, aid*) are insufficient and need to be increased, especially to countries in sub-Saharan Africa (IMF and World Bank 2005; UNDP 2005; Marysee et al. 2007). Other works have found that aid is either neutral (Boone 1996; Easterly

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2005; Easterly et al. 2004) or even counterproductive with respect to growth (Bobba and Powell 2007). A third group of scholars argue that the effects of aid are positive but subject to diminishing returns (Gomanee et al. 2003; Lensink and White 2001).

Sound monetary, fiscal, and trade policies (Burnside and Dollar 2000; Collier and Dollar 2002) and good institutions (Chauvet and Guillaumont 2003; Svensson 1999; Driffield and Jones 2013) have been found to enhance the effectiveness of aid. In contrast, other studies have demonstrated that the impact of aid is largely independent of the policy and institutional environment in the recipient country (Hansen and Tarp 2000; Rajan and Subramanian 2008).

The goal of this chapter is to address some of the aforementioned issues concerning the aid-growth relationship in the African context. Consistent with studies on the takeoff hypothesis (IMF and World Bank 2005; Sachs 2005) and those that argue that the quality of aid matters for its effectiveness (Clemens et al. 2004; Bobba and Powell 2007; Headey 2007; Rajan and Subramanian 2008; Minoiu and Reddy 2009), we estimate the marginal effects of aid on growth by introducing measures of aid's quantity and quality in the regression analysis. The quantity component is proxied by a quadratic term of the aid variable. Due to lack of data on more direct measures, source-based proxies are used to capture the quality component. We employ nonlinear parametric as well as nonparametric regression models, which help us explore various forms of nonlinearity and identify thresholds for the reversal in the sign of the marginal effect of aid.

Furthermore, the analysis explores the role of governance in the aid-growth relationship. In the parametric regressions, broad measures of governance are used. The first measure is polity II index (from the polity IV project), which assigns numerical values to a country's position on a spectrum of governing authority [spanning from fully institutionalized autocracies (−10 to −6) through mixed-authority regimes (anocracies, −5 to 5) to fully institutionalized democracies (6 to 10)] in a given year. The index is a composite of six factors that include competitiveness of executive recruitment, openness of executive recruitment, constraint on chief executive, regulation of chief executive recruitment, competitiveness of political participation, and regulation of participation. Under each of these factors are various indicators with varying weights (Marshall et al. 2016). Overall, the index is measured on a 21-point scale that ranges from −10 to 10.

Since mixed-authority and democratic political regimes are expected to embrace some level of participatory governance, we assume that countries

with such political regimes will have efficient political, financial, and social institutions. These institutions will in turn determine how aid is distributed and utilized in these countries, and consequently, its effectiveness. Moreover, good governance is also expected to have a direct impact on economic growth. The average polity II index for the sample of countries used in this study for the 1975–2010 period was −1.8, with majority of these countries leaning toward mixed-authority political regimes (90 percent), compared to 6 and 4 percent of them leaning toward democratic and autocratic regimes, respectively.

The second proxy is legal origin, which refers to whether the country's legal system was founded on the common law tradition of Anglo-Saxon countries or on the Continental civil law tradition. Studies by La Porta et al. (1997, 1998, 2008) have argued that legal origin is a good predictor of a country's institutional quality, showing that unlike English common law tradition, the French civil code is associated among other things with less efficient contract enforcement, heavy hand of government ownership and regulation, weaker investors' protection, and possible higher corruption. Many African countries still maintain strong colonial ties, and have not significantly changed their constitution since attaining independence (UNCTAD 2005). Given that the constitution defines and sets up the government, and consequently, the accompanying institutions, it implies that the nature of institutions that were put in place during the colonial period are to a larger part still in operation (or are influencing the formation of new institutions) in these counties. Thus, in this chapter we use legal origin as a measure of the quality of an array of formal institutions in African countries. In this study, 63 and 35 percent of the countries in the sample are identified with French (civil law) and British (common law) legal origins, respectively.

In contrast to previous studies, we also use nonparametric regressions to understand the changes in the marginal effects of aid on growth for various levels of governance measures. Since nonparametric regressions have some flexibility on the functional form relative to parametric regressions, we are able to introduce specific indicators of governance (government stability, corruption, democratic accountability, law and order) without compromising the efficiency of the model (in the parametric regressions we are constrained by the sample size). Accordingly, we are able to evaluate the impact of aid on growth conditioned on different levels of various governance indicators. The results are expressed in three-dimensional graphs,

enabling us to detect the thresholds of the governance indicators at which the impact of aid on growth becomes more/less effective.

African countries are well suited for studying various aspects of the relationship between aid and growth for several reasons. Africa has traditionally been the largest recipient of aid. Mounting external debt, weak economic institutions, poor governance, and excessive reliance on primary sector exports are some of the persistent factors that have continued to cripple the region and keep it in a cycle of aid dependency. At the same time, the effectiveness of aid has been in doubt because a rapid increase in aid to African countries as a share of GDP between 1970 and the late 1990s coincided with a decline in GDP per capita (see Fig. 16.2 in Easterly 2003).

Methodology and Data

Parametric Regression

In the parametric analysis, two models are estimated to investigate the impact of aid on economic growth. In the first model, the aid variable is entered as a standalone argument, while in the second, it is interacted with a dummy variable for legal origin. The baseline model is as follows:

$$\begin{aligned}\Delta y_{it} = \quad & \beta_0+\beta_1 y_{it-\tau} + \beta_2 ODA_{it-\tau} + \beta_3 ODA^2_{it-\tau} \\ & + \beta_4 Open_{it-\tau} + \beta_5 Inv_{it-\tau} + \beta_6 Fisc_{it-\tau} + \beta_7 Infl_{it-\tau} \\ & + \beta_8 Polity_{it-\tau} + \beta_9 dlegal_i + \beta_{10} Totgr_{it-\tau} \\ & + \beta_{11} Popg_{it} + \beta_{12} FD_{it-\tau} + \eta_t + \upsilon_i + \varepsilon_{it}\end{aligned} \tag{15.1}$$

Where y_{it} is the natural logarithm of real output per capita in country i at time t. Country-specific and time-fixed effects are denoted by υ_i and η_t, respectively, while ε_{it} is the standard error term. Δy_{it}[1] is the average annual growth rate of output per capita in country i between the years t and $t-\tau$, where τ takes the value of 4. In line with the growth literature, growth rate is averaged across four-year non-overlapping periods. All independent variables are initial values at the beginning of each period.[2]

The main explanatory variable of interest is the official development assistance (ODA), which takes various forms to measure the quantity and quality aspects of aid. As previously mentioned, the quantity aspect is proxied by the quadratic term of the ODA variable (ODA^2). Finding

good measures for the quality of aid can be tricky for cross-country empirical studies.[3] Employing project-based proxies or considering whether aid is tied provides a good starting point, but a more complex one for regression analysis. For example, while some project-type assistance may be related to investment spending, a closer look may reveal that such aid is de facto tied or has some untied components. On the other hand, fully untied aid may be disbursed toward consumption spending with little impact on long-run economic growth. Two recent studies, Birdsall et al. (2010) and Knack et al. (2011), offer an alternative framework for assessing aid quality. These studies develop different indices that form the basis for evaluating the quality of aid based on donor practices in recipient countries. Generally, they find that multilateral aid agencies rank higher than bilateral donors on the aid-quality scale (see Table 4 in Birdsall et al. 2010 and Table 3 in Knack et al. 2011). Accordingly, this chapter adopts a similar approach and employs source-based proxies for aid quality.

The first proxy is bilateral aid (*BODA*). In addition to total bilateral aid, aid from France and the United Kingdom (UK) is included on the basis that majority of the countries in this study are affiliated either with French (63 percent) or British (35 percent) legal origin. Bilateral aid from the European Union (EU) member countries is also included since collectively, these countries are the biggest donors to African countries. We assume that a large proportion of bilateral aid is geostrategic in nature. UK and France, in particular, tend to direct most of their aid to former colonies, with non-democratic former colonies receiving almost two times more aid than democratic non-colonies (Minoiu and Reddy 2009). Such geostrategic aid, which is dispersed regardless of the country's policy environment and institutional quality, is expected to have an undesirable impact on growth relative to non-geostrategic aid. The second proxy is multilateral aid (*MODA*). Unlike bilateral aid, multilateral aid is assumed to be non-geostrategic in nature, therefore, it should enhance growth of recipient countries.

Legal origin, represented by a dummy variable (*dlegal*), takes a value of one for civil law countries (that include former French, Spanish, and Portuguese colonies) and zero otherwise.[4] In an alternative specification (where legal origin is interacted with foreign aid) two dummy variables are used, *dFrench* (France) and *dBritish (UK)*, which take the value of one for civil law and common law countries, respectively, and zero otherwise. Given the greater emphasis on collective rather than private property rights under the French civil law, the *dlegal* coefficient is expected to have a negative sign.

The growth literature (Barro 1991; Levine and Renelt 1992; Sala-i-Martin et al. 2004) guides us in selecting the core set of growth determinants, which include the initial level of output per capita ($y_{it-\tau}$), trade openness (*Open*) measured as the percentage of merchandise trade in GDP, monetary policy (*Infl*) proxied by the CPI inflation rate (specified as the logarithm of (1+ inflation rate)), fiscal policy represented by government consumption spending (*Fisc*), financial market development (*FD*), population growth (*Popg*), domestic investment (*Inv*), and a control for external shocks represented by the terms of trade growth (*Tot*gr). The polity II index (*Polity*) is used as a proxy for governance and is measured on a scale ranging from −10 (autocratic regime) to +10 (democratic regime). In the nonparametric analysis, disaggregated indicators of governance (government stability, bureaucracy quality, corruption, law and order, democratic accountability, and ethnic fractionalization) are introduced. The corresponding data were obtained from the *International Country Risk Guide* (PRS Group 2011). To ensure uniformity, the original measure of each variable is converted into a scale ranging from 0 (lowest level of governance quality) to 100 (highest level), the exception being corruption where the scale is inverted.

The estimation is conducted using the system generalized method of moments (SGMM) approach of Arellano and Bover (1995) and Blundell and Bond (1998) to control for endogeneity bias, measurement bias, unobserved country fixed effects, and other potentially omitted variables. SGMM is robust to weak instrument bias. It uses suitable lagged levels and lagged first differences of the regressors as their instruments. To minimize the number of GMM-style instruments used, we restrict the maximum lags of dependent and predetermined variables for use as instruments to one. In all specifications, time dummies are included to remove universal time-related shocks from the errors (Roodman 2006).

Nonparametric Regression

The regression model in Eq. (15.1) captures the nonlinear effect of aid on growth via the squared term of the ODA variable; however, it still imposes a particular functional form onto the relationship between the two variables, even if the specification is more general in nature than the standard linear regression. In case this functional form does not correspond to the true functional relationship between aid and growth, the estimated coefficients will be biased. By including a squared term of the ODA variable, we assume

that the nonlinearity between aid and growth is either concave or convex, and that there is only one threshold where the marginal effect of aid reverses its sign. However, as Gomanee et al. (2003) have shown, multiple thresholds and various forms of nonlinearity are equally plausible.

To address these issues, we employ a nonparametric regression, which has the advantage of being very flexible in that it relaxes all assumptions about functional form and linearity, homoscedasticity, and serial correlation. However, the model suffers from the "curse of dimensionality", which makes it difficult to fit a regression in the presence of too many predictors. For this reason, we include only those explanatory variables in the estimation that achieve statistical significance at conventional levels in univariate significance tests.

Given that the nonparametric regression does not yield scalar estimates of marginal effects, the results are presented in three-dimensional plots, whereby each axis denotes the average annual growth rate over four-year periods, the aid variable, and a governance variable, respectively, while holding all other control variables constant at their sample means. Furthermore, we show the corresponding two-dimensional growth curve profiles, which represent the nonparametric regression line of the aid-growth relationship for three different levels of the governance variable. These profiles allow us to identify the thresholds for reversals in the sign of the marginal effect of aid and help us determine which governance indicators create the optimal environment for aid to stimulate growth.

Data

The regression analysis is conducted using two datasets. The first covers a sample of 48 African countries over the period 1975–2010, while the second contains data on 39 African countries over the period 1987–2010 and makes use of more detailed data on governance.[5] GDP per capita (in constant 2005 international dollars), government consumption spending, openness, investment spending, and population growth were collected from the Penn World Table version 7.1 (Heston et al. 2012).

Data on net ODA, net multilateral aid, and total bilateral aid flows from Development Assistance Committee donors (all expressed as percentage of GDP) were collected from the OECD's *International Development Statistics* online database. Bilateral aid from France, the UK, and EU member countries as percentage of GDP, money and quasi money (M2) as percentage of GDP, and the annual CPI inflation rate were obtained from the

Table 15.1 List of countries in the sample by legal origin

French legal origin		*British legal origin*	*Neither*
Algeria	Guinea-Bissau	Botswana	Ethiopia
Angola	Madagascar	Gambia, The	
Benin	Mali	Ghana	
Burkina Faso	Mauritania	Kenya	
Burundi	Mauritius	Lesotho	
Cameroon	Morocco	Liberia	
Cape Verde	Niger	Malawi	
Central African Republic	Rwanda	Namibia	
Chad	Sao Tome and Principe	Nigeria	
Comoros	Senegal	Sierra Leone	
Congo, Dem. Rep.	Seychelles	Somalia	
Congo, Rep.	Togo	South Africa	
Cote d'Ivoire	Tunisia	Sudan	
Djibouti	Mozambique	Swaziland	
Egypt, Arab Rep.		Tanzania	
Equatorial Guinea		Uganda	
Gabon		Zambia	
Guinea		Zimbabwe	

World Bank's *World Development Indicators* database. Terms of trade indices data were downloaded from the online database of the UNCTAD, while the polity II index was collected from the Polity IV Project (Marshall and Jaggers 2011). Table 15.1 lists the countries in the sample according to their legal origin. Table 15.2 contains the descriptive statistics for the selected variables of the growth regressions.

Results

Parametric Results

Growth Effects of Aid Quantity

The takeoff hypothesis postulates that a sustained flow of aid is necessary to help poor countries cross the threshold capital stock required for takeoff toward self-sustained growth (IMF and World Bank 2005). To test this hypothesis, we follow the literature and include both linear and quadratic specifications of the ODA variable in the regression model while controlling for legal origin and other relevant growth determinants. As shown in

Table 15.2 Descriptive statistics for selected regression variables

Variable	*Mean*	*Std. dev*	*Min*	*Max*	*N*
Real GDP per capita growth	0.599	4.590	−28.813	39.534	459
Total ODA (% of GDP)	12.561	13.414	0.070	109.791	425
Bilateral ODA (% of GDP)	7.216	8.104	−0.103	64.684	425
Multilateral ODA (% of GDP)	4.756	5.424	−0.035	55.277	425
UK Bilateral Aid (% of GDP)	0.501	1.097	−0.114	10.728	425
France Bilateral Aid (% of GDP)	1.550	2.353	−0.222	17.950	425
EU Bilateral Aid (% of GDP)	1.378	1.664	−0.070	10.937	425
Financial development	45.265	347.279	0.918	7015.569	406
Openness	64.783	36.528	1.795	241.414	459
Investment	21.087	13.089	1.752	76.511	459
Fiscal policy	13.439	9.855	1.371	56.798	459
Inflation	89.447	1312.335	−29.173	26762.020	426
Terms of trade growth	0.271	13.990	−44.059	255.363	459
Population growth	2.467	1.677	−15.506	12.067	459

Note: The real GDP per capita growth and TOT growth are averaged over four-year period. All other variables are initial values at the beginning of the period for the sample of 1975–2010

column (1) of Table 15.3, the estimated coefficient of the linear term for ODA has a negative sign, while that of the quadratic term is positive, both with significant effects. This suggests that the regression line describing the aid-growth relationship is convex and thus lends support to the argument of the takeoff hypothesis.

To assess whether the quantity effects of aid differ with respect to legal origin, we interact both the linear and quadratic terms for ODA with the dummy variables for French and British legal origin. The results in column (1) of Table 15.4 imply that the regression line is concave due to diminishing returns of aid, which contrasts with the estimates for the total sample. But what matters in this context is that the direction of the quantity effects does not vary across the two categories of legal origin. A closer look, however, reveals important differences in the magnitude of the coefficients. In particular, a 1 percent increase in aid as percentage of GDP boosts subsequent annual growth by 0.1 percent in countries with British legal origin, compared to 0.07 percent in their French counterparts. In addition, the coefficient for the quadratic term that indicates the negative marginal effect of aid due to diminishing returns is twice as large for French civil law countries as for their British counterparts.

Table 15.3 Foreign aid effects on real GDP per capita growth of African countries (four-year averaged), SGMM estimation (1975–2010)

	(1)	*(2)*	*(3)*
Real GDP per capita (ln)	−17.160***	−14.760***	−15.200***
	(1.837)	(0.595)	(1.088)
Total Aid	−0.062***		
	(0.021)		
Total Aid^2	0.001**		
	(0.0003)		
Bilateral Aid		0.088**	
		(0.042)	
Bilateral Aid^2		−0.002***	
		(0.001)	
Multilateral Aid		−0.059	
		(0.092)	
Multilateral Aid^2		−0.001	
		(0.001)	
France Bilateral			−0.331***
			(0.128)
UK Bilateral			0.318*
			(0.171)
EU Bilateral			−0.236**
			(0.115)
Inflation	−0.00004	−0.00006	−0.00006
	(0.00004)	(0.00005)	(0.0002)
Financial development	0.024**	0.032***	0.038***
	(0.011)	(0.007)	(0.008)
Openness	0.014***	0.015***	0.015***
	(0.004)	(0.003)	(0.004)
Legal origin (*dfrench*)	−0.489	−0.468*	
	(0.299)	(0.277)	
Polity index	−0.012	−0.033	−0.015
	(0.031)	(0.031)	(0.029)
Terms of trade growth	0.026	0.026	0.037
	(0.028)	(0.023)	(0.033)
Fiscal policy	−0.185***	−0.164***	−0.138*
	(0.045)	(0.057)	(0.072)
Investment	0.135***	0.109***	0.134***
	(0.040)	(0.026)	(0.031)
Population growth	0.560***	0.539***	0.784***
	(0.131)	(0.139)	(0.132)
Observations	271	309	309

(*continued*)

Table 15.3 (continued)

	(1)	*(2)*	*(3)*
Number of countries	48	48	48
Sargan Test (Prob >chi^2)	0.127	0.175	0.297
Arellano-Bond (Pr>z)	0.353	0.736	0.769
Time-fixed effects	Yes	Yes	Yes

Note: All variables (with the exception of TOT growth) are measured as initial values at the beginning of the four-year period. Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Arellano-Bond test that average autocovariance in residuals of order 2 is 0 has H0: no autocorrelation. All values are based on a two-step estimator. Maximum lags of dependent and predetermined variables for use as instruments are limited to 1

The observed positive effects from the quadratic specification of total aid are in line with the results from existing empirical studies (Dalgaard and Hansen 2001; Hansen and Tarp 2001; Lensink and White 2001) and concur with evidence from micro-level project impact evaluations. For example, a World Bank (2003) study found that countries with aid levels above 20 percent of GDP (most of them in Africa) grew on average by 1.3 percent per year in per capita terms over the period 1995–2000. Other success stories from countries such as Uganda and Mozambique show that increased shares of aid in GDP above 20 percent coincided with positive growth rates in the 1990s (Mavrotas 2007).

Nevertheless, our findings also imply that an increase in aid to African countries in the hope of achieving a takeoff toward self-sustained growth is not necessarily warranted. In particular, we show that the takeoff hypothesis might not hold once the sample is disaggregated according to legal origin. In fact, the results suggest that aid effects conditional on legal origin could be subject to diminishing returns, so that doubling current aid flows would have adverse effects on growth. This could occur because dramatically scaling up aid flows may overwhelm or displace local efforts (Calderisi 2006) or undermine other key sectors through the Dutch disease with undesirable effects on economic growth (Moyo 2009). Another plausible explanation is the overall governance quality effects inherent in legal origin.

Growth Effects of Aid Quality

The next issue is whether the quality of aid matters for economic growth, as suggested in related literature (Bobba and Powell 2007; Minoiu and Reddy 2009; Rajan and Subramanian 2008). Column (2) in Table 15.3 contains

Table 15.4 Foreign aid effects on real GDP per capita growth of African countries, disaggregated by legal origin (four-year averaged), SGMM estimation (1975–2010)

	(1)	*(2)*
Real GDP per capita (ln)	−16.520***	−13.420***
	(1.858)	(0.867)
*dbritish**Total Aid	0.099*	
	(0.0413)	
*dbritish**Total Aid^2	−0.001***	
	(0.0004)	
*dfrench**Total Aid	0.073***	
	(0.017)	
*dfrench**Total Aid^2	−0.002***	
	(0.0004)	
*dbritish**Bilateral Aid		0.301***
		(0.111)
*dbritish**Bilateral Aid^2		−0.020***
		(0.004)
*dfrench**Bilateral Aid		0.013
		(0.034)
*dfrench**Bilateral Aid^2		−0.0001
		(0.001)
*dbritish**Multilateral Aid		−0.083
		(0.122)
*dbritish**Multilateral Aid^2		0.013***
		(0.003)
*dfrench**Multilateral Aid		0.138**
		(0.058)
*dfrench**Multilateral Aid^2		−0.008***
		(0.003)
Inflation	−0.00002	−0.0001
	(0.00003)	(0.00004)
Financial development	0.030***	0.042***
	(0.011)	(0.008)
Openness	0.017***	0.018***
	(0.005)	(0.003)
Polity index	−0.021	−0.019
	(0.033)	(0.033)
Terms of trade growth	0.032	0.017
	(0.026)	(0.021)
Fiscal policy	−0.185***	−0.166***
	(0.045)	(0.055)
Investment	0.131***	0.111***
	(0.040)	(0.026)
Population growth	0.364*	0.766***

(*continued*)

Table 15.4 (continued)

	(1)	*(2)*
	(0.195)	(0.224)
Observations	271	309
Number of countries	48	48
Sargan Test (Prob >chi^2)	0.144	0.363
Arellano-Bond (Pr>z)	0.370	0.397
Time-fixed effects	Yes	Yes

Note: All variables (with the exception of TOT growth) are measured as initial values at the beginning of the four-year period. Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

the results for the linear and quadratic specifications of bilateral and multilateral aid. Contrary to our expectations, the linear term for bilateral aid exhibits a positive sign, while the quadratic term is negative, indicating the presence of diminishing returns. Increasing the initial share of total bilateral aid in GDP by 1 percent boosts annual economic growth of African countries by approximately 0.09 percent for the following four years. However, when aid share in GDP doubles, annual growth rates drops by 0.002 percent in subsequent years. In contrast, the coefficients for multilateral aid do not achieve statistical significance.

One possible reason for the unexpected results with regard to bilateral aid is revealed once we decompose it into country-specific components. The estimates in column (3) of Table 15.3 demonstrate that bilateral flows from France and EU member states had the hypothesized adverse effect on growth, while those from the UK seem to have stimulated growth in recipient countries. In fact, the literature indicates that French bilateral aid tend to be geostrategic in nature relative to UK aid. For instance, French aid has focused on military and cultural cooperation with their former colonies in Africa, while British assistance has targeted economic development and liberalization instead (Cumming and Chafer 2011; Pacquement 2010). In addition, bilateral aid from the UK consistently ranks higher than from France in terms of quality (Birdsall et al. 2010; Knack et al. 2011).

Furthermore, we hypothesized that the effects of bilateral and multilateral aid would vary due to differences in the institutional environment of recipient countries, which is proxied by legal origin. Accordingly, we interact the dummy variables for British and French legal origin with the two components of aid and present the results in column (2) of Table 15.4. First, robust bilateral aid effects are only present in former British colonies, reiterating the positive effects of the linear specification and the negative

impact of the quadratic term on growth. Second, the effects of multilateral aid are significant in both groups, although the linear term is neutral in former British colonies. More importantly, the coefficients for multilateral aid in common law and civil law countries exhibit opposite signs, suggesting that legal origin does matter for the effectiveness of aid. When multilateral aid is doubled, former British colonies experience a significant growth boost of approximately 0.01 percent per year over the subsequent four-year period, while the economic growth of French legal origin countries deteriorates at the same rate.

Our regression results highlight the following key findings: (i) scaling up bilateral aid impedes growth in African countries, regardless of the legal origin; (ii) the current flow of bilateral aid is effective only if it originates from the UK and only in recipient countries with British legal origin; (iii) the current flow of multilateral aid does not seem to have a noticeable economic impact in former British colonies, but it promotes growth in former French colonies; (iv) however, should the current level of multilateral aid double, benefits will accrue mostly to countries with British legal origin, whereas French civil law countries will be adversely affected. Generally, based on these results, we can convincingly argue that the quality of aid matters and that the impact of aid on growth differs with respect to legal origin.

As a robustness check, we introduce five proxies for quality of governance (ethnic fractionalization, government stability, bureaucracy quality, corruption, law and order, and democratic accountability) that have been deemed relevant to growth and aid effectiveness by policy makers and donors (Court 2006). However, this reduces both the sampling period (1987–2010) and sample size (39 countries). To avoid duplication, we include the legal origin dummy and the five governance indicators in separate models. The results indicate that the growth effects of aid are robust and remain consistent with the predictions of the takeoff hypothesis. These results still hold when the five proxies are used instead of the legal origin dummy, indicating that legal origin acts as a proxy of an array of governance quality measures.[6]

Nonparametric Results

The nonparametric analysis begins with a univariate specification test (Racine 1997; Racine et al. 2006), which shows that ODA is a significant determinant of growth in both datasets. The polity II index for 1975–2010 and four out of the five institutional variables for 1987–2010 are also significant. From the group of control variables, only openness is significant

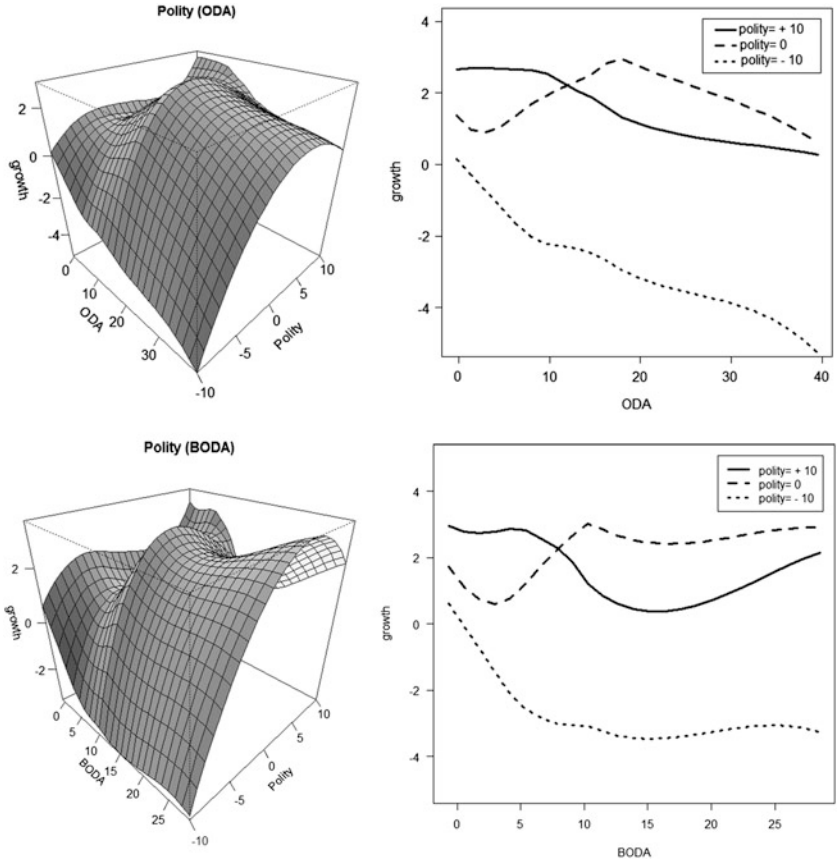

Fig. 15.1 The effects of foreign aid and political regimes (polity index) on growth, 1975–2010

in both datasets, while population growth and investment achieve statistical significance only for 1975–2010 and 1987–2010, respectively.

The regression results for 1975–2010 are illustrated in Fig. 15.1. The left column shows the effects of ODA and the polity index on growth in three-dimensional plots while holding the remaining control variables constant at their sample means. The column on the right presents the corresponding two-dimensional growth profile curves that describe the marginal effect of

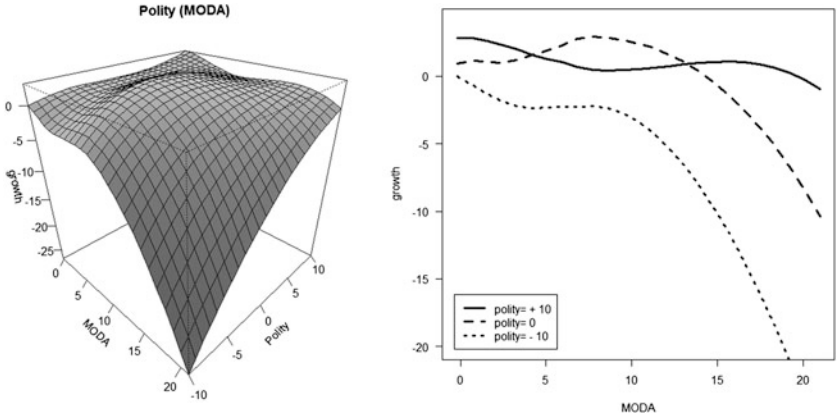

Fig. 15.1 (continued)

ODA on growth for three different levels of the polity index representing autocracy, anocracy, and democracy.

As evident from the graphs in the first row of Fig. 15.1, increasing aid has a negative effect on growth in autocracies. Under a full-fledged democratic regime, aid is largely ineffective at low levels and becomes obstructive to growth beyond 10 percent of GDP. In anocracies, the growth-enhancing effects of aid are observed for levels between 3 and 20 percent of GDP, while ODA is counterproductive below and above these thresholds. Other empirical studies have demonstrated that democracy promotes growth through a more effective allocation of aid because of institutionalized checks on power, such as free elections, transparency, and accountability (Kosack 2003; Svensson 1999). This minimizes the possibility that aid is embezzled or diverted toward nonproductive uses. Our results support this conclusion by showing that the complete lack of democratic features is detrimental to the influence of aid on growth. At the same time, we find that strengthening the democratic attributes of a political system on the continuum between anocracy and a full-fledged democracy weakens the effectiveness of aid. A possible explanation is that in democracies aid could be diverted to finance vote buying during electoral campaigns (Kuncic 2011) and to pay for populist measures with a short-run focus that are not necessarily conducive to medium- and long-term growth. In addition, democratic regimes and democratization reforms in recipient countries, particularly after long periods of dictatorial regimes, tend to attract an influx of aid, especially

from democratic donor countries (Bermeo 2011). In such cases, especially in Africa, aid proliferation can reduce the growth-enhancing effects of aid (Kimura et al. 2012).

The graphs for the two components of ODA in the second and third rows of Fig. 15.1 show that bilateral aid exhibits largely the same patterns as total aid. An important difference is that in autocracies and anocracies it loses its relevance for growth in amounts exceeding 10 percent of GDP, whereas in democracies it contributes to a takeoff in growth above a threshold of 15 percent of GDP. With regard to multilateral aid, low levels promote growth in anocracies but have a weak negative impact at both extremes of the political regime spectrum. Once the 8 percent of GDP mark is crossed, annual growth in anocracies and autocracies deteriorates sharply by more than 1 percent for each additional percent of aid as a share of GDP, while aid becomes largely irrelevant for growth in democracies.

Further, we test for differences with respect to legal origin and present the results in Fig. 15.2. In countries with a French legal origin, aid impairs growth at lower levels and becomes effective in amounts exceeding 10 percent of GDP, only to revert back once aid reaches 25 percent of GDP. Although the pattern is almost identical across political regimes, the thresholds are significantly lower for anocracies. In contrast, aid in former British colonies boosts growth at levels below 15 percent of GDP, but diminishing returns weaken its effectiveness and reverse its effect above this threshold. In the case of autocracies, this occurs as well but at markedly lower levels. Aid reclaims its positive effect above 25 percent of GDP, regardless of the political regime. These results confirm the concave (convex) form of the regression line at lower levels of aid for countries with a British (French) legal origin observed in the parametric estimation.

In Fig. 15.3, we explore the effects of the four institutional factors found to be significantly related to growth in a nonparametric setting. The growth profile curves in the two-dimensional plots show the relationship between ODA and growth for the lowest, mean, and highest levels of a given governance indicator.

High levels of government stability improve aid effectiveness but only above 10 percent of GDP. In the case of extreme political instability, the regression curve has a steep negative slope implying a drop of almost 1 percent in the annual growth rate for every increase in ODA by 1 percent of GDP. At average levels of stability, aid is largely irrelevant for growth. Government stability reflects the unity within the government, its legislative strength, and the popular support it enjoys. As our results show, a fractured

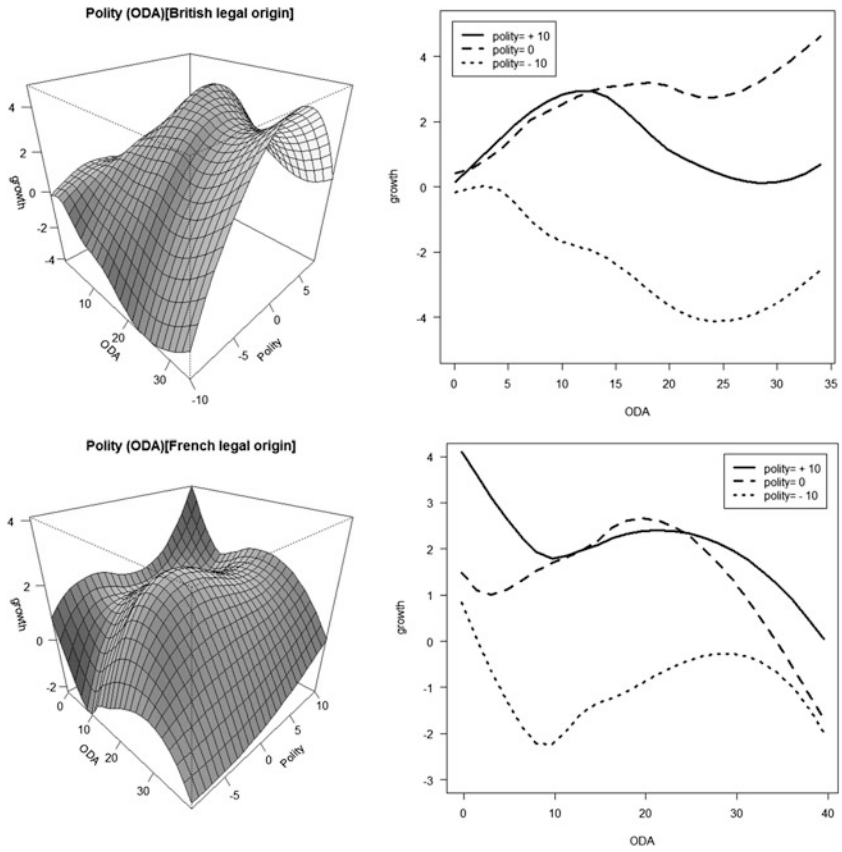

Fig. 15.2 The effect of foreign aid on growth in countries with British vs. French legal origin, 1975–2010

and impotent government that lacks the support of the electorate is very likely to impair the allocation and effective use of aid.

The strong presence of corruption is found to prevent aid from promoting growth, as suggested by the slope of the regression curve turning negative beyond aid levels of 8–9 percent of GDP. This is contrasted by the positive growth effect of aid when corruption is completely absent. At average levels of corruption, the negative effect of aid on growth becomes apparent only above 20 percent of GDP. Corruption can undermine the

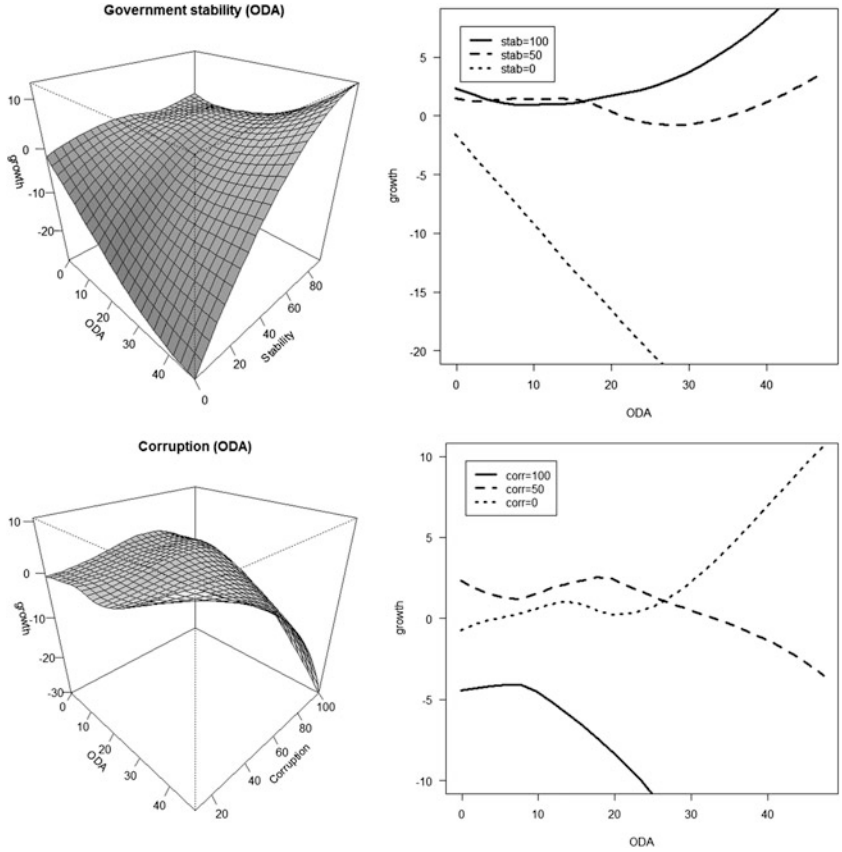

Fig. 15.3 The effects of foreign aid and various governance indicators on growth (1987–2010)

effectiveness of aid in various ways. For instance, the bidding process for development projects financed by aid can be rigged in favor of certain firms at inflated prices in exchange for kickbacks. In addition, government officials can embezzle funds and solicit bribes in order to ignore poorly implemented or unfinished projects financed by aid.[7]

High levels of democratic accountability ensure that aid is used to stimulate growth, although its marginal effect is relatively weak. A complete lack of democratic accountability is found to be much more conducive to

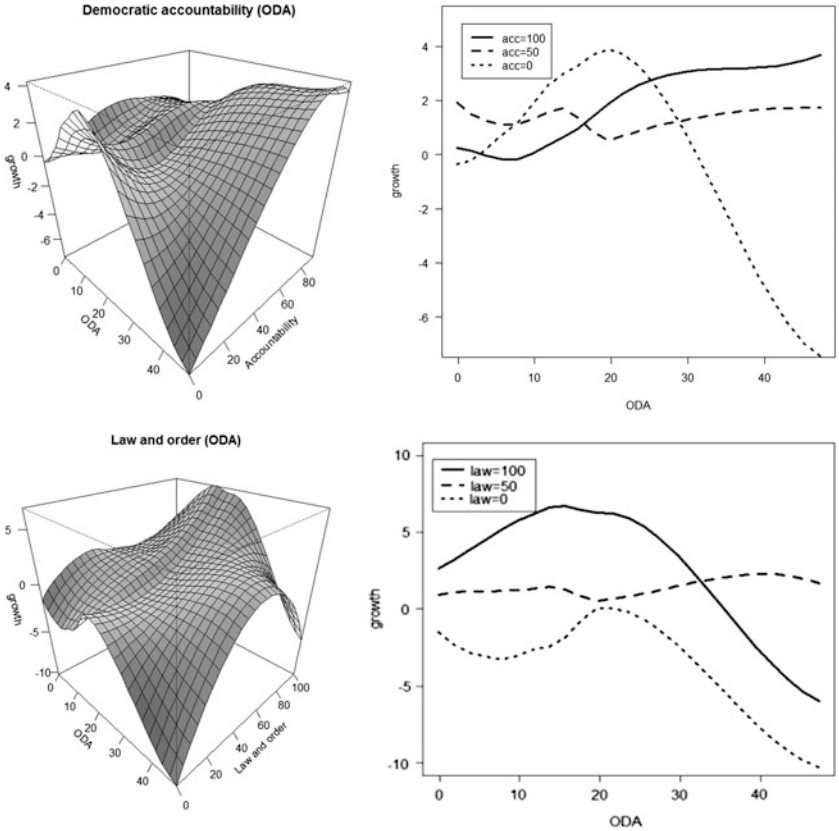

Fig. 15.3 (continued)

growth for levels of aid below 20 percent of GDP; however, above this threshold the effect of aid turns negative. This result is surprising since accountability is expected to reduce the likelihood of aid being diverted or embezzled. It is possible that the misappropriation of funds is not endemic at lower levels of ODA to the extent of rendering aid counterproductive. As we showed above, average levels of corruption also turn into a serious problem for the effectiveness of aid in excess of the same threshold of 20 percent of GDP, and this is apparently where accountability starts to make a difference as well.

Enforcing law and order was found to create an environment that helps aid stimulate economic activity but it is not able to prevent aid above 20 percent of GDP from impeding growth. In the extreme case of complete breakdown in law and order, aid has a negative effect on growth, especially at levels below 10 percent and above 20 percent of GDP.

Conclusion

The empirical literature on the effectiveness of aid with respect to growth has produced conflicting results but previous studies have unambiguously established that the effect of aid on growth is nonlinear and depends on certain characteristics of recipient countries. With a focus on these two aspects, this chapter employs a combination of parametric and nonparametric methods that prove to be very advantageous in assessing the nonlinear relationship between aid and growth. In addition, we investigate the relevance of governance quality and identify the specific institutional components that promote the growth-enhancing effects of aid.

Our results indicate that aid is effective in stimulating growth but the pattern and magnitude of its impact is influenced by quality of governance in the recipient country. When governance factors are not taken into account, the relationship between aid and growth is found to be convex suggesting that only sustained flows of aid above a certain threshold can ensure a takeoff in growth. Differences in legal origin, however, reveal a different pattern where the effects of aid are subject to diminishing returns that weaken its impact in response to further increases. For countries with British legal origin, the resulting concave shape of the interaction between aid and growth is robust across various specification of the empirical model. In contrast, the aid-growth relationship in countries that follow the French legal tradition is conditional on the quality of governance. Furthermore, we find that the type of political regime plays a significant role with aid being most effective in anocracies, and counterproductive in autocracies.

The bilateral and multilateral components of aid, which are employed as measures of the quality of aid, exhibit the expected effects but only when the quality of governance is taken into account. In particular, multilateral aid representing flows that are not geostrategic in nature was shown to have a positive effect on growth, while bilateral assistance does not make a difference. Legal origin is also important in this aspect. Bilateral aid in former British colonies is subject to diminishing returns, while multilateral aid is

effective only above a certain threshold for both legal origin categories when governance quality is controlled for.

Given the importance of governance for aid effectiveness, we explore various components and find that political stability and low levels of corruptions are crucial for the growth-enhancing impact of aid. Enforcing law and order contributes to the effectiveness of aid only below a level of 20 percent of GDP, while democratic accountability makes a difference only above this threshold.

We can derive several policy lessons and recommendations from our findings, which, given our sample, are primarily aimed at African countries. Bilateral aid to former British colonies has a positive impact but scaling it up would diminish its effectiveness and eventually impair growth. Sustained increases in multilateral aid will generate growth benefits regardless of legal origin, but only above a certain threshold that depends on the political regime. In addition, good governance is a necessary condition for recipient countries with a French legal origin enjoying these benefits. More broadly, the conditionality of aid implemented by donor countries and multilateral organizations is crucial for the effectiveness of aid with respect to growth, especially if it targets stable governments, low levels of corruption, and the rule of law.

Notes

1. The average annual growth rate of output per capita between the years t-τ and t is calculated as $(y_{it} - y_{it-\tau})/\tau$.
2. The only exception is the terms of trade growth (*Totgr*), which is averaged over the four-year period to maximize data points.
3. Studies focused on a specific country have shown that certain components of aid are more effective in promoting growth than others. For instance, Kargbo and Sen (2014) found that grants improve pro-poor growth in Sierra Leone.
4. In this chapter, we adopt a broader definition of "legal origin", similar to La Porta et al. (2008), as a style of social control of economic life. This definition encompasses assimilation of legal systems, social institutions, and infrastructure introduced in the African countries through conquest and colonization.
5. The sampling period for the 1975–2010 dataset was chosen to accommodate the maximum number of African countries.
6. The results of the robustness tests are available upon request.

7. Kangoye (2013) shows that aid unpredictability can also breed corruption in recipient countries.

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CHAPTER 16

The Role of Foreign Aid in the Fast-Growing Rwandan Economy: Assessing Growth Alternatives

Xinshen Diao

Introduction

Rwanda's annual GDP growth between 1999 and 2015 was 7.7 percent, and the GDP per capita annual growth rate was 5 percent, both at a historical high. Relative to other countries in Africa, Rwanda has the highest population density in Africa at 416 persons per square kilometer (in 2012). The country is also poor in natural resources and is landlocked. This makes Rwanda's recent achievements even more impressive. Rwanda's performance is widely believed to have been significantly bolstered by its government's commitment to policy and institutional reform and investment in infrastructure, agriculture, education, and health. According to the World Bank's *Doing Business 2014,* Rwanda ranks 32nd in the ease-of-doing-business ranking worldwide and ranks second in Africa after South Africa. Rwanda is also considered to be the second-most-reformed economy in the world over the last five years, as well as being the first in the East African Community by this measure (World Bank 2013).

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Rwanda's growth has also been broad-based, leading to rapid reductions in poverty. Based on the *Integrated Household Living Conditions Surveys 2* and *3* (or EICV2 and EICV3) (National Institute of Statistics of Rwanda (NISR) 2007, 2012), the national poverty rate was lowered by 12 percentage points between 2005/2006 and 2010/2011. Between 2005/2006 and 2010/2011, per capita real income increased by almost 40 percent for the poorest 20 percent of households, more than 20 percent for the second and third quintiles of households and slightly less than 20 percent for the fourth quintile of households.

Rwanda's recent growth is encouraging. When we look further into the structure of the recent growth, such growth seems to be led by the expansion of the non-tradables. For example, five subsectors of the economy listed in Table 16.1, which are all more or less non-tradable, had growth rates of 40 to 80 percent higher than the overall GDP growth rate in 1999–2014, and 40 percent of the increased overall GDP could be explained by growth in these five sectors. On the other hand, with its growth rate lower than that of the total GDP, growth in the manufacturing sector contributed only 4.4 percent of increased GDP in the last 15 years. While the share of manufacturing in GDP was small initially, at 6.8 percent of total GDP in 1999, it further fell to 5.1 percent in 2014. The aggregated service sector together with construction, which is a non-tradable industrial subsector, explained two-third of the increased total GDP in the last 15 years. Measured in the constant GDP, share of the service sector was 41 percent of total GDP in 1999 and rose to 54 percent in 2014. This increased role of services in the economy actually comes from the four service subsectors included in Table 16.1. In fact, a change in the share of these four service subsectors together is more than a change in the share of the aggregated service sector, as share of business services has actually been falling over time.

In the development literature, faster growth in the non-tradable relative to the tradable sectors is associated with the appreciation of the real exchange rate, which is often an outcome of large foreign inflows through natural resource booms, foreign aid, or remittances (see for example, Corden 1984; Buiter and Purvis 1983; Adenauer and Vagassky 1998; Arellano et al. 2005; Lartey et al. 2008; Ismail 2010). In Rwanda, foreign inflows come mainly from foreign aid, given that the country is natural resource poor; exports share of GDP is modest compared with that for many other African countries; and levels of foreign remittance inflows are also low.

Table 16.1 The five fastest growth sectors in the Rwandan economy (1999–2014)

	Annual growth rate (1999–2014)	*Share of constant GDP in 1999*	*Share of constant GDP in 2014*	*Contribution to growth in GDP (1999–2014)*
Construction	12.6	4.8	7.8	8.7
Wholesale and retail trade	11.3	9.7	13.9	15.1
Hotels and restaurants	14.4	1.3	2.6	3.0
Transport, storage, communication	14.2	3.3	7.1	8.4
Other personal services	12.5	2.5	4.6	5.3
Five sectors total	12.4	21.6	35.9	40.5
Total GDP	8.0			

Source: Author's calculation based on the data from National Institute of Statistics of Rwanda (2015)

The data between 1999 and 2014 showed that foreign aid in the forms of grants received by the government (excluding grants through technical cooperation) accounted for 12–15 percent of GDP annually (World Bank 2015). Until recently, more than 40–50 percent of government revenues are in the form of such grants. While the share of grants in the government revenue started to fall in 2012–2015, this share is still higher than 30 percent of the total government revenue (NISR 2015). Moreover, the long-term foreign borrowing seems to have picked up recently. Thus, public investment projects are now primarily financed by foreign aid plus foreign borrowing. Based on the data of NISR (2015), the ratio of long-term foreign loans plus capital grants to the government's capital expenditure (including domestic and foreign) averaged at 85 percent in the 1999–2014 period.

Research on the relationship between foreign aid and growth is rich, and there are numerous detailed related literature reviews (see examples, White 1992; Tsikata 1998; World Bank 1998; Hansen and Tarp 2000; Hermes and Lensink 2001; Morrisey 2001; Easterly 2003; McGillivray 2003; Kanbur 2006; McGillivray et al. 2006; Roodman 2007; Thorbecke 2007; Arndt et al. 2010). However, in the development literature, it is still inconclusive whether large foreign aid inflows lower or stimulate overall economic growth. On the other hand, a consensus seems to hold for the

positive impact of aid inflows on the growth in the non-tradable sectors (Mague and Sosa 2010). Such impacts of foreign aid on the non-tradables often come from its income effect as increased demand from the inflows of foreign aid allows domestic producers to expand production by hiring more underemployed factors—labor, land, and capital (Nkusu 2004). The demand that creates growth in the non-tradable sectors can also be the result of increased public investment financed by foreign aid, which usually leads to a construction boom.

As shown in Table 16.1 above, among the five subsectors in which growth rate is much higher than that of the total economy, rapid growth in the construction subsector can be understood as the result of rapid growth in investment. For the other four sectors, the strong income effects that create more domestic demand for the non-tradables seem to dominate. In the recent years since 2008, gross capital formation accounts for more than 20 percent of Rwanda's GDP and has reached 26 percent in the last four years. The annual average growth rate of capital investment is 14.6 percent in 1999–2014 (World Bank 2015), and 70 percent of that investment has been in construction.

The pattern of Rwanda's recent growth leads to a set of research questions important for its future growth in terms of the relationship between growth and foreign aid, that is, what is the longer-term implication of this recent growth pattern? Will such growth be sustainable? What will be the country's future economic structure moving along such growth path?

The concerns about a possibly negative relationship between capital inflows of large foreign aid and long-term growth in the development literature mainly come from two different aspects. Aid inflows to governments implementing ineffective policies are wasteful (Burnside and Dollar 2000). Increasing the returns to corruption and/or increasing rent-seeking activities are also associated with aid inflows to the countries whose governments lack transparency and accountability (Djankov et al. 2008). The misuse or leakages of foreign aid into unproductive expenditure in the public sector are expected to have a negative impact on growth (Mosley 1987). The second concern that is more relevant to this chapter is that huge foreign aid inflows usually lead to the real exchange rate appreciation, which could affect long-term growth negatively by hurting tradable sectors, particularly exportable manufacturing (Adenauer and Vagassky 1998; Hausmann et al. 2004; Rajan and Subramanian 2005, 2011; Prasad et al. 2007; Rodrik 2008). In the developing countries, the tradable sectors often create more positive spillover effects in growth by bringing in more

advanced technologies and management skills and hence often play a leading role in productivity growth (Van Wilnbergen 1984; Rodrik 2013). Slowdown in the growth of the tradable sector (mainly in the manufacturing sector) is seen as prematured deindustrialization (Rodrik 2016a), which will affect both economic transformation and long-term sustainable growth negatively. On the other hand, there is evidence to show a possibly positive long-term growth effect if foreign aid is used properly, particularly if the governments use such aid for public investment to improve infrastructure and increase the supply of other public goods, education, and health services. In low-income countries, such public investment and spending could help to improve the private sector's productivity, and hence, foreign aid can have positive impact on long-term growth (Torvik 2001; Adam and Bevan, 2004; Prati and Tressel 2005).

In the recent years in Rwanda, foreign inflows such as grants and loans have indeed helped Rwanda's government finance many public infrastructural investment projects, which are expected to have long-term benefits on economic growth. On the other hand, there is evidence to show that such inflows are associated with the real exchange rate appreciation (Fig. 16.1), which leads to an appropriate concern whether the overvalued real exchange rate could further hurt tradable sectors and slow down the

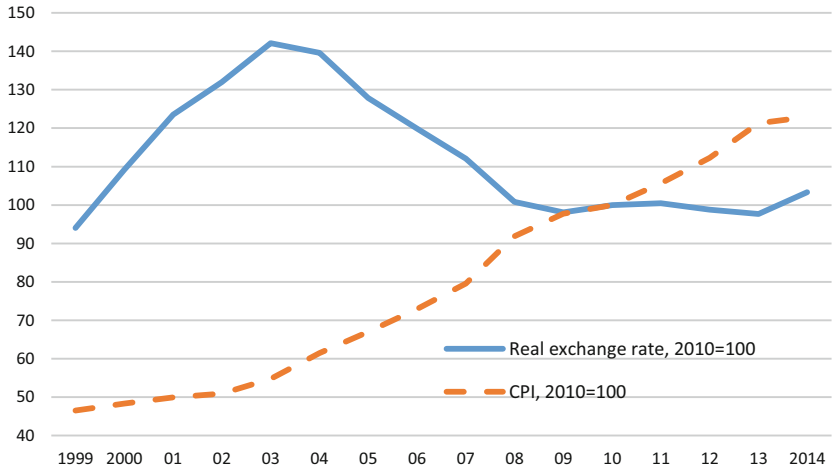

Fig. 16.1 Movements of the real exchange rate and consumer price index in Rwanda, 1999–2014 (*Source*: World Bank (2015))

structural change in the economy. This concern is associated with an observation that without structural change through which resources (labor and capital) move into more productive tradable sectors, particularly manufacturing, the economy lacks powerful engines to drive future growth. Indeed, this will be a challenge in Rwanda for her long-term growth.

Summarizing, Rwanda's recent patterns of growth and structural change make it an ideal case to explore the implications of the role of foreign aid in economic transformation for low-income African countries. Specifically, a dynamic Computable General Equilibrium (CGE) model is developed for this purpose, which is based on a social accounting matrix of the Rwandan economy in 2014.

Structure and Assumptions of the Model

The Assumptions and Sectors of the Model

In my CGE model, the Rwandan economy is properly defined as a small open economy that takes the world prices as given. While part of her economy connects with the global markets directly through exports (e.g. coffee and tea) or imports (e.g. many manufactured goods), there are economic activities less affected by trade and world prices (such as agricultural food production and many service activities). For this reason, the model defines part of the Rwandan economy as a set of non-tradable sectors of which production is the only supply source for meeting domestic demand. The economic activities that engage in international trade are defined as tradable sectors, including both exportable and import-substitutable.

There are 18 sectors in total in the model to represent the Rwandan economy, of which 12 are tradable and 6 are non-tradable sectors. The differentiation between tradable and non-tradable sectors is used to assess differential effects (if any) of foreign inflows on overall economic performance. Both tradable and non-tradable sectors can be part of agriculture, industry, or services. Table 16.2 below provides a list of the 18 sectors and their position in trade.

Labor and Land

The recent national representative household survey (EICV3) data shows that in 2011/2012, about 75 percent of total Rwanda's labor force works in

Table 16.2 Sectors in the dynamic CGE model for Rwanda

	Sectors	*Position in trade*
1	Cereals, non-tradable	Non-tradable
2	Cereals, importable	Import substitutable
3	Export crops	Export only
4	Other crops, non-tradable	Non-tradable
5	Other crops, exportable	Exportable
6	Livestock, exportable	Exportable
7	Mining, export	Export only
8	Food processing, non-tradable	Non-tradable
9	Food processing, importable	Import substitutable
10	Coffee and team processing, export	Export only
11	Manufacturing, consumption goods	Import substitutable
12	Manufacturing, intermediate goods	Import substitutable
13	Manufacturing, investment goods	Import substitutable
14	Construction and other non-tradable industry	Non-tradable
15	Services, non-tradable	Non-tradable
16	Services, exportable	Exportable
17	Services, importable	Import substitutable
18	Public services, non-tradable	Non-tradable

Source: 18-sector dynamic CGE model

agriculture, and the model is structured in a similar way. I define two types of labor in the model according to EICV3: (1) agricultural labor that is employed in the six agricultural sectors only and (2) nonagricultural labor that is employed in the 12 nonagricultural sectors only. According to the data processed from EICV3, more than 80 percent of agricultural labor force is unpaid small farmers' family members, and farmer households' agricultural income is mainly captured by returns to land instead to labor. This implies that the average wage rate in agriculture is extremely low, a fact that has to be taken into consideration for the model. Based on this fact, the initial agricultural wage rate is equivalent to 13 percent of the wage rate for nonagricultural labor in the model's calibration.[1] Land is employed by the five agricultural crop production sectors. Information used for land allocation across these five sectors is drawn from the Rwandan Seasonal Agricultural Survey, which has been conducted periodically, and National Agricultural Survey that was conducted in 2007 and 2008, only in the recent years.

I take growth rate of the labor supply and land expansion as exogenous. I assume that agricultural land grows at a rate of 1.9 percent per year, and

agricultural labor at 2.8 percent, similar to Rwanda's population growth rate in the recent years. The growth rate for the nonagricultural labor is much higher, at 4.4 percent. The higher growth rate of nonagricultural labor supply relative to the agricultural labor supply delivers a declining employment share in agriculture, similar to what we have observed in Rwanda and elsewhere in Africa in recent years.

With the large gaps in wage rates between agricultural and nonagricultural labor discussed above, when nonagricultural labor grows more rapidly than the agricultural labor, as what has happened recently in the country as well as an assumption in the model, labor productivity of the overall economy will rise as will the households' welfare. While the model does not specifically define poor and non-poor households, it is obvious that most poor households live in the rural areas, depending on agricultural and informal nonagricultural activities as main sources of income. Different patterns of growth, thus, could have differential welfare effects among the rural and urban households that are defined later in this section.

Capital and Investment

Capital is a factor employed in nonagricultural production only. The accumulation of capital results from private investment financed through household savings and foreign capital inflows. The model also includes a public sector that provides public investment financed through government savings (which can be negative) and foreign grants received by the government. Public investment results in productivity growth. The public sector and productivity growth in the model are explained later in this section. Because private investment is an endogenous variable, so is capital accumulation, which is an endogenous process in the model.

Households

There are two aggregated households, rural and urban, in the model. The rural household owns agricultural land, agricultural labor, and part of the nonagricultural labor, while the urban household owns capital and the remaining nonagricultural labor. Agricultural land and labor are mobile across the six agricultural sectors, while capital and nonagricultural labor are mobile across the 12 nonagricultural sectors. Both households have a consumption bundle of the 16 commodities (outputs of mining and export crop production are mainly for exports or used as intermediate inputs, and

they are not final consumption goods), but the spending patterns among these commodities differ significantly between the two households. For example, non-tradable agricultural goods account for more than 32 percent of total consumption expenditures for the rural household, while it accounts for only 19 percent for the urban household. While the expenditure share of non-tradable services in the total consumption budget is similar for the two households, the urban household consumes much more importable services than the rural household, measured by the budget shares. Such differences in the structure of consumption expenditure between rural and urban households also indicate that different patterns of growth could have differential effects on rural and urban households' welfare. Again, this has important policy implication in growth strategy, given that poverty rate is still high and the majority of the poor are among rural households in Rwanda. However, the analysis of growth effect on poverty reduction goes beyond this chapter.

The Government, Public Sector, Public Investment, Real Exchange Rate, and Productivity

The model also includes public sector as the provider of public services. The government in the model collects taxes and receives foreign grants and then spends such revenues on public services (which are the output of the public sector), transfers income to households, and finances infrastructure investment. There is also a foreign sector in the model. Besides foreign grants received by the government, the foreign sector finances private capital investment directly. About 25 percent of such foreign investment is assumed to be foreign direct investment (FDI) in the tradable sectors of the economy. Returns from FDI are transferred abroad. The remaining 75 percent of foreign investments are non-private, which can be financed by international NGOs or foreign governments' concession loans. Returns from such foreign investment are assumed to stay in the country as part of urban households' income.

The dynamics in the model come from two sources: (1) private capital accumulation which has been discussed above and (2) productivity growth through public investment. Many factors can lead to productivity growth. For example, Gollin and Rogerson (2014) develop a closed-economy model with three geographic locations: (1) cities, (2) rural areas relatively close to cities, and (3) remote rural areas. They find that improvements in transportation infrastructure (which is a typical public investment) have a

significant effect on the population living in remote rural areas by making it easier for them to move from subsistence agriculture into manufacturing, but the share of workers living in close-by rural locations remains virtually unchanged.

In our model, productivity growth is primarily an outcome of public investment. This is supported by substantial studies in the literature, which show a positive linkage between productivity growth and public investment. That is, I link the total factor productivity (TFP) coefficient in the model to the increases in public investment. An elasticity of 0.25 is used in an equation to update the TFP coefficient over time, that is, 1 percent growth in public capital investment spending in a given year is associated with 0.25 percent growth in total factor productivity across sectors in the next year. This elasticity was calculated using data from Rwanda on public spending and productivity growth for the past 15 years (Diao et al. 2014).

I also consider the real exchange rate effect on productivity growth. According to Rodrik (2008), changes in the real exchange rate affect the long-term growth. For this reason, I link the growth rate of TFP coefficient in the model to the real exchange rate.[2] Following the literature, if the real exchange rate depreciates, that is, if the domestic prices fall relatively to the world prices (or increase more slowly than the world prices), the TFP growth rate (which is determined by the growth rate in the public investment as I discussed above) in the tradable sector is assumed to be positively affected. An elasticity of 0.95 is chosen in this case. For example, if the real exchange rate depreciates by 1 percent, the TFP growth rate for the tradable sectors rises to 3.0284 percent, 0.0284 percentage points higher than that of the non-tradable sectors, of which the productivity growth rate remains at 3.0 percent—this is because it is solely determined by public investment growth. In other words, I assume that the real exchange rate does not directly affect productivity growth in the non-tradable economy. On the other hand, when the real exchange rate appreciates, the TFP growth rate in the tradable sectors is negatively affected. For example, if the real exchange rate appreciates by 1 percent, the TFP growth rate falls to 2.97 percent among the tradable sectors and remains at 3.0 percent for all non-tradable sectors.

Growth Scenarios

I consider two scenarios based on different assumptions about the growth rate in foreign aid inflows. I assume that growth rate in foreign investment in the private capital is the same in both scenarios and focuses only on the possible differential impact of foreign aid received by the government in the form of grants. Moreover, by assuming that growth rate in the government's non-investment spending is constant in the real term, we implicitly assume that different growth rate in foreign aid affects directly public investment only. Focusing on the foreign aid and its finance of public investment instead of the finance of the government's overall budget would help us isolate the direct benefit of foreign aid on growth through public investment from possible negative effects of such aid, for example, aids used to raise public servants' salary or to create more public jobs, which, indeed, occurred often in many developing countries in which foreign aid accounts for a large share of the government's budget. Focusing on the foreign aid that financed public investment is also helpful for the main purpose of this chapter to properly assess the trade-off between the positive effect of foreign aid on public investment and possibly negative effect of it when it causes the real exchange rate to appreciate. Both scenarios consider a ten-year period between 2015 and 2025. In the discussion of the simulation results of these two scenarios, we focus on the impacts of the inflows on shaping the patterns of overall economic growth and structural change in the economy. It is well known that at this stage, in Rwanda's development, tax revenues are insufficient to cover Rwanda's public investment plans. That is expected to change in the medium to long run; however, we ignore them in our simulations.

In the first scenario, foreign grants received by the government used for public investment are assumed to grow continuously at 16.5 percent per year, a growth rate similar to that seen in recent years; I call this scenario the "more-aid-dependent" scenario. In the second scenario, the growth rate in foreign grant inflows falls to 4.9 percent per year, below the growth rate in GDP, leading the ratio of total foreign inflows to GDP to fall over time. I call this the "less-aid-dependent" scenario.

As noted above, the growth rates in labor and land are exogenous to the model and are the same between the two scenarios. Growth rate in non-grant foreign investment is also the same between the two scenarios. In addition, the elasticities of TFP growth with respect to growth in public investment and changes in the real exchange rate are the same in both

scenarios. Thus, there are only two primary channels through which foreign aid influences growth in our model. First, increased foreign aid facilitates economic growth by financing additional public investment, which also creates a short-term effect on the economy by booming construction as well as the longer-term effect through higher productivity growth. Second, increased foreign aid can negatively affect the productivity growth in tradable sectors if it leads to the appreciation of the real exchange rate. On net, the impact of more foreign aid on growth depends on which force dominates.

Discussion of the Results of the Growth Scenarios

I focus on growth effect of foreign aid in the two-scenario analysis. In addition to the overall growth, we pay particular attention to the sectors' structure of such growth by looking into share of GDP and sectors' contribution to the overall GDP growth over time. To help understand the growth results of the scenarios, I also report the differential impacts of foreign aid on public and private investments and on changes in the real exchange rate. The public investment and change in real exchange directly affect the longer-term growth through their effect on growth in TFP, while the private and public investments together can also have short-term demand effect by booming construction.

By the design of the model, increases in foreign aid lead to more public investment, as shown in Fig. 16.2. In the figure, the public investment is measured by its physical outcome instead of its monetary value for a better comparison over time. As shown in Fig. 16.2, growth rate of public investment in the more-aid-dependent scenario is much higher than that in the less-aid-dependent scenario, particularly in the early years. A slowdown in such high growth rate over time is due to the rises in the unit cost of such investment, which causes a departure of the outcome of investment from its monetary value, for which growth rate should be relatively stable. On the other hand, growth rate in public investment under the less-aid-dependent scenario is low but much stable, indicating that over time, prices for the investment goods are relatively stable in this scenario.

However, increased public investment does not necessarily lead to more private investment. In fact, except for the first year in the model, growth rate of the private investment in its physical term is lower in the more-aid-dependent scenario than in the less-aid-dependent scenario, as shown in Fig. 16.3.[3] By pushing up investment cost, the same amount of savings by

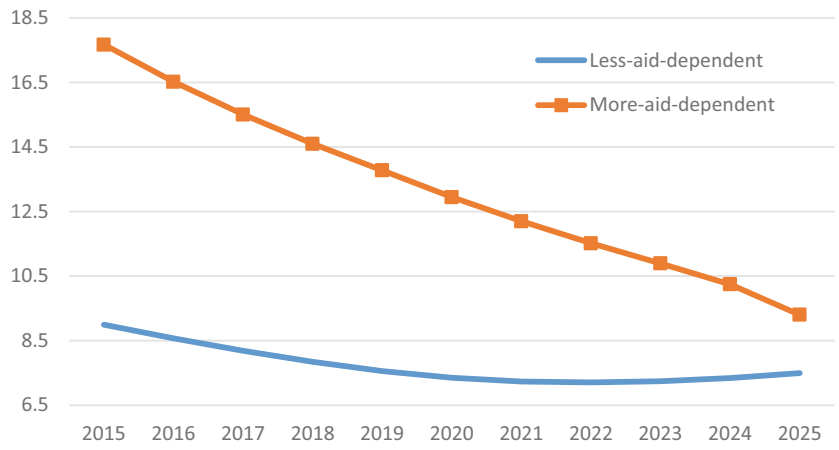

Fig. 16.2 Annual growth rates of public investment in the two growth scenarios (%) (*Source*: Result of Rwanda's dynamic CGE model simulation)

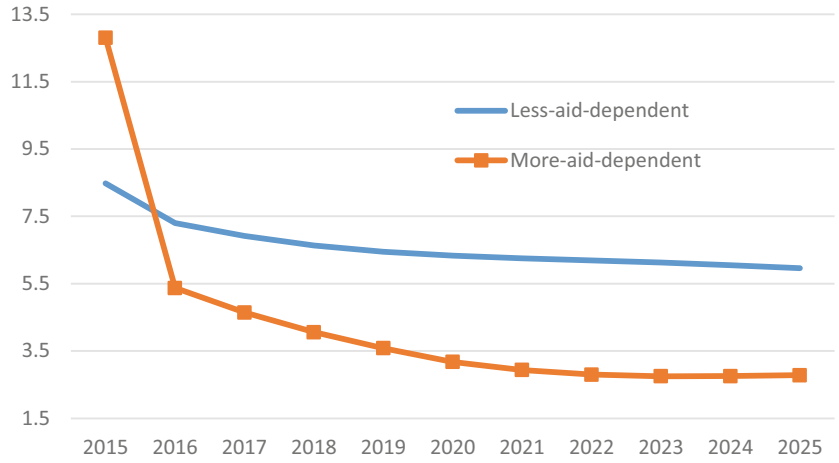

Fig. 16.3 Annual growth rates of private investment in the two growth scenarios (%) (*Source*: Result of Rwanda's dynamic CGE model simulation)

the private households would result in less physical volume of investment, which could negatively affect private capital accumulation process.

The model's results displayed in Fig. 16.3 seem to be less straightforward. In macroeconomics, the ratio of savings to GDP is an indicator for measuring investment capability of a country, while a similar ratio of savings to GDP does not necessarily imply the same outcome of the investment. According to the World Development Indicators (WDI) dataset, domestic savings as a share of GDP have risen in Rwanda in the recent years, from negative value in the late 1990s to the early 2000s, to positive value of less than 4 percent from 2004 to 2006, and 7–11 percent in the recent years between 2007 and 2014 (World Bank 2015).[4] However, when the investment is deflated by the prices for the investment goods, growth in the private capital in the real term may be much slower than what has been indicated in the data for the savings.

One major concern in the literature for the large amount of foreign aid is its possible impact on the real exchange rate, and the model is designed to explicitly assess such effect. Figure 16.4 displays the model's result of different outcomes of real exchange rate movement under different assumptions on growth in foreign aid. Following a standard measure of the real exchange rate in the literature, we define the real exchange rate as a ratio of the world price index over Rwanda's domestic price index. In creating the

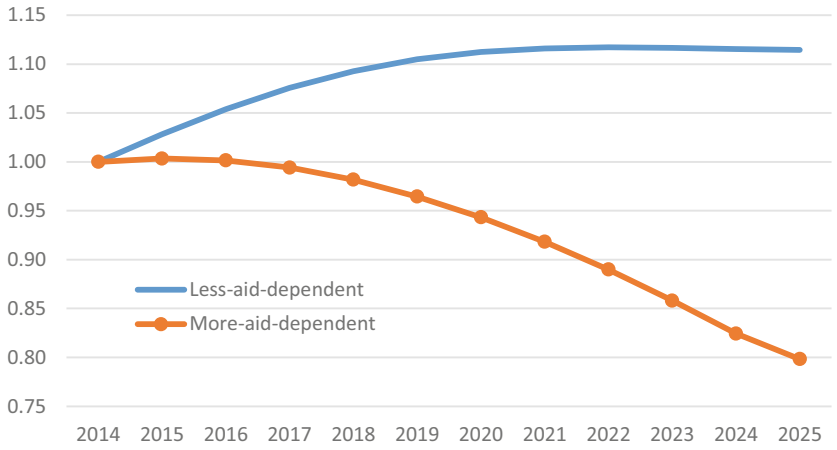

Fig. 16.4 Change in the index of real exchange rate (2014 = 1.00) (*Source*: Result of Rwanda's dynamic CGE model simulation)

world price index, we consider international market prices for Rwanda's major export and import goods, while for the domestic price index, it is based on Rwanda's producer prices. With the model's assumption of Rwanda as a small open economy, the world price index is constant and can be normalized to one, and thus, the real exchange rate equals the inverse of domestic price index, which is the endogenous result of the model simulation.

While changes in the real exchange rate are not extraordinary under both growth scenarios, their movements are the focus of the discussion here. It is obvious in Fig. 16.4 that the movement of the real exchange rate goes in opposite directions under different foreign aid growth assumptions. Under the less-aid-dependent scenario, a slight upslope trend for the real exchange rate in Fig. 16.4 indicates the depreciation, that is, while the level of domestic prices is relatively stable, it falls over time relatively to the world prices. Under the more-aid-dependent scenario, a downslope trend for the real exchange rate indicates its appreciation—over time, domestic prices rise relatively to the world prices.

As I explained above, the net impact of more foreign aid on productivity growth depends on which force dominates—the positive effect of more public investment versus the negative effect of the real exchange rate appreciation. Figure 16.5 displays such combined effect on the productivity (TFP) growth.

Figure 16.5 shows that the growth rate in productivity accelerates over time under both scenarios, indicating that with increases in public investment financed by more foreign aid inflows, growth rate of productivity rises over time. However, the trade-off between the positive effect of more public investment due to more foreign aid and the negative effect of the real exchange rate appreciation—with increased foreign aid—is also obvious in the figure. With more foreign aid that stimulates public investment but causes the real exchange rate to appreciate, the magnitude of productivity growth rate is negatively affected. While the productivity growth rate is still rising over time in most years under this scenario, the absolute level of such growth rate is lower than that of the less-aid-dependent scenario. Moreover, the gap between the two productivity growth rates under the two scenarios has widened over time, particularly in the second half of the simulated period in which the productivity growth rate starts to fall under the more-aid-dependent scenario while it continues to rise in the other scenario.

The total (general equilibrium) effect of the foreign aid on the overall economic growth is measured by the growth rate in GDP in Fig. 16.6.

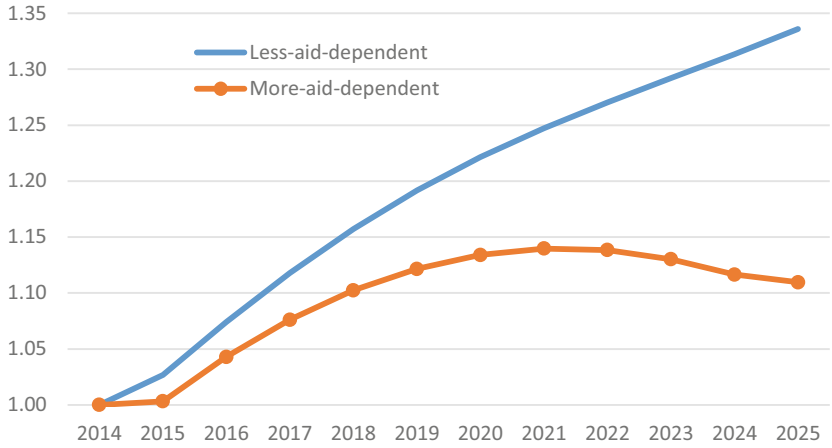

Fig. 16.5 Level of TFP growth rate (2014 = 1.00) (*Source*: Result of Rwanda's dynamic CGE model simulation)

When the Rwandan economy is less dependent on foreign aid, its growth rate is stable and the difference between the high growth rates in the early years and relatively low growth rates in the future years is 0.26 percentage points (maximum). On the other hand, with more foreign aid dependency, it can create higher GDP growth rates relative to less aid dependency in the early years, but it can also lead to slowdown in growth in the future years. The gap between growth rates in the early years and in the future years is 0.71 percentage points. While the slowdown in GDP growth in the later years is primarily the result of a slowdown in productivity growth rate shown in Fig. 16.5, the fall in the private investment growth rate is also a contributive factor. As shown in Fig. 16.3, the difference in such growth rates under the two scenarios is as high as 3 percentage points in years after 2019, which could affect the speed of private capital accumulation, the other dynamic factor of growth in the model.

If Fig. 16.6 indicates that the way in which public investment is financed does not have extraordinary effect on the growth rate in GDP, by contrast, such effect is significant on the composition of economic growth. At the sector level, higher growth in foreign aid benefits non-tradable sectors' growth as a whole, while the growth in the tradables tumbles. Considering nonagricultural economy only, Fig. 16.7 displays such differential growth effect under the two growth scenarios.

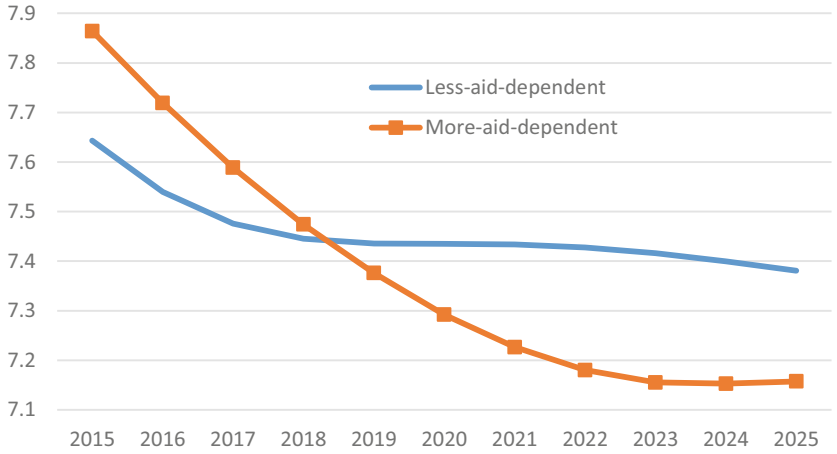

Fig. 16.6 GDP annual growth rate under the two growth scenarios (%) (*Source*: Result of Rwanda dynamic CGE model simulation)

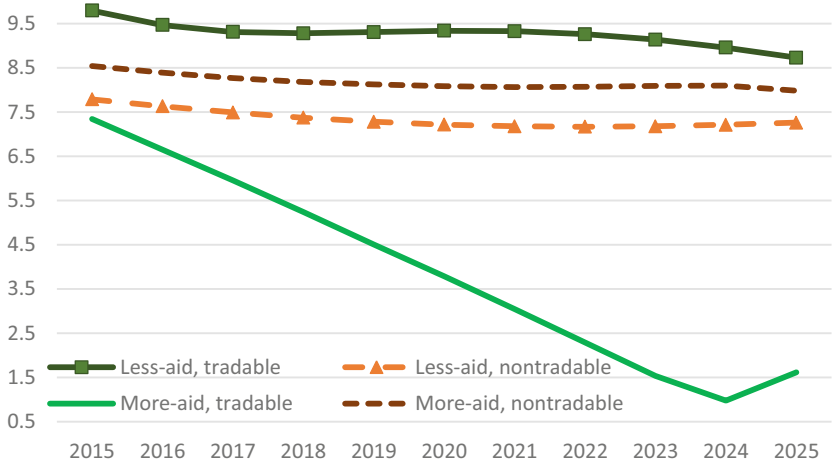

Fig. 16.7 Annual growth rates in tradable and non-tradable nonagricultural GDP (%) (*Source*: Result of Rwanda's dynamic CGE model simulation)

Considering the tradable nonagricultural and non-tradable nonagricultural economies as a whole in Fig. 16.7, the annual growth rates of the tradable nonagricultural GDP are in the range of 8.7–9.8 percent under the less-aid-dependent scenario. Such growth rates fall constantly under the more-aid-dependent scenario and fall to as low as 1–2 percent annually in the future years. That is to say, with high foreign aid inflows and for the economy as a whole, growth of the non-tradable economy is more important than the growth of the tradable economy. More foreign aid inflows are associated with the appreciation of the real exchange rate, which cause the prices in the non-tradables to rise relative to those in the world market. Producing for domestic markets has become more attractive to local producers. Thus, resources are pulled into the economic sectors whose production is mainly for meeting increased demand from domestic market. Such domestic demand-led growth pattern simulated in the model is consistent with the early discussion of the chapter in which we described the importance of the non-tradable growth in shaping the growth patterns of Rwanda's recent economy. This model's result is also consistent with the consensus in the development literature discussed in the previous section.

The result displayed in Fig. 16.7 under the more-aid-dependent scenario is also consistent with what we observe in recent years in many African countries, that is, the economic activities producing for domestic demand have become the leading forces in both growth and job creation. Thus, there seems to exist a trade-off for promoting nontraditional trade and economy-wide growth when growth is supported by increased foreign aid to finance public investment.

The different foreign aid growth rates also affect structural change differently, which can be seen clearly in Fig. 16.8, in which we report the results for GDP shares of tradables and non-tradables for the two alternative scenarios. The initial output shares for the tradable subcomponent of the economy is roughly 28 percent of total GDP, and the rest 72 percent is for the non-tradables.

When economic growth is more dependent on foreign aid, the share of the non-tradable sectors in the economy rises and the share of the tradable economy falls. On the other hand, when growth is less dependent on foreign aid, the GDP share of the tradables rises over time and the GDP share for the non-tradables falls. Between the two scenarios, difference in the shares of either tradable GDP or non-tradable GDP can be as high as 17 percentage points by 2025, the final year in the period of ten years

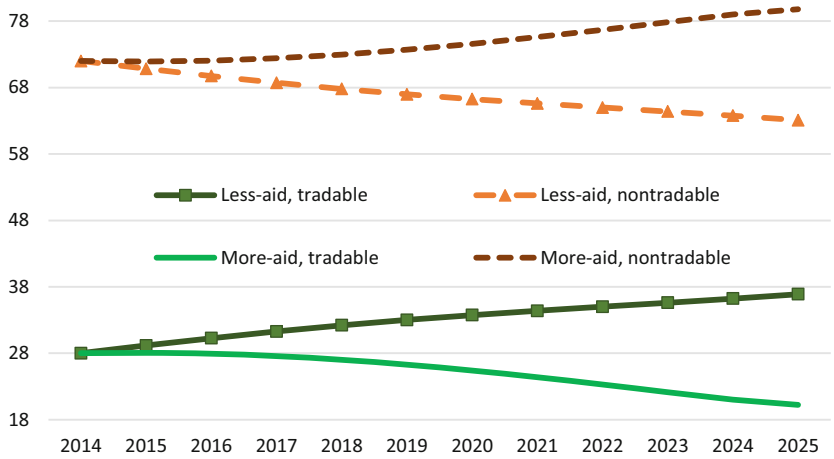

Fig. 16.8 Shares of tradables and non-tradables in GDP in their current prices (%) (*Source*: Result of Rwanda dynamic CGE model simulation)

simulated in the model. This is not a small number in terms of magnitude of structural change, which can have a huge implication for the growth sustainability in the long run for a low-income country like Rwanda.

Conclusion

The relationship between economic growth and foreign aid inflows is more or less an empirical issue, and in the development literature, it is still inconclusive whether foreign aid inflows positively or negatively affect the longer-term growth in developing countries. In this chapter, I apply a dynamic CGE model to the case of Rwanda to assess this issue. By considering two alternative growth scenarios of foreign aid inflows—the first based on continued high growth in foreign aid inflows and the second based on a substantial reduction in foreign aid growth—the chapter assesses the relationship between growth, structural change, and foreign aid in Rwanda. The chapter finds that, while there exists a growth effect of foreign aid, the differential impact of the levels of foreign aid inflows on the average overall economic growth is modest. Between the more and less foreign-aid-dependency scenarios, the differences in economic growth rates (measured by growth in GDP) range from a positive difference of 0.10–0.20 percentage

points in the early years to a negative difference of 0.20–0.26 percentage points in the later years. However, the composition of economic growth is significantly different depending on the assumptions about foreign aid growth rate. Foreign aid inflows finance infrastructure investment, but they also affect the real exchange rate. Thus, high and sustained foreign aid inflows stimulate growth primarily in the non-tradable part of the economy. By contrast, foreign aid inflows have a negative impact on growth in the tradable part of the economy by making exportables less competitive. Finally, when growth is less dependent on foreign aid, the contribution of structural change led by the expansion of the tradable economy to overall growth is larger. This is particularly true when labor productivity is significantly higher in the tradable sectors.

In the recent years, Rwanda has been seen to follow a growth path significantly different from the East Asia model, in which export-oriented, labor-intensive manufacturing has led to structural transformation. In Rwanda, as well as in many other African countries, growth has been dominated by the expansion of non-tradable sectors that largely serve domestic markets. This observation has led some to be skeptical about the sustainability of Africa's recent growth (Lipton 2012; Rodrik 2016b). Indeed, it is not clear whether the domestic demand-led growth could become sustainable in the longer run, as there is no historical evidence to support such growth model. Africa's recent growth, thus, calls for a new way of thinking about its growth sustainability, including a new thinking about the role of domestic and regional markets in Africa. This growth pattern also raises a set of new questions about the proper government policies to support broad-based and sustainable growth in Africa with more foreign aid or less.

Notes

1. The wage rates are endogenous variables in the model and will change endogenously over time. Here, we talk about the initial values for the wage rates, which are used to calibrate the model's parameters in its production functions.
2. The real exchange rate is measured as the ratio of international price index, which is an exogenous variable, over the domestic producer price index, which is endogenous in the model.

3. This model's result does not imply a crowd-out effect of the public investment, given that in the model the public investment does not compete with the private investment directly.
4. Domestic savings in the WDI include both private and public savings.

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CHAPTER 17

Anatomy of Foreign Aid in Ethiopia

Adugna Lemi

Introduction

Ethiopia has been growing at a remarkable rate since 2004. In 2014, its real gross domestic product (GDP) grew at a rate of 10.3%, which was more than double that for sub-Saharan Africa (SSA) of 4.6% (World Economic Outlook 2015). In a span of ten years (2005–2014), the economy added over US$44 billion worth to its GDP, a significant improvement for a country with frequent climate calamites and poor infrastructure. However, the improvement may not be evident for its citizens as Ethiopia still remains on the lower end of the development ladder.

With an estimated population of 96 million in 2014, the per capita income of the country was only US$550, way below the SSA average of US$1550. There are a number of plausible explanations for the limited improvement of Ethiopia's per capita income, ranging from globalization to population growth. Aid inflow—as a way to increase the country's capital base—has been advocated as one of the panaceas since the 1950s. Nevertheless, results from recent empirical studies and reports on aid effectiveness are, at best, mixed (Easterly and Pfutze 2008).

Along with growth in the overall economy, comes increased government spending and deficit financing. The government collected about US$2.3

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billion dollars including taxes and grants during the 2004/2005 fiscal year. Out of which, US$0.5 billion (22%) was in the form of grants. During the same year, the government spent US$2.8 billion, which was above the total revenue by US$0.6 billion. Without grants, the deficit could have been about US$1 billion. Of the 22% in external grants that constitute as part of government revenue, 50% came in the form of grants in kind (or earmarked) and the remaining 50% in the form of untied funds (IMF 2015). There has been a slight improvement in recent years. In the 2013/2014 fiscal year, the country mobilized US$9.3 billion from domestic and US$0.65 from grants, which was only 6% of total revenue and grants. The share of external funds to finance government budget deficit was only 11% of total government spending in the 2013/2014 fiscal year compared to 29% in the 2003/2004 period (IMF 2015).

How did the government finance the deficit? In principle, it could use both domestic and external sources of finance. What is critical for countries like Ethiopia is to finance deficits with hard currencies since significant part of the financing is required to cover expenses on importing essential goods and services. As stated above, about 78% of this money comes in the form of external borrowing. Arguments in favor of more grants than loans seem to have been practiced in Ethiopia at least during the early 2000s; however, in recent years, there is evidence that the country relied more on external borrowing.

Aid in the form of grants has been preferred over loans for several reasons (Rogoff 2005; Bulow and Rogoff 2005; Brech and Potrafke 2014; Alvi and Senbeta 2012). Grant-only aid has been supported to prevent future debt crisis and to lift the tax burden of weak economies. It is also argued that grant-only approach will eliminate the "bad-cop" role of development banks in enforcing debt repayments.

On the other hand, Clements et al. (2004) and Carter (2013) despised the idea of grant-only aid due to its negative implications on the mobilization of domestic revenue. Their study reveals that an increase in aid inflow in the form of grant is associated with a decrease in domestic revenue mobilization, which eventually strains government budget. Both lines of argument qualify their respective conclusions with the need to enhance domestic institutions to respond to domestic revenue mobilization capacities, but also, to improve transparency in the operation of governments. Compared to the 2003 value of 28%, Ethiopia has increased its domestic revenue generation capacity and mobilized close to 90% of its total revenue from domestic tax and nontax sources in 2013/2014 (IMF 2005, 2015). In

recent years, grants account for less than 10% of the country's total revenue (IMF 2015).

Whether the sources of financing are something to worry about depends on who gives the grants, for what purposes, when they give, and whether the sources are reliable. If the sources are predictable and do not depend on regime, then the country can make realistic and achievable long-term plans. If not, it is difficult to make progress in development with sporadic flow of capital. It is not only essential for the predictability of the aid funds to determine which donors account for the larger share of official bilateral flows and the agencies that account for the larger share of multilateral creditors; but also, for what purposes the country has been receiving aid. Do regimes matter in the aid flows? Do the strategic interests of the donors affect the pattern of aid flows? This chapter provides descriptive analysis of aid flows to Ethiopia for the period 1960–2014 and attempts to answer these and related questions. Relating flows of aid to economic performance or analyzing aid effectiveness[1] is beyond the scope of this chapter.

The sampling period (1960–2014) is divided into three political regimes: imperial (1960–1973), military (1974–1990), and the current (1991–2014) regime. It is important to note that in the last ten years, Ethiopia has had impressive economic growth and at the same time has become a major player in anti-terrorism efforts. Both phenomena have significant implications on aid flow into the country, hence warranting the need to analyze these flows across regimes.

The rest of the chapter is divided as follows: the next section presents data sources and methodology, section three provides background and descriptive analysis of the flow of aid to Ethiopia, and sections four and five give an account of the major donors and sectoral distribution of aid, respectively. The last section concludes.

Data Source and Methods

This chapter uses data from the Organization for Economic Cooperation and Development (OECD), and as such the variables and definitions follow the standards that OECD uses. Data on the geographic distribution of financial flows report aid flows to Ethiopia from each DAC member countries and multilateral agencies from 1960 to 2014. Aid flows are grouped as loans, grants, technical cooperation, food aid, private sector grants, and other official flows. Both disbursement and commitment information are

reported for all categories. Unlike previous studies, actual disbursement amounts are used for the analysis in this chapter.

For the 1973–2003 period, data on sectoral distribution contain information only for bilateral aid commitments, while for the years 2004–2014, the sectoral distributions were reported both for bilateral and multilateral donors (OECD 2005, 2015). As a result there may be an underestimation of the sectoral distribution of aid flow pre-2004. For justifiable comparison across years, only bilateral aid flows are reported in this study since coverage ratio of multilateral aid distributions is very low. It is also important to note that the sectors in this dataset refer to the recipient sectors in Ethiopia.

Some DAC member countries (Germany, France, and Japan) have not reported data on technical cooperation by sector, and prior to 1999, some aid agencies of the United Nations did not report their activities to the Creditor Reporting System (CRS). These two missing data points make the CRS aid data coverage less than 100%. The coverage ratio was 77% in 1995 but has improved over time as countries started reporting sectoral allocation of their aid. The coverage was over 90% after 1999. As such it is difficult to compare this dataset with the geographic distribution dataset described above. Nevertheless, even with these caveats, one can use this data as an approximation especially after 1999.

Lowess, a method that includes local regression smoothing, simple bar graphs, and descriptive statistics, is used to analyze the data. Lowess is derived from the term "locally weighted scatter plot smooth," as the method uses locally weighted linear regression to smooth the data. The smoothing process is considered local because each smoothed value is determined by neighboring data points defined within the span. In this study, comparisons have been made in terms of average flows[2] for each donor, regime, and sector. With few exceptions, there is no variation in trends whether one looks into the average flows or the total flows for each donor in the geographic distribution data.[3] For the sectoral distribution data, since coverage ratios are less than 100%, comparison to total aid inflows would be misleading.

Aid Flows and Donors

There is no doubt that Ethiopia has been portrayed as a poster child of aid flow to generate aid money. Two famines that devastated the northern part of the country in 1970s and 1980s, and still resonate among the public in the West, prompted the altruistic activities.[4] The two world-wide music

events (live-aid and live8) that were held to garner millions of aid from official and private donors made it clear that aid is not just to develop a country in the long run but also to save lives in the case of emergency. The fact that the country is currently facing another drought/famine (even worse than the previous ones) implies that previous flow of aid and government efforts had temporary life-saving impacts, and sustainable survival mechanism has not taken root in the country.

Various reasons have been advanced to explain the dismal nature of the economy and the lack of sustainable means of livelihood in Ethiopia. At the same time, alternative mechanisms have been suggested to provide a long-term solution. Some commentators argue that restrictive religious practices (this is mostly true of Orthodox Christians) are to blame since it forbids people from working during some days of a month in a year. They went further to suggest that the country requires not only additional support in the form of aid but also a new calendar (Wiedemann 2005). While others question the long-term contribution of aid, McLaughlin (2004) argues that because of the direct effect of food aid from the USA, some cooking-oil manufacturing firms in the country had to shut down due to competition (Zhang 2004). There are other similar anecdotes that highlight the need for more aid and at the same time the need for restraint on aid to protect local economy.

There is also a concern with respect to aid flow related to debt burden. As it has happened in other parts of the world, aid in the form of loan has implications on debt crisis. Although Ethiopia is not at an alarming rate with this regard, one needs to look into the current state of the debt burden for reference purposes. As of 2005, the country owed over US$6 billion to its creditors; this number increased to US$16.6 billion in 2014 (The World Bank 2015). Of the 2005 value, 81% (US$4.9 billion dollars) was owed to multilateral creditors, 13% (US$0.8 billion dollars) to official bilateral donors, and the remaining 5.9% to other commercial creditors. In 2013, official donors account for 75.5% (US$8.9 billion dollars) and the private (commercial) creditors, 24.4% (US$2.9 billion dollars). As one can see in the later sections, current aid flows include debt relief provided to Ethiopia under different programs. It is important to keep this in mind to appreciate the significance of who is giving aid in the form of debt relief, and in the form of new aid inflow.

A few studies have profiled the debt burden and aid flow to Ethiopia (Alemu 2009; Abegaz 2005; Geda 2003; Yamano et al. 2003; Maxwell and Kennan 1996; Cullather 2012). For instance, Alemu (2009) looks at the trend and the impact of aid on growth and poverty in the country. Geda

(2003) provides a detailed account of the historic origin of Ethiopia's debt; Abegaz (2005) documents the level, source, and composition of aid flow into the country; Yamano et al. (2003) present the role of food aid in rural Ethiopia; and Maxwell and Kennan (1996) investigate effectiveness of European aid to Ethiopia. Cullather (2012) presents historical account of the development aid flow from the USA to Ethiopia. Although the objective of this chapter and aforementioned studies is the same—to provide a profile of aid flow to Ethiopia—this chapter uses the latest and more detailed data and presents aid flow by regime, type of aid, and purposes for which aid has been given since 1960.

The overall aid flow to Ethiopia has exhibited wide swings in the last 55 years, with the highest average peak of approximately US$78 million recorded in 2009. Looking at the period prior to 2000, average aid flow peaked at around US$ 62 million in 1985 (Fig. 17.1). The trend in aid flow reached its trough during the Ethio-Eritrea war in 1997–2000, which overlaps with the Asian financial crisis. Since 1985, at the onset of the devastating famine of the 1980s, there was an uptick in the aid flow from bilateral donors. In the 2000s, the trend was mostly upward with the exception of 2010–2012 period. The surge in aid inflow during the 2000s could be due to humanitarian aid flow, the fight on terrorism, and the new initiative (aid for trade) that the World Trade Organization member countries launched in 2005. The push for more aid targeted to increase trade flow, is believed to have contributed to the aid flow spike in the late 2000s. In 2002, there was unusual drought during the two harvest seasons—the Belg and the Mehr in February and June, respectively—that withered over 70% of the maize and sorghum crops, decimating grain production. This led to the country producing 25% less cereals and pulses than the previous year (FAO 2003). That was also the period when a significant jump in aid flow was recorded.

Figure 17.2 summarizes major multilateral donors for the period 1960–2014. The World Bank, European Union (EU), African Development Bank/Fund (Africa), and UN agencies (excluding WFP) are top donors. The other two of the top five donors (Global Fund[5] and Global Alliance for Vaccine Initiative (GAVI)[6]) are relatively new and became key players only in the past decade. These donors provide aid mostly for the healthcare sector and particularly, to support the fight against HIV/AIDS, and Malaria. Given frequent droughts followed by famine, it is surprising that the World Food Program (WFP) is not among the top 5 multilateral donors. It is also important to note that 15 of the 22 Development

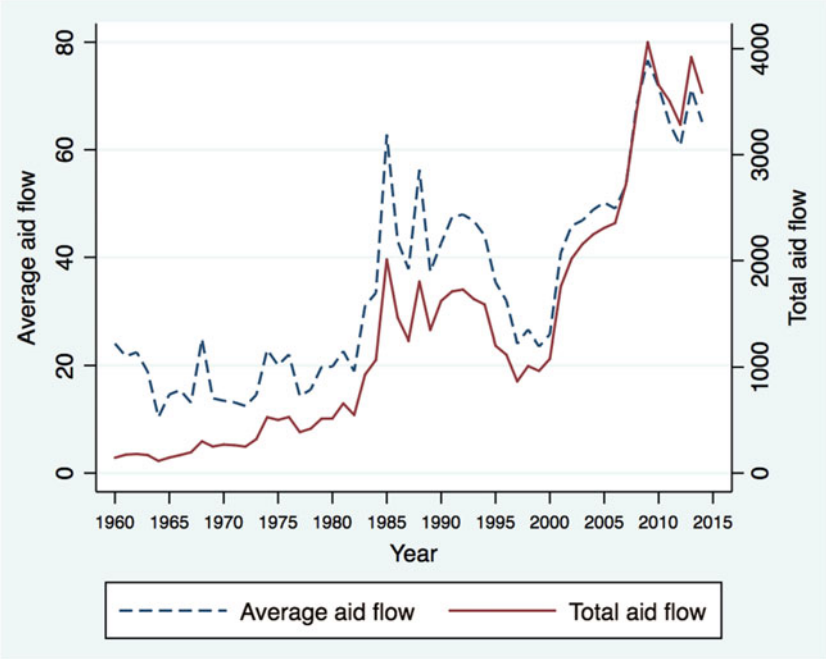

Fig. 17.1 Total and average aid flows to Ethiopia (in US$ millions), 1960–2014 (*Source*: Author's calculation based on OECD database)

Assistance Committee (DAC) member countries belong to EU; their share as a group is expected to be high, making EU Ethiopia's third major multilateral donor.

Among the bilateral donors, the USA, the UK, Italy, Germany, and the Netherlands were the top donors for the entire period (Fig. 17.3). The role of Italy is obvious given the historical ties of the two countries, especially until Eritrea's split from Ethiopia in 1993. The support from the USA was significant even during the 1960s and early 1970s as well as in recent decades for various reasons. In the 1960s and 1970s, the USA was interested in supporting Ethiopia to fight the expansion of socialism and to strengthen economic ties, the latter may be more important in the 1960s. Recently, the relationship between the USA and Ethiopia seems to be more than ever mainly due to collaborations to fight terrorism. European countries' support was mostly for humanitarian and development contributions

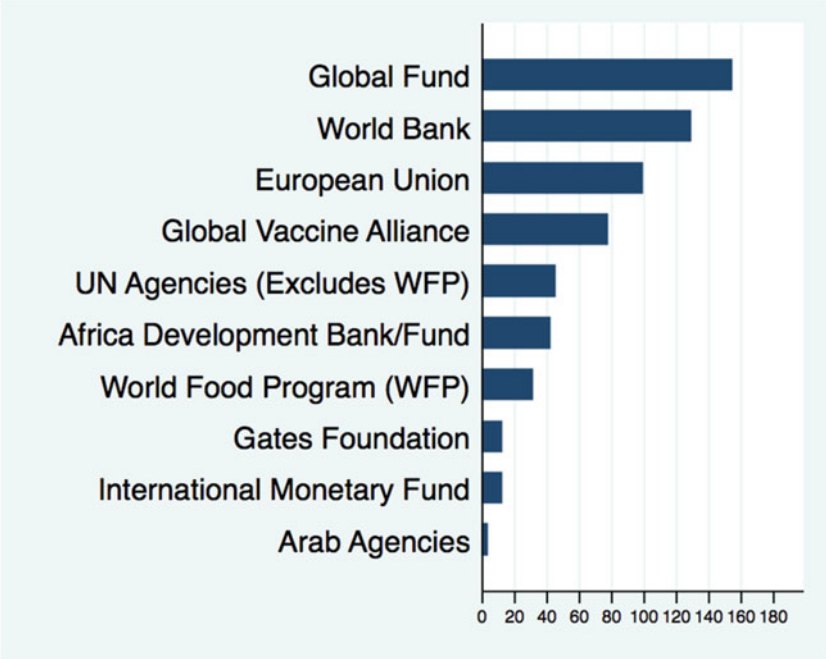

Fig. 17.2 Multilateral average aid flows to Ethiopia by donors (in US$ millions), 1960–2014 (*Source*: Author's calculation based on OECD database)

that are directed to local government and nongovernmental organizations to strengthen good governance and for infrastructure development. Since the early 2000s, Ethiopia has been among the top performing countries - in terms of economic growth - in Africa. Such performance has attracted the attention of many donors that seek to establish a link with Ethiopia for potential economic gains. In addition to countries listed above, Canada and Japan fall in this category.

Who Gave the Aid and When?

Analysis of Aid Flows During Different Political Regimes

Since the 1960s three successive/regimes have ruled Ethiopia. Regime refers to government that came to power by involuntary overthrow of

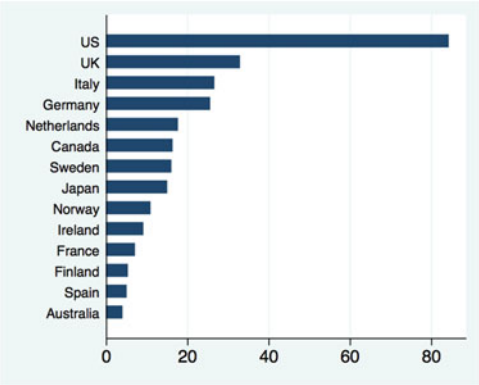

Fig. 17.3 Bilateral average aid flows to Ethiopia by donors (in US$ millions), 1960–2014 (*Source*: Author's calculation based on OECD database)

government that precedes it. In Ethiopia, although the narrative varies a among its citizens, at least the past two governments are labeled as regimes. The narrative for the current government depends on who you ask. The military regime and the current government claim to have gained power through democratic means. With little to no international observers, the elections during the military regime were not credible, if not out-right fraud. Some of the past five elections had international observers on and off; as such the fairness of the elections is questionable at best. Consequently, it is safe to refer to the governments in Ethiopia as regimes. These include imperial (1960–1973), military (1974–1990), and the current ethnic-based regime (1991–present).

It is interesting to see the dynamics of aid flow during the current regime, especially in the early years (1991–2003), when all donors were pledging to support rebuild a war-torn country after the bloody war that ended in 1991. However, since 2003 both the interest of donors and the status of the country have changed. The war on terror has been intensified in recent decades, and the country has recorded significant economic growth. It is also important to note that Eritrea was part of Ethiopia until 1993, and the data has not been adjusted to reflect these changes. Consequently, this may overestimate the aid flow to Ethiopia during the imperial and military regimes.

As one can expect, the imperial regime received the least amount of aid flows compared to the other two regimes for two reasons. First, the size of the economy and population during the imperial regime were smaller than during the military regime and even much smaller than today; as such, a large sum of aid was not warranted. Second, although the country needed aid for humanitarian reasons (devastating drought that had swept the northern part of the country in early the 1970s), the imperial regime at the time preferred to hide the situation from international media. Consequently, the country received little aid even for humanitarian reasons (food aid) (Fig. 17.4 for 1960–2003 data).

ODA grant was in the first and second place during the military and imperial regimes, respectively. For the imperial regime, aid to the private sector (soft loans to encourage entrepreneurs) ranked first but second during the military regime. The importance of aid for the private sector during the military regime is surprising, given that it was a staunch supporter of a command/centralized economy. For the current regime, given the government's willingness to adopt reform policies in line with the Washington consensus, the country has managed to attract a large sum of aid both in the form of loan and grants.

The EU, UN agencies, and the World Bank were the major multilateral donors during both the imperial and the military regimes. The aid was mostly in the form of humanitarian and emergency assistance. As discussed previously, new key players have emerged during the current regime, including the Global Fund and GAVI, as the second and the fourth top donors, respectively (Fig. 17.5). Overall, in the past six decades, five multilateral donors dominated the list: the Global Fund, the World Bank, the EU, GAVI, and UN agencies (Figs. 17.2 and 17.5). These are a mix of donors in terms of their key objectives, which include development support (the World Bank), support to the health sector (Global Fund and GAVI), security issues (UN agencies), as well as humanitarian and governance issues (EU).

Of the several bilateral donors, four countries stand out during the past two regimes: the USA, Italy, Sweden, and Germany. For the current regime, the UK replaced Sweden as one of the top four donors (Fig. 17.6). While the USA has maintained its position as as a major bilateral donor since the imperial regimes, Italy was only a top donor during the military regime. It is important to bear in mind the role of Eritrea when analyzing Italy's contributions. During the military regime—the period when Italy was the top donor—Eritrea was part of Ethiopia, and Italy

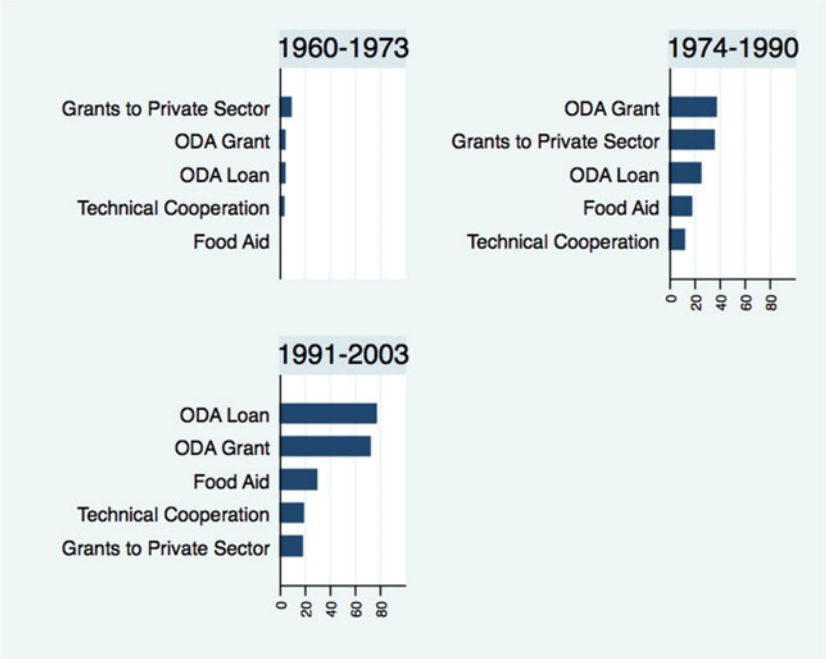

Fig. 17.4 Average aid flows to Ethiopia by aid types and regimes (in US$ millions), 1960–2003 (Note that the graph for the recent decade (2003–2014) is not reported here since different methods of data collection have been implemented since 2003 for types of flow) (*Source*: Author's calculation based on OECD database)

seemed to have had vested interest in Ethiopia as its citizens and economic interests were at stake. One of the features of aid from Sweden (and for that matter from most Scandinavian countries) is that the country often gives aid for humanitarian purposes.

An interesting observation in the current regime is that even the other bilateral donors at the bottom of the list have made significant contributions in terms of average aid inflow, at least compared to the imperial regime. These include Norway, Ireland, France, Spain, Finland, Belgium, Australia, Denmark, and Austria. As noted above, majority of countries from the EU, tend to disburse aid in support of good governance, freedom of speech, and

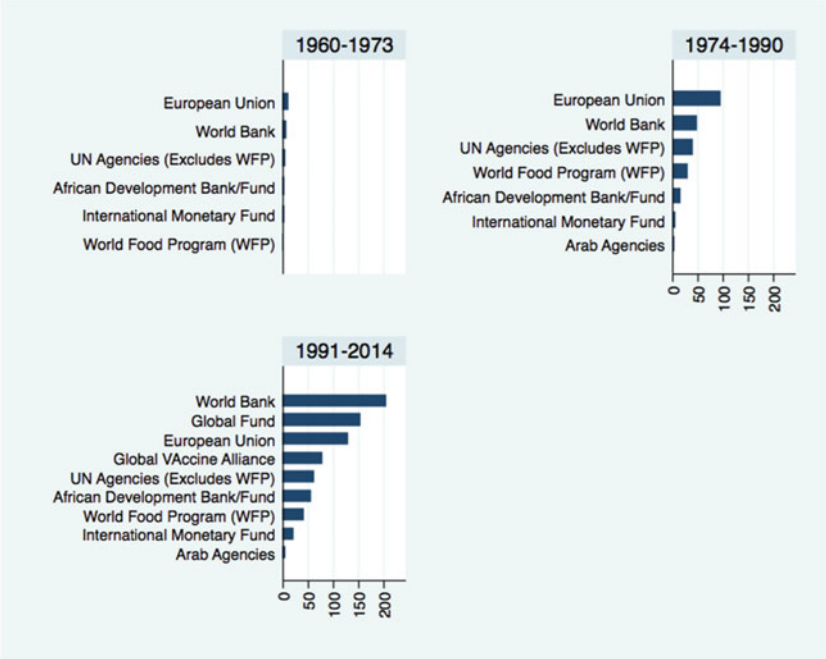

Fig. 17.5 Multilateral average aid flows by donors and regimes (in US$ millions) (*Source*: Author's calculation based on OECD database)

humanitarian purposes rather than to achieve the donor country's national interests, as it is often alleged for the other Western donors.

Has Ethiopia Received Predictable Aid Inflow from All Donors?

Predictable and sustainable aid flow is crucial for countries like Ethiopia that are dependent on aid to finance deficits, emergency reliefs, and infrastructure development. To understand the extent of predictability and sustainability, I present smoothed trends of aid flow over the period 1960–2014 for bilateral and multilateral donors, respectively, using Lowess.

Lowess is used to generate smoothed trends for bilateral (Fig. 17.7) and multilateral (Fig. 17.8) donors. Average aid flows for most bilateral donors were almost flat during the entire period, except for the USA, the UK, Canada, the Netherlands, and to some extent Japan and Norway. For some

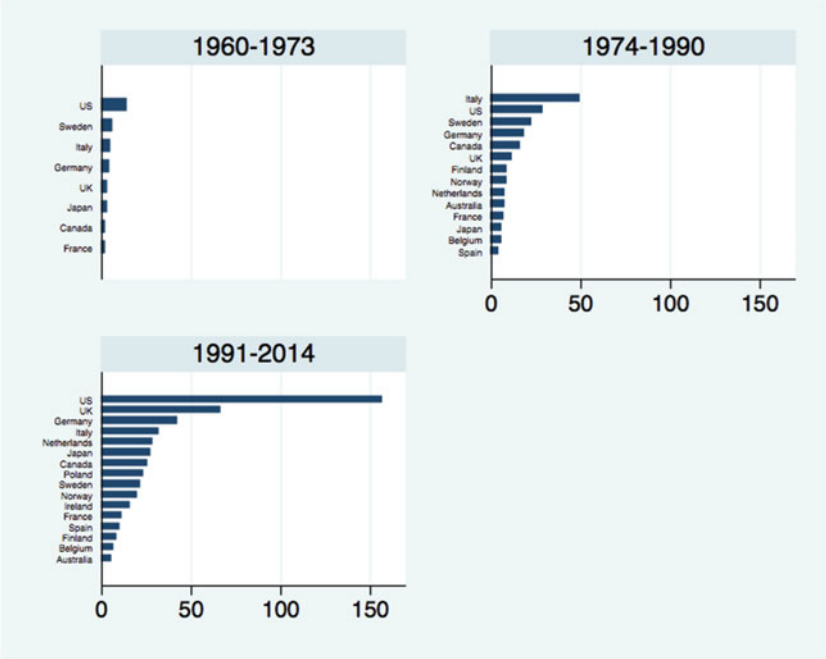

Fig. 17.6 Bilateral average aid flows by donors and regimes (in US$ millions) (*Source*: Author's calculation based on OECD database)

European countries (Austria, Belgium, Denmark, Ireland, and Switzerland) and Australia, the average flows were flat, but continuous increase in aid flow is observed for the USA, Ireland, Netherlands, and, to some extent, Japan. The decline in aid flow during the late 1990s had to do with the border conflict and war between Ethiopia and Eritrea. However, some countries, mainly the USA, the Netherlands, and the UK, were not deterred by the conflict to send more aid to Ethiopia.

For multilateral donors, there were more ups and downs and a couple of major newcomers that shaped the flow of aid to Ethiopia. Rising average aid flows are recorded for some of the usual donors (i.e. African Development Bank/Fund, the World Bank, and the IMF (in recent decade)). Recently, the overall aid flow from multilateral donors has declined compared to before the 2000s. The highlight is that contributions of the World Bank

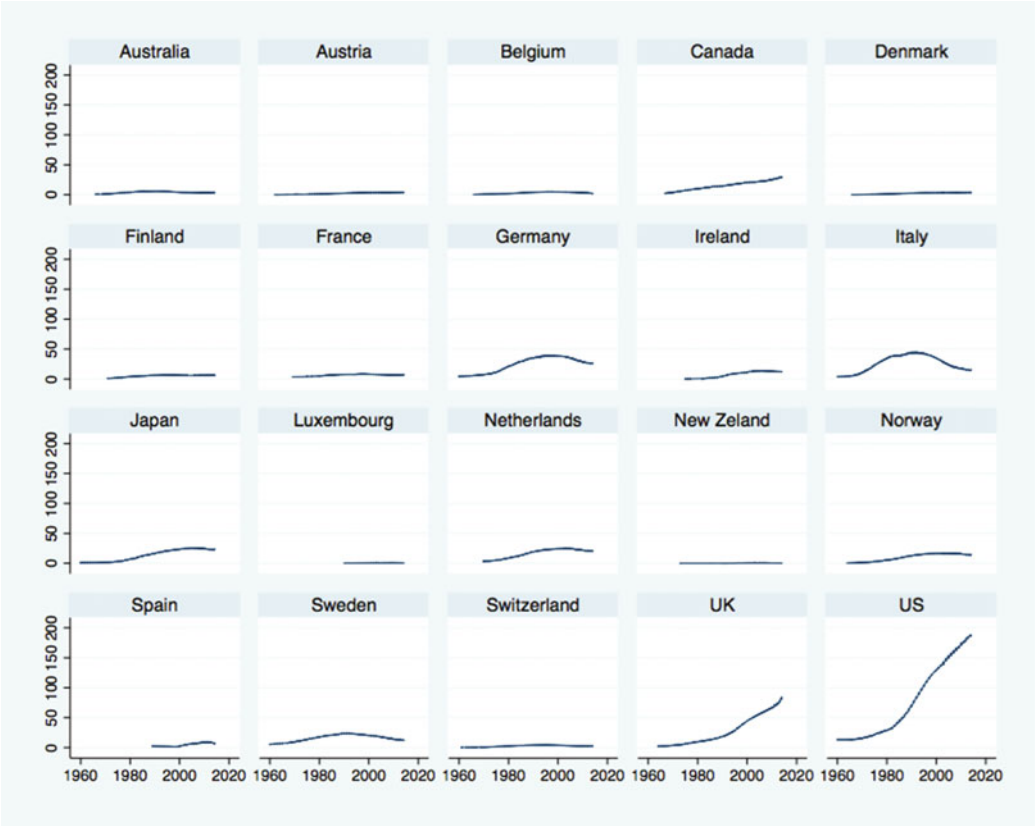

Fig. 17.7 Lowess smoothing of bilateral aid flows to Ethiopia (in US$ millions), 1960–2014 (*Source*: Author's calculation based on OECD database)

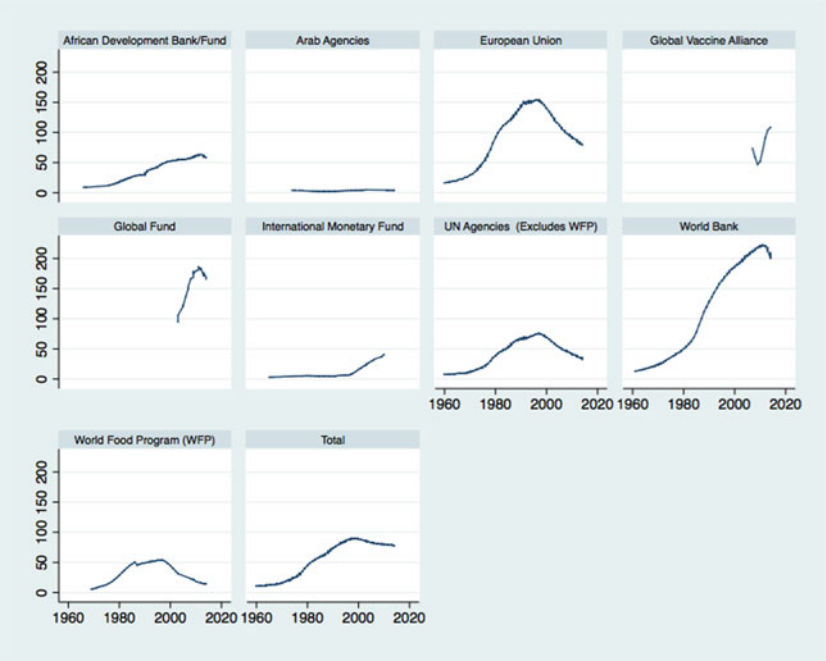

Fig. 17.8 Lowess smoothing of multilateral aid flows to Ethiopia (in US$ millions), 1960–2014 (*Source*: Author's calculation based on OECD database)

and African Development Bank/Fund, the IMF, and the two newcomers (the Global Fund and GAVI) have increased, whereas those of the EU, UN agencies (excluding WFP), and WFP have declined (Fig. 17.8).

Evidence in Figs. 17.7 and 17.8 clearly indicates that predictability is not forthcoming from most donors. It is not that all countries increase or decrease their aid flow at the same time. There is a possibility that donors are coordinating their aid disbursements to avoid duplication, where some give only for humanitarian needs while others, for projects and long-term development programs (EU and the World Bank). Predictability of the latter is important. Nevertheless, even for the major donors, like EU, predictability is not obvious as evidenced in the decline in their aid flow.

Despite the unpredictability, there is positive news. In recent years, flows in the form of Official Development Assistances (both grants and loans) have been pouring in at an increasing rate. Evidence also shows that private capital

flows (FDI and portfolio investments) have been increasing. This is a healthy sign for Ethiopia where official aid flows are followed by private capital flows, albeit at a slow rate. However, for a country like Ethiopia where the capital market is not well developed (or non-existent), it is too early to expect the role of private capital flows to play any significant role. It may be unhealthy if the rate of infrastructure development lags behind that of the private capital flow. This seems an expected outcome where aid to the private sector is waiting for the effect of development grants and loans to be felt across the poorly interlinked sectors of the economy. With the inflow of aid, the government must intensify the development of social and economic infrastructures and services to ensure effectiveness and inflow of private capital at a higher rate.

Distribution of Aid Flows by Sector, 1973–2014

The OECD dataset also compiles information on aid flow by sectoral distribution. Since the data reported for each donor and years are incomplete, I used only average aid flows for discussion purposes in this part of the study. The sectors are grouped into: social infrastructure and services; economic infrastructure and services; production; emergency assistance/humanitarian assistance (since 2003); help with debt; multi-sector, program assistance (commodity aid since 2003); and unallocated/unspecified. According to the definition of OECD, these sectors can be grouped into two: aid for (direct) production activities (including infrastructure and services) and aid for non-production (indirect) activities (including emergency assistances). Productive activities include allocation of aid to social and economic infrastructure and service, production sectors, and multi-sectors. Non-productive activities include aid flows to program assistance as well as emergency assistances, which mainly refer to food aid and aid for debt-relief. As shown in Fig. 17.9, a large proportion of aid went to non-production activities (mainly, debt-related activities) in the 1973–2014 period. This was followed by two productive activities—social and economic infrastructure and services.

Debt relief initiatives received much publicity after the 1996 World Bank and IMF Heavily Indebted Poor Countries (HIPC) initiative and the 2005 multilateral debt relief initiative (after the Gleneagles summit in July 2005). Ethiopia has been benefiting from both initiatives, as can be seen from the average aid numbers reported both in pre- and post-2003. While these initiatives have been hailed for their supposedly altruistic motives of helping relieve poor countries from debt-service obligations that were burdening

their economies, scholars and commentators, however, have raised the question regarding the practical impact of both initiatives. One concern is that debt relief may end up being a substitute for aid. Donors who consider debt cancellation may cut back fresh grants or loans. However, poor countries, despite accumulated debt, still need more grants and/or loans to finance their deficits or development projects (Arslanalp and Henry 2006; Rogoff 2005), partly due to the odious debt (Boyce and Ndikumana 2011). Hence, it may be too early to count on the debt relief component of aid unless fresh aid keeps coming at a sustainable rate and magnitude.

Sectoral Distribution of Aid Flow by the Regime

A look into the sectoral distribution during the three regimes is very critical, as it sheds light on which regime got more aid for the productive sector. Given data constraints, only the last two regimes are considered [data on sectoral distribution started in 1973] (Fig. 17.10). For the current regime, non-productive sector aid (debt related) tops the list of sectoral allocations followed by social infrastructure and services sector. At face value, it may

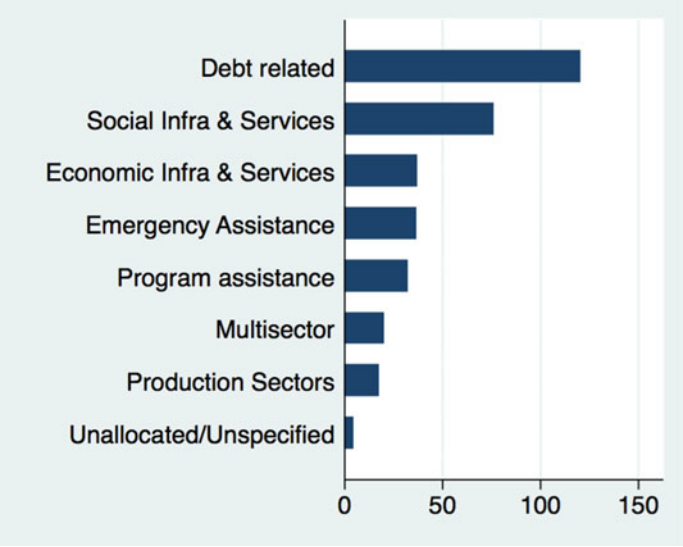

Fig. 17.9 Average aid flows to Ethiopia by sectors (in US$ millions), 1973–2014 (*Source*: Author's calculation based on OECD database)

seem surprising that the military regime received more aid for productive sectors than the current regime, despite the buzz about the extensive infrastructure development during the current regime. However, the reason for the non-productive sector that tops the list for the current regime (debt-related aid) is the debt relief initiatives discussed above. In addition, one can also argue that although aid statistics show that the military regime had received aid for production activities (i.e. multi-sector aid) mostly from the former socialist countries, some of that aid might have been diverted to other non-production sectors (i.e. military hardware factories) and resulted in the debt burden itself.

Sectoral Distribution of Aid Flow by Bilateral Donors

Table 17.1 presents bilateral average aid flows by major sectors for the period 1973–2014.[7] The table also ranks countries by the amount of average aid flow to all sectors. As expected, countries listed as major emergency assistance donors (USA, UK, Canada, and Germany) top the rank of

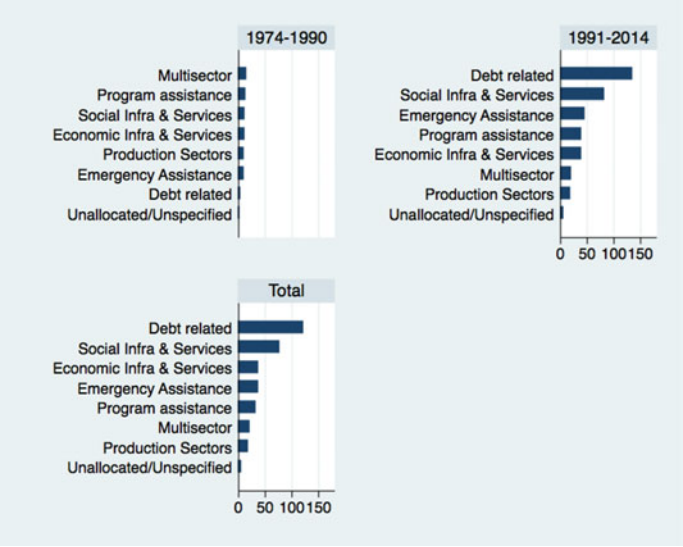

Fig. 17.10 Average aid flows to Ethiopia by sectors and regimes (in US$ millions), 1974–2014 (*Source*: Author's calculation based on OECD database)

aid that went to program assistance. This finding is not surprising since Canada, the UK, Germany, and the USA heavily support their agricultural sector and can afford to use the surplus food production as aid. Cline (2004) indicates that during the 2000–2002 period, output-distorting subsidies as a percent of agricultural output averaged 19.9% for the USA, 1.65% for Canada, and 36.2% for the EU. With the exception of the UK, the other donors also gave considerable amount of aid for production sectors. With regard to social infrastructure and services, the USA and the UK are the largest contributors.

The overall trend of aid flow to the major sectors of the country is reported in Fig. 17.11. The figure presents local regression smoothing trend during the last five decades to highlight the sectors for which the country has received aid in a consistent manner. Aid flows to two of the production sectors (production and multi-sector) have been flat at best. Flows to the economic infrastructure and services, emergency assistance, and program assistance have registered modest increases since the early 2000s. Significant jump in aid flow has been recorded for social infrastructure and services since the early 1990s and has been increasing ever since. Debt-related aid flow also jumped in the late 1990s; however, it returned to its historic average after reaching a peak in 2006/2007 when another round of debt relief initiative was launched.

Conclusion

The goal of this chapter was to present a descriptive analysis of foreign aid to Ethiopia, disaggregated by type of aid, donor, and recipient sector during the past five decades (1960–2014). The chapter also highlighted the distribution of each of these aid flows across the three regimes that have ruled the country since the 1960s.

The analysis shows that Ethiopia's major bilateral donors are the USA, Italy, Germany, Sweden, Netherlands, Japan, and the UK, whereas the EU, World Bank, WFP, and African Development Bank/Fund are the biggest multilateral donors. Since 2003, other multilateral (Global Fund, GAVI, and the IMF) and bilateral (Canada and Norway) donors have joined the top rank as key donors. Prior to 2003, aid came into the country mainly through Official Development Assistance (both in the form of grant and loan) followed by grants to the private sector (export credit and lending) and food aid. However, after 2003, there has been a decline in the grant components of aid both from multilateral and bilateral donors. It is

Table 17.1 Bilateral average aid flows to Ethiopia by sectors (in US$ millions), 1973–2014

Bilateral donors	*Debt related*	*Economic infrastructure and services*	*Emergency assistance*	*Multi-sector*	*Production sector*	*Program assistance*	*Social infrastructure and services*	*Unallocated/ unspecified*	*Total*
US	34.04	13.21	353.77	5.17	13.99	45.56	223.47		689.21
UK	10.02	2.56	46.67	3.97	1.89	52.28	190.04	0.97	308.4
Germany	25.89	9.22	6.93	11.83	14.44	10.27	23.51	2.98	105.07
Canada	0.15	0.78	9.77	1.63	14.09	18.12	19.08	0.27	63.89
Japan	4.49	16.63	6.85	0.73	10.08	10.22	15.07	2.45	66.52
Italy	28.96	16.58	3.56	8.25	7.44	4.57	12.85	4.38	86.59
Netherlands	2.34	2.8	6.02	3.49	7.13	7.84	22.04	6.99	58.65
Sweden	4	2.54	6.93	6.83	5.1	5.45	17.28	1.12	49.25
Ireland		1.02	2.89	5.45	3.17	9.04	21.18	0.28	43.03
Norway		3.24	5.57	5.25	4.71	1.82	13.17	2.18	35.94
Spain	0.67	0.32	6.91	1.15	2.72	0.92	9.89	0.07	22.65
France	1.07	7.9	1.79	2.19	1.86	2.23	9.58	0.34	26.96
Finland	0.97	1.87	1.42	1.22	1.32	0.43	10.27	0.72	18.22
Australia	1.99	0.04	3.86	1.05	1.37	3.36	3.21	0.16	15.04
Denmark		2.15	2.54	5.17	2.36	1.38	2.04	1.27	16.91
Austria	3.37	0.88	0.63	1.27	1.28	0.72	4.52	0.41	13.08
Belgium	4.27	0.44	1.59	1.05	0.54	1.81	3.47	0.34	13.51
Switzerland			2.29	0.97	0.75	1.21	0.46	1.64	7.32
Greece			5.3	0.2	0.09	1.15	0.77		7.51
Luxembourg		0.17	0.61	0.08	0.14	0.22	0.14	0.15	1.51
New Zealand		0.01	0.35		0.02	0.1	0.07	0.28	0.83
Total	122.23	82.36	476.25	66.95	94.49	178.7	602.11	27	1650.09

Source: Author's calculation based on OECD database

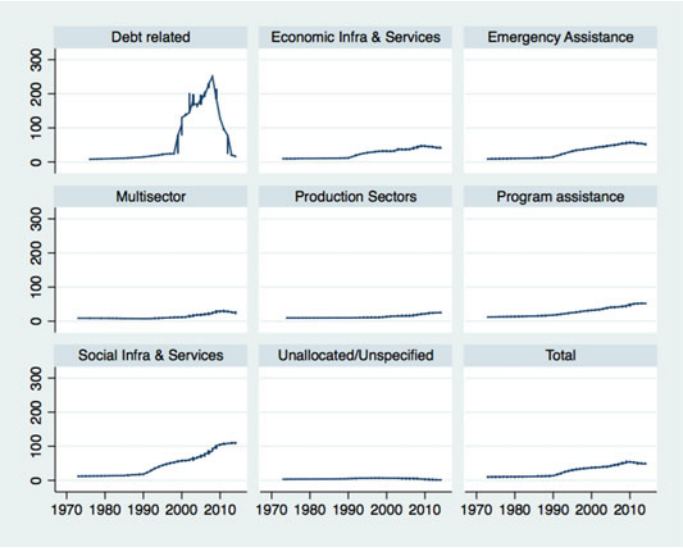

Fig. 17.11 Lowess smoothing of aid flows to Ethiopia by sectors (in US$ millions), 1973–2014 (*Source*: Author's calculation based on OECD database)

important to note that there were significant variations in aid flow across regimes in terms of donors, types of aid, and purposes/sectoral distributions.

The three major purposes for which aid was disbursed during the last two regimes were debt related, social and economic infrastructures and services, as well as emergency assistances. For the current regime, emergency assistance was the third major purpose, while production-related sectors (production and multi-sector) were at the bottom of the list.

In terms of trend, aid flow to most sectors remained flat since early 2000s. The exceptions were aid flow to the social infrastructure and services sector and, to some extent, economic infrastructure and services and program and emergency assistances. This suggests that there has been a shift in recent years from production-related focus to social/humanitarian/emergency activities. This is worrisome for a country that expects to join the group of middle-income countries in the coming decades. Perhaps, Ethiopia should strategically push for more aid flow to the productive sectors in a sustainable manner.

Some conclusions can be drawn from this analysis. First, evidence shows that Ethiopia has become dependent on ODA loans to finance social infrastructure and services. It is normal to expect that private capital (in the form of FDI, equity investment, private loans) should follow a surge in ODA loans for the country to move to a sustainable and market-based financing of development. However, Ethiopia has received a very insignificant amount of private capital, and the future trajectory is unknown. This is because inflow of private capital depends among other things on the prevalence of strong institutional, regulatory, and judiciary frameworks in the country.

Second, there was a slight shift in the composition of donors (both bilateral and multilateral). In terms of bilateral aid,[8] the shift was in favor of those countries seeking geostrategic and economic interests, whereas multilateral aid shifted toward emerging donors providing social services (particularly healthcare). In response to such dynamics and emerging partners, Ethiopia should customize its aid policy to take advantage of these changes in a way that embraces inclusive and sustainable development.

Notes

1. For further information about aid effectiveness in Ethiopia, see the work of Alemu (2009).
2. In reporting the bar graphs, average aid flow numbers (instead of total flows) are reported to avoid impact of infrequent one-time bumps.
3. The similarity of the average and total aid flows is demonstrated in Fig. 17.1 that reports both numbers across time.
4. The drought/famine that the country has faced in recent months (2015 and 2016) has received only lukewarm attention from donors.
5. The Global Fund is a twenty-first-century partnership organization designed to accelerate the end of AIDS, tuberculosis, and malaria as epidemics.
6. Created in 2000, GAVI is an international organization—a global vaccine alliance—bringing together public and private sectors with the shared goal of creating equal access to new and underused vaccines for children living in the world's poorest countries.
7. The sectors in the table are only some of the major sectors selected for summary purposes. I have omitted sectors that received very little aid.

8. Bilateral donors from non-OECD countries (especially China) are not included; including such donors could have shown even more uptick in aid flow for recent years.

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PART VII

Remittances, Debt, Resource Management, and Economic Development in Africa

CHAPTER 18

Remittances and Economic Development in Africa: A Review of Empirical Evidence

Kasahun Woldemariam and Zelealem Yiheyis

Introduction

The global flow of officially recorded remittances, comprising personal transfers and employee compensations, has seen considerable increase over the years. For example, in 1990, total world remittances were US$67.9 billion, which rose to US$135.5 billion a decade later. By 2012, recorded remittances had reached US$488 billion. These represented 0.3, 0.4, and 0.7% of global GDP, respectively. A larger percentage increase was observed in sub-Saharan Africa (SSA) during the same period. The recorded inflow of remittances in 2012 to the region was 16.5 times greater than the US$1.8 billion in 1990, registering a rise in the average remittance-GDP ratio from a mere 0.7 in 1990 to 2.1% in 2012. While the share of global remittances received by SSA remains relatively small, its importance as a source of foreign exchange has grown over the last several decades. For instance, in 1990, remittance flows to SSA represented 2.6% of the values of its exports and imports of goods and services, rising to 8% two decades later. This is in contrast to developing economies, in general, for which the corresponding percentages are estimated at 5.6% and 5.0%, respectively (UNCTAD

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database). Although the question of whether and how remittances contribute to economic development largely remains underinvestigated, the steady growth and the relative importance of remittances as a potential source of capital for development have led some to view remittances as "the new development mantra" (Kapur 2003). This chapter reviews the empirical literature on the link between remittances and various dimensions of economic development including economic growth, human capital development, poverty, and income inequality, with a focus on Africa. The remainder of the chapter is divided into five main sections. The next section compares the trends of remittances, foreign direct investment (FDI), and official development assistance (ODA) as sources of external finance. Section three outlines the theory concerning the expected contributions of remittances to the economic growth and development of the recipient countries. Section four reviews the related empirical evidence in the context of Africa. In section five, we summarize the main points of the chapter and suggest areas for further research.

Trends in Remittance Flows Relative to ODA and FDI

Movements in the period average rates of remittances, ODA, and FDI flows to SSA are depicted in Fig. 18.1. It is clear that remittances have, until 2007, trended upward, whereas ODA exhibited a downward trend, falling significantly in the 1990s, recovering slightly between 2002 and 2006, only to decline subsequently. On average, ODA and FDI inflows to the region exceeded recorded remittances, but the gap between them has been narrowing over the years. This is without taking into account unrecorded remittances sent through informal channels, which "could add at least 50 per cent to the globally recorded flows" (UNCTAD 2012). Given this and other estimates (e.g. Page and Plaza 2006), recorded and unrecorded remittances sent to developing countries, including Africa, may be sizable, probably exceeding the total flow of FDI or ODA (Ratha 2007a). Therefore, a comparison based on official data will understate the amount and importance of remittances as a source of foreign exchange relative to ODA and FDI, which flow only through official channels and are more accurately recorded.

The data presented in Fig. 18.1 is based on period averages, which obviously glosses over inter-country differences in the relative importance of remittances, ranging between countries such as Comoros, Lesotho, and the Gambia among the top and Central African Republic, Gabon, and

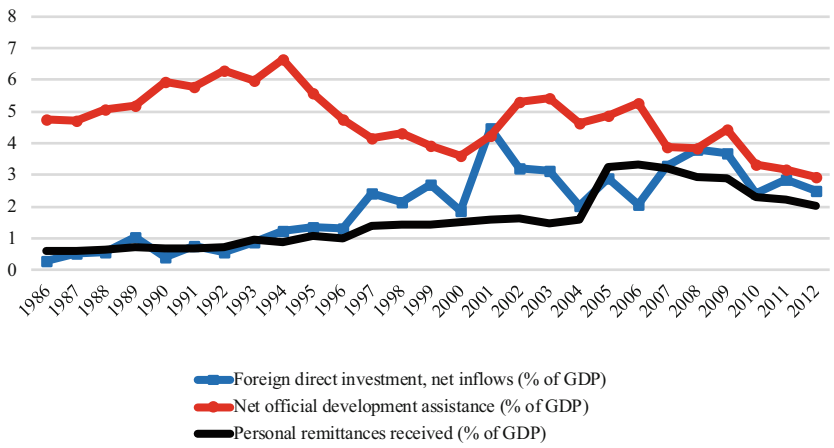

Fig. 18.1 Remittance, ODA, and FDI (% of GDP), 1986–2012 (*Source*: Authors constructed using data from World Bank's WDI database)

Tanzania at the other extreme. Table 18.1 provides a summary of the temporal profiles of the three variables by country, selecting the top 15 recipients of remittances in Africa based on the average of remittances as a percentage of GDP from 2000 to 2012. During this period, the average remittance rate ranged between 2.7% (Kenya) and 43% (Lesotho) and exhibited an increase in the majority of the countries in question except in Lesotho, Sudan, Swaziland, and Kenya where a decline was observed. Nigeria, Egypt, and Morocco received the highest amount of remittances, in that order, while Lesotho, Comoros, and Gambia ranked highest in remittance receipts as a share of their GDP. As a percentage of GDP, remittances exceeded ODA by a noticeable margin in Lesotho, Comoros, Morocco, Nigeria, and Egypt, while the reverse was true in Kenya, Benin, Mali, and Uganda. Remittances represented a higher share of GDP than FDI in all countries except in Sudan, while the two flows were roughly equivalent in Uganda, Mali, and Swaziland.

SSA remittances have been generally less volatile than FDI (Ratha 2013). However, since 2008, there has been a steady decline in remittance inflows, indicating the susceptibility of migrants' income and the amount of money they send to their families to macroeconomic conditions in the source and destination countries (Nyamongo et al. 2012; Barajas et al. 2010). However, migrants may be altruistically motivated to remit when their families

Table 18.1 RMT, ODA, and FDI (% of GDP) in selected African countries

Country	*RMT (% GDP)*				*ODA (% GDP)*				*FDI (% GDP)*				*RMT (million US$)*
	2000	*2005*	*2012*	*Annual mean, 2000–2012*	*2000*	*2005*	*2012*	*Annual mean, 2000–2012*	*2000*	*2005*	*2012*	*Annual mean, 2000–2012*	*Annual average 2000–2012*
Lesotho	62.0	43.8	23.8	43.0	4.8	4.9	12.1	8.4	4.2	5.1	3.2	6.1	557
Comoros	–	14.2	20.0	17.6	9.3	6.0	12.5	9.5	0.0	0.1	1.9	1.1	87.2
Gambia	–	9.5	15.5	10.3	6.3	9.7	15.2	11.4	5.6	8.6	3.7	6.7	80.5
Senegal	5.0	9.1	–	8.9	9.2	8.0	7.7	8.4	1.3	1.9	2.0	2.0	904
Togo	2.6	9.1	–	8.7	5.4	3.9	6.2	7.0	3.2	4.5	2.4	3.2	205
Morocco	5.8	7.7	6.8	7.5	1.2	1.2	1.5	1.3	0.6	2.8	3.0	2.3	5100
Nigeria	3.0	13.0	4.5	6.3	0.4	5.7	0.4	1.5	2.5	4.4	1.5	3.0	11,900
Egypt	2.9	5.6	7.3	4.7	1.4	1.2	0.7	1.0	1.2	6.0	1.1	3.2	7290
Uganda	3.8	3.6	3.8	4.5	13.8	13.2	7.0	12.4	2.6	4.2	5.1	4.2	523
Tunisia	3.7	4.3	5.0	4.4	1.0	1.1	2.2	1.3	3.5	2.2	3.4	3.5	1570
Mali	3.0	3.3	–	4.3	11.9	13.6	9.7	12.3	3.4	3.0	3.8	4.2	290
Sudan	5.2	2.7	0.6	3.6	1.8	6.9	1.5	3.6	3.2	5.9	3.7	4.5	955
Swaziland	3.7	3.7	0.8	2.9	0.9	1.8	2.2	1.9	5.9	−1.8	2.2	2.5	68.9
Benin	3.7	3.4	2.8	2.8	10.3	8.0	6.8	9.2	2.5	−0.2	3.7	1.3	138
Kenya	4.2	2.3	2.4	2.7	4.0	4.1	5.3	4.2	0.9	0.1	0.5	0.5	650

RMT Remittance

Source: Calculated by authors using data from World Bank's WDI database

back home are faced with natural disaster or economic deterioration (Singh et al. 2010; Young 2008). Thus, compared to other forms of financial flows, the slight decline in remittances flow seems to reflect migrants' altruistic motives and, by inference, the profit-driven flow of FDI. Also, given the incompleteness of data on total remittances and the possible breakdown of law and order and of the communication infrastructure due, for example, to political instability or natural disasters, the decline in total remittance flows could be far greater than what the official data shows. A case in point is the sharp decline in remittance flows to Egypt, in 2009, by about 20% and a much weaker than expected remittance flows to other North African countries (Ratha et al. 2009).

Remittances and Economic Development: Expected Relationships

Remittances are expected to influence economic growth and development through a number of channels and mechanisms operating both at the micro- and macro-levels, with implications for the various determinants and sources of growth and development, such as domestic fixed capital formation, labor supply, poverty reduction, and access to education and healthcare. This section provides and selectively outlines the salient channels of transmission as a background for the subsequent review of the empirical evidence.

Domestic Physical Capital Formation

Remittances are expected to influence long-run economic growth through domestic capital accumulation, which could stem from remittance-induced increase in recipients' income and savings which could be used to finance investment. Having met their short-term consumption needs, remittance recipients are expected to use the extra income to finance investment projects. This is particularly expected where the financial sector is poorly developed and households face liquidity and credit constraints that restrict their investment activity. Remittances could also improve and increase recipients' collateral, creditworthiness, and demand for and access to credit.

The consequent rise in savings can deepen financial development, improving the efficiency of investment, as a more developed financial sector would channel more of the funds to finance capital formation

(e.g. Aggarwal et al. 2006; Bjuggren et al. 2010). The efficiency of investment could also be affected through changes in the quality of financial intermediation. This may arise from the "informational advantage or disadvantage" remitters or recipients possess "relative to formal domestic financial intermediaries" where "remittances are primarily disguised capital inflows" (Barajas et al. 2009). Remittance receipts are also expected to boost investment by reducing macroeconomic instability through their consumption smoothing effects, as they are said to "behave counter-cyclically," serving as shock absorbers for families that may be in the midst of manmade or natural disasters (Singh et al. 2010).

Furthermore, as a source of foreign exchange, remittances could improve the recipient country's balance of payments, helping dampen the instability of export revenues and potentially increase the import of capital goods.

Labor Supply

The effect of remittances on labor supply may be examined by distinguishing between the direct impact of migration on labor supply of the domestic economy and of remittances on the labor-force participation decision of recipients. The emigration trends from Africa to the wealthiest countries are said to be related to the rise among the youth population and the wide North-South wage differentials (Hatton and Williamson 2002a; Ndulu 2004). The pattern of migration seems to indicate that those who are skilled with at least a bachelor's degree tend to migrate to developed nations, while those unskilled and less educated tend to migrate to neighboring countries. Of the tertiary-educated population in SSA, an average of 20% is estimated to work in OECD countries, a figure that underestimates the extent of brain-drain for some countries such as Angola and Mozambique where it is in excess of 50% (Gupta et al. 2007).

The decision to migrate is seen as a rational decision between domestic and foreign locations on the part of the migrant and the family members taking into account such factors as the availability of "complementary facilities needed for practicing in specialized professions" (Ndulu 2001) and the relative returns and risks in domestic and foreign locations (Ndulu 2001; Collier et al. 2004). Regardless of whether migration is a rational decision, its implication for the home country's labor supply and overall productive capacity has been a cause for concern. This is understandable in view of the high emigration rate of tertiary-educated population from Africa (Gupta et al. 2007) and the low productivity of the African workforce

relative to other developing regions (ILO 2014). The concern over the loss of human capital or productive capacity to migration may be tempered by the expected returns in the form of remittance flows (Lopez-Cordova 2006; Easterly and Nyarko 2008; Bollard et al. 2009). It may also be moderated by the transfer of know-how, entrepreneurial skills, and the expansion of business and knowledge networks to the migrants' country of origin (Easterly and Nyarko 2008; UNCTAD 2012). Furthermore, in the context of Africa, the unemployment rate—estimated to be higher than observed in other developing regions (ILO 2014)—would have been much higher without emigration. In the presence of surplus of labor, migration becomes a lever, easing the unemployment rate and improving the marginal productivity of labor (Cattaneo 2009).

Remittances could, however, adversely affect labor force participation as recipients become dependent on remittance income. To the extent that remittance flows are consistent and relatively predictable, remittance recipients may, arguably, have little incentive to engage in productive activities (Bridi 2005; Chami and Fullenkamp 2009). Moral hazard problems, arising from information asymmetry and lack of monitoring and enforcement mechanism between the remitter and the recipient, imply that remittance receipts may be diverted to the consumption of leisure (Chami et al. 2003). The moral hazard problem may also be compounded by high unemployment rate and policy impediments to entrepreneurship and social mobility in Africa.

Securitization, Government Finance and Quality of Governance

Remittances may improve the borrowing capacity of governments by enhancing their credit worthiness. It is argued that if sovereign ratings included remittances in addition to the "debt-to-exports and debt service to current account ratios," the "unrated countries would be likely to have higher ratings than expected" (Avendano 2009). Lower credit risk would translate into lower borrowing costs and interest payments. The government may also expand its revenue streams by taxing remittance as income or by levying taxes on remittance-induced investment and consumption expenditures. A stable flow of remittance could, therefore, provide governments the funds, through securitization and taxation, needed to finance projects and to meet their multilateral debt obligations.

Public investment on such projects as economic infrastructure would create employment opportunities for local communities. This may, in

turn, increase the demand for domestically produced goods, thereby boosting the local economies and contributing to economic growth. When countries meet their public and private debt obligations, their creditworthiness is likely to improve, making them more attractive to foreign investment and low-interest development loans, possibly with longer grace and maturity period.

On the other hand, a significant flow of remittances may create moral hazard to the public sector, adversely impacting the quality of governance and domestic institutions (Abdih et al. 2008). Remittance-receiving households may use their income on goods and services that would have otherwise been provided by the public sector. As such, "remittances may actually encourage states in the developing world to ignore their traditional responsibilities because they assume that remittances will fill various voids" (Ebeke 2012). The availability of remittance income may also decrease the recipients' incentive to participate in the monitoring and voicing of opinion on the government's management of the economy. The private and/or public moral hazard argument is predicated on the assumptions that remittance recipients would have been able to pressure the government to meet the basic needs of society had they been non-recipients.

Poverty Alleviation and Human Capital Formation

Poverty reduction, increased access to education, healthcare, and better nutrition are not only manifestations of economic development, but they are also the means toward it. Remittances are expected to influence poverty, income inequality, human capital, and overall living conditions at the individual and community levels (Adams and Page 2005; De Haas 2005). Remittances could reduce poverty by increasing the incomes of recipients—assuming that they were poor in the first place—which, in turn, would augment their consumption and improve their living conditions (Adams and Page 2005; De Haas 2005; Ghai 2005; UNCTAD 2012). Furthermore, remittance recipients may use the funds to pay for education and training to enhance their employability and earning capability. Remittances could also cause an increase in school enrollment and a decrease in primary school dropout rates as the reliance on child labor to supplement household income diminishes (Human Development Report 2009; Ratha 2007b). However, the net effect of remittances on the stock of human capital in the migrant-sending country would depend on the significance of

remittance-induced education and skill formation relative to the amount of brain-drain resulting from migration.

Remittances could also reduce income inequality if recipients were poorer than non-receiving households. Remittances could, however, give rise to income inequality between recipients and non-receiving poor households not only because of the direct impact on their relative nominal income but also on their real incomes if remittances were to increase the average price of consumer goods. Moreover, international migration is a costly undertaking, which the poor could ill afford. Income inequality could, therefore, worsen as a result of remittances if members of economically better-off households were more capable of migrating and thus remitting more than those from poorer households (Lipton 1980; Stahl 1982; Rodriguez 1998). However, the adverse effect of remittances on income inequality would be lessened as the cost of migration falls with the formation and growth of close networks of migrant communities (Koechlin and Leon 2006; Adams 1991).

Additionally, remittances may have beneficial spillover effects on community development (Anyanwu and Erhijakpor 2010). It is conceivable that even non-recipients in the community could benefit from the flow of remittances, provided that remittances increase consumption of locally produced goods and services. Employment opportunities could arise if recipients engage in entrepreneurial activities that create, at least, backward linkages with domestic suppliers of inputs. Furthermore, remittances transferred by migrant associations could contribute to community development if invested in building and improving the physical infrastructure of the community, which may further encourage entrepreneurship and other investment activities in the community. As Taylor et al. (1996) argued, although the income and employment effects of remittances may vary by the recipient families' initial conditions, the benefits that accrue to migrant households often have indirect benefits "to others who provide them with goods and services that would not be consumed in the absence of international migration."

Clearly, remittances could influence economic development in multiple and overlapping ways, with ambiguous effects on some dimensions of development. It appears that whether and the extent to which remittances contribute to economic development depend on a number of factors including the size and stability of remittance flows, the motivations to remit, how remittances are used, the quality of institutions, the impact of migration on labor supply and the stock of human capital, and the degree of

exposure to moral hazards both by remittance-receiving households and governments. These suggest that whether remittances contribute to economic development is ultimately an empirical question.

Remittances and Economic Development: The Empirical Evidence

In this section, we review the related empirical evidence largely in the context of Africa, focusing on the effects of remittances on economic growth, human capital accumulation, poverty alleviation, and income inequality.

Effect on Economic Growth

The evidence on the direct link between remittances and economic growth is thin, particularly in the context of Africa. One of the few studies examining the contribution of remittances to the economic growth of African countries is Fayissa and Nsiah (2010). They estimated a model of real GDP per capita with remittances per capita in current US dollars as one of the explanatory variables. Using a panel data from 1980 to 2004 for 36 African countries and employing alternative panel data estimation methods, including a variant of the dynamic panel data procedure, they find a positive relationship between per capita real GDP and remittances. Similarly, Lartey (2013), employing a panel data for 36 SSA countries over 1980–2008, finds that remittances, entered as a share of GDP, have positive impact on economic growth, the latter represented by the growth rate of per capita real GDP. However, the sign and significance of the effect are conditional on the inclusion of an interaction term between remittances and indicators of financial development without which it emerges insignificantly negative. The coefficient on remittances becomes positive when interaction terms are alternately entered. The positive coefficient estimates imply that the growth effect of remittances increases with the degree of financial development.

Singh et al. (2010) also examined the growth implications of remittances and the size and location of the diaspora over the same period (1980–2008) and for as many SSA countries. Applying the fixed-effect, two-stage least squares estimation procedure and representing the two variables of interest with the log of remittance-GDP ratio and difference in the log of real GDP

per capita, they find that remittances exerted a significantly negative effect on growth. They argue that well-developed domestic institutions could unlock "the potential for remittances to contribute to faster economic growth." The location, more than the size of the diaspora, determines the volume of remittances sent to the origin countries. Thus, migrants in wealthier countries tend to send more than their counterparts in poor or middle-income economies (p. 327). Their findings support the view expressed by Catrinescu et al. (2006) that remittances may have the potential to contribute to economic growth in developing countries, provided that political and economic institutions facilitate the flow and efficient use of the transfers. The results reported by Lartey (2013) and Singh et al. (2010) as regards financial development are at odds with those of Bjuggren et al. (2010), Abdih et al. (2008), and Giuliano and Ruiz-Arranz (2005), among others, who find evidence that remittances diminish in their growth-enhancing effects when the financial system is well-established, which helps ease the liquidity and credit constrains for private-sector investment.

Baldé (2011) compared the effect of remittances and foreign aid on savings and investment for a sample of 37 and 34 SSA countries, respectively, over the period 1980–2004. Based on OLS and instrumental-variable fixed-effect estimation, Baldé finds that remittance and foreign aid promote domestic savings and investment. Despite the stylized fact that foreign aid historically outweighed remittances for most of the countries in the region, Baldé noted that remittances exerted a considerably larger impact on savings and investment than foreign aid did. Lartey (2013) also examined the effect of remittances on investment, represented by the investment-GDP ratio, in the same study previously cited in connection to growth. He reported that remittances stimulated domestic capital formation in SSA. The estimates are interpreted to imply "the existence of an investment channel through which remittances promotes growth" (p. 1054). The observed positive growth and investment effects have led the author to conclude that "remittances contribute towards a stable macroeconomic environment in the subregion by financing consumption during economic downturns which in turn fosters investment."

A similar result is reported by Ojapinwa and Odekunle (2013) who examined the link between remittances and fixed capital formation in Nigeria. They estimated an investment equation derived from the Harrod-Domar growth framework, with variables entered in real terms and in level form. Employing the dynamic OLS estimator, they found remittances to have spurred fixed capital formation in Nigeria and that "remittances can

bring about more growth if the Nigerian financial sector is more developed growth and other incentives are provided for remittance recipient economies" (2013).

More recently, Yiheyis and Woldemariam (2015), applying the bounds testing approach to cointegration, examined the effect of remittances on locally financed domestic fixed capital formation in four African countries: Burkina Faso, Kenya, Nigeria, and Senegal. They find evidence contrary to the results reported by Ojapinwa and Odekunle with respect to Nigeria, differences in method of estimation, and variable representation notwithstanding. Regressing the rate of domestic fixed investment net of FDI on remittances as a share of GDP and other explanatory variables, the results of their study indicate that the short-run effects of remittances are positive for Burkina Faso and Kenya and negative for Nigeria and Senegal. The experiences of Kenya and, to a lesser extent, Senegal suggest that the long-run relationship between remittances and domestic capital formation is negative. The long-run effect in Burkina Faso was found insignificantly positive, while that in Nigeria was insignificantly negative.

Effect on Human Capital Accumulation

The contribution of remittances to human capital development, including investment in health and education, constitutes the other major area of research interest over the past few decades. The dilemma for many of the African countries is how best to balance the domestic need for educated workforce, investment capital, and foreign exchange needed to pursue their development objectives. As mentioned, these concerns may be tempered by the expected returns from human capital flight. Whether the returns outweigh the temporary shortages of skilled labor in the home country and whether the brain-drain is offset by brain-gain are said to be determined, among others, by the destinations and educational levels of migrants. Easterly and Nyarko's study on the effect of brain-drain on the domestic stock of human capital suggests that the incentives provided by brain-drain for skill formation at home offsets Africa's loss of skills to migration. Easterly and Nyarko (2008), using Ghana as a case study, estimate "that the present value of remittances more than covers the cost of educating a brain drainer" (2008).

Beine et al. (2008) have also analyzed the net effect of brain-drain on human capital formation in a sample of 127 developing countries, of which 51 are from Africa by regressing the growth rate of the pre-migration

human capital levels between 1990 and 2000 on the log of skilled migration rate, remittances as a share of GDP, and other covariates at their 1990 levels. The results, based on OLS and instrumental variables, suggest that for the sample as a whole, brain-drain contributes to human capital formation. However, the country-specific counterfactual experiment reveals that the effect of brain-drain was not the same across countries. Among the African countries in the sample, only 24 experienced a beneficial brain-drain, which led the authors to characterize the situation for many of the small countries in SSA as "extremely worrisome." In general, countries characterized by low levels of human capital and low skilled emigration rates are found to benefit from brain-drain. The study finds no evidence that remittances influenced the growth of human capital formation in the receiving countries.

More recently, Naanwaab and Yeboah (2013) examined the impact of remittances on investment in human capital accumulation in 71 developing countries, including 21 from SSA, covering 1998–2010. Their panel data estimates, using the three-stage least squares regression, suggest that remittances contribute to investment in education and healthcare. For the 21 African countries, the effect is particularly greater on investment in education than in healthcare expenditure. Based on household survey data from Ghana, Adams and Cuecuecha (2013) find that remittance-receiving households in Ghana spend more on education, health, and housing at the margin.

Arguably, one of the redeeming features of brain-drain is that more skilled migrants will remit more than their less skilled counterparts. The explanation is that more skilled migrants "work better jobs and earn more money than low skilled migrants, and in turn, send more money back home in remittance flows" (Bollard et al. 2009). Using a micro dataset, comprising over 33,000 migrants in 11 OECD countries, Bollard et al. (2009) finds that more educated migrants remit a greater amount. This is contradicted by macro-level results from an investigation of the same issue by Niimi et al. (2010) who used a period-averaged data (1998–2002) of 82 countries inclusive of African countries. The reported instrumental-variable estimates suggest that remittances decrease as the proportion of migrants with tertiary education rises. The findings are explained in terms of the differential characteristics of skilled migrants that discourage them from remitting more than their unskilled counterparts: Firstly, "they tend to come from better off families, whose demand for remittances is lower relative to poor ones." Secondly, they have comparative advantage over unskilled migrants

to "enjoy more secure legal status" and greater employment opportunity. Finally, skilled migrants adjust more easily to their new environment and, consequently, have little to no incentive to invest in their country of origin. Given these factors, the authors contend that "the claim that the negative impact for sending countries of skilled relative to unskilled labor migration is mitigated or even offset by the fact that skilled migrants remit more than unskilled ones is not supported by the evidence."

Using a more comprehensive composite indicator of development—human development index (HDI)—Ustubici and Irdam (2012) examined the development effects of remittances on HDI for a sample of 32 countries of which eight are from Africa. Their study applies the OLS method on panel data from 1990 to 2005 at five-year intervals. Using lagged explanatory variables and controlling for other factors including a measure of brain-drain, they report a positive relation between remittances and HDI for the aggregate sample. Disaggregating the sample reveals that whereas the effect of remittances is positive and more significant for medium-HDI group of countries, it is negative for the eight low-HDI countries in the sample of which five are from Africa.

Effects on Poverty and Income Inequality

One of the expected effects of remittances is poverty reduction. Adams et al. (2008a), based on the 2005/2006 nationally representative 8,000 households, compared the marginal spending behavior of households receiving remittances from within and outside of Ghana and that of non-receiving households. Using a two-stage multinomial logit model with instrumental variables, they find no statistically significant difference in spending or investment behaviors between the three groups of households in Ghana. The conclusion is that remittances, regardless of their origin, are fungible—that they are used like any other sources of income. In another study involving the same survey data and similar methodology that generates predicted and counterfactual expenditures for receiving and non-receiving households, Adams et al. (2008b) find remittances to have reduced the level, depth, and severity of poverty in Ghana. Similarly, Gubert et al. (2010) examined the effects of remittances on poverty and income inequality among Malian households and noted that remittances led to poverty reduction. Wouterse (2010) reports qualitatively similar evidence for Burkina Faso. In addition to volume and frequency, the origin of remittances is noted to be important for reducing poverty. For example, Gyimah-Brempong and Asiedu

(2009) find that, in Ghana, international remittances have a far greater impact on poverty reduction than domestic remittances within Africa, corroborating the findings of an earlier study for the same country by Adams et al. (2008b). That remittances from developed countries are found to have a greater impact than remittances from within Africa, or other developing economies may be attributed partly to income, purchasing power parity, and foreign exchange rate differentials between sending and receiving countries. It may also be that international remittance-receiving households are richer, to begin with, than families who receive remittances from within Africa (Anyanwu 2011). "[D]espite the greater hurdles introduced by poverty constraints," however, migration and remittances could produce positive externalities to non-remittance-receiving poor households (Cattaneo 2009).

The poverty-reducing effects observed in household survey data are generally consistent with those reported by studies at the macro-level. For example, an econometric study by Anyanwu and Erhijakpor (2010) that covered 33 sub-Saharan African countries over 1990–2005 found that, holding on other determinants including a measure of income inequality, remittances significantly "reduce the level, depth, and severity of poverty in Africa." The results are robust to the method of estimations used, which included OLS and the instrumental variables-generalized method of moments (IV-GMM) estimators. A similar finding is reported by Gupta et al. (2007) from a study of 76 countries including 24 from SSA, using both OLS and three-stage least squares estimation methods. Their estimates suggest that an increase in remittances would lead to a drop in the poverty headcount and the poverty gap. A negative association between remittances and poverty is also reported by Serino and Kim (2011), who examined a panel data of 66 developing countries from 1981 to 2005, employing the quantile regression method. They found that the poverty-reducing effect was more pronounced in the worst-off quantile, leading them to surmise that remittance inflow would play a significant role in poverty reduction in the poorest countries.

With respect to income inequality, a study based on household survey data by Adams et al. (2008b) found that both internal and international remittances increase income inequality, with the latter exerting a large effect than the former. Similarly, Anyanwu (2011) found that, based on IV-GMM estimates, international remittances increase income inequality in Africa. Koechlin and Leon (2006), based on cross-sectional and panel data estimation methods on data from 78 countries, found evidence that inequality

increases with remittances at the first stages of migration history, which may decline as the opportunity cost of migration falls.

Differences among countries on the response of income inequality to international remittances are examined by Ebeke and Le Goff (2009) based on a sample of 80 developing countries between 1970 and 2000. The study provides insights into how the characteristics of origin countries affect whether remittances decrease or increase income inequality. They argued that as the cost of migration increases, international remittances produce an "unequalizing" effect between households. The closer are the primary destinations of migrants to the home country and the lower the brain-drain, the greater the inequality-reducing effect of remittances. This implies that for SSA countries "(less developed, high migration costs and characterized by high exodus of skilled labor); remittances could exacerbate income disparities between segments of the population."

Ironically, however, it is the poor segments of society in different parts of Africa "that have the most to gain by migration to high-wage countries" but they are the least to migrate not only to distant places but also to a neighboring African country. Not only they lack the funds to cover the cost of migration, but they are also the ones who "incur higher borrowing expenditures than the well-off, because of default risks" (Cattaneo 2009). Studies by Wouterse (2010), Koechlin and Leon (2006), and Adams (1991) suggest that the cost, perhaps more than the risk, of migration to the developed countries may explain why intra-African remittances reduce inequality and poverty, whereas international remittances from more developed countries have the opposite effect.

Summary and Concluding Remarks

The empirical literature on the economic effects of remittances have bourgeoned particularly since the late 1990s. However, the evidence on Africa has remained relatively thin, especially at the country and household levels. This may be a reflection of the paucity of data and the historically low share of global remittances flowing to the continent. Despite extensive studies on the subject in the context of developing countries in general, there is yet to emerge a consensus on the extent to which remittances affect economic growth and development in the recipient countries. Clearly, there is a widespread recognition that remittances are a major source of foreign exchange and household income for recipient countries and that they have multiplier effects on aggregate demand. However, whether remittances

would contribute equally to the economic growth and development of the recipient countries remains debatable.

In the context of Africa, the empirical evidence with respect to economic growth and its determinants is mixed. Evidence of negative, positive, or weak effects is reported. The differential results may be attributed to differences, among others, in model specification, variable representation, sample period and composition, type of data, treatment of remittances as endogenous or exogenous variable, and in estimation methods. The balance of the evidence reviewed seems to suggest that remittances have contributed to growth. It is not clear, however, whether the positive effects reported are transitory or durable. The mixed findings regarding the effect of brain-drain on the stock of human capital in the remitters' home countries seem to weaken the optimistic link between remittances and long-run economic growth, providing support to the view that the detected positive association between remittances and growth may be a result of short-run multiplier effects. In the absence of long-term growth gains, remittances' contribution to development will be limited. The evidence on poverty reduction and living conditions for recipients is more conclusive in the short-run context, although the reported induced rise in income inequality is worrisome, as the latter is one of the factors that worsen poverty.

Whether remittances lift people out of poverty without inducing dependency remains unclear, providing no clear indication that remittances contribute to economic development. These observations suggest the need for more cross-country and, especially, country-specific and household-level empirical study. The evidence on overall living conditions would be bolstered by examining the effects of remittances on composite indicators such as human development index, which is rarely investigated in this context.

More research is needed to shed light on whether and how remittances influence economic growth and development and their determinants at the country level. In addition, additional multi-country studies that aim, among others, at identifying the factors that condition the relationship between remittance flows and the various dimensions of economic development would be of high importance in informing policy with a view to strengthening the beneficial effects of remittances and minimizing their adverse effects where observed.

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CHAPTER 19

Have Debt Relief Initiatives Yielded Varying Effects in Resource and Non-resource Endowed Countries in Africa?

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Introduction

This chapter provides evidence on the economic effect of the World Bank (WB) and International Monetary Fund (IMF) debt relief initiatives in Africa's least developed countries (LDCs) that are also categorized as heavily indebted poor countries (HIPCs). We build on the work of Wamboye and Tochkov (2015), which estimates external debt and debt relief initiative effects on labor productivity growth and convergence in a sample of 41 sub-Saharan African (SSA) countries. While this study does not exclusively focus on HIPCs, it found that the marginal external debt relief effects were effective in easing the negative impact of external debt and debt service on growth in output per worker in the targeted countries. Our contribution adds knowledge on the relationships between debt relief initiatives and growth, against the backdrop of limited literature, which is constrained by data availability.

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We employ system generalized method of moments (SGMM) to evaluate how debt relief impacts economic growth of LDCs over the years 1979–2013. Debt relief effectiveness is estimated by introducing interaction terms, which enable us to measure the marginal effects of debt service on growth as a result of participating in the HIPCs debt relief programs.

These interaction terms take three forms. First, debt service variable interacts with a dummy variable for the period 1979–1995, which measures the pre-debt relief effects. Second, a pre-decision point dummy—that includes the years from 1996 to the year a country reached its decision point—is interacted with the debt service variable to capture the accrued benefits from engaging in the debt relief initiatives process, regardless of whether the country successfully reaches the completion point. By using this dummy, we postulate that potential future debt forgiveness will stimulate these countries to engage in growth-enhancing activities as they work to meet the debt relief requirements necessary for them to reach the decision point—the first stage in the two-stage HIPCs initiatives' debt forgiveness process—and qualify to continue to the completion point. Third, the debt service variable interacts with the post-decision point dummy, which captures the debt relief effects beyond the decision point, assuming that these countries actually progress to the completion point. This third dummy takes a value of one for all the years beyond the decision point.

In the 1980s, sweeping macroeconomic policy reforms under the IMF structural adjustment programs were introduced in most developing countries as a way to get these countries back onto a sustained economic growth path. These programs led many LDCs to borrow billions of dollars from the international community, which created an unsustainable debt. Consequently, by mid-1990s, it was clear that a bolder approach was needed to address excessive debt that was detrimental to growth performance of these countries. In response, the WB and IMF introduced the HIPCs debt relief initiative in 1996, followed by an enhanced HIPCs initiative in 1999 and then Multilateral Debt Relief Initiative (MDRI) in 2005. The objective of the HIPCs debt relief initiatives and MDRI, which distinguishes them from other bilateral donor debt relief programs such as the Paris club, was to reduce the multilateral public and publicly guaranteed (PPG) debt (beyond the traditional debt relief mechanisms provided by official bilateral and private creditors) of the poorest eligible countries to sustainable levels and to ensure a permanent exit from repeated debt rescheduling (Fonchamnyo 2009). In return, this would eliminate, or at best, reduce the debt overhang and liquidity constraint effects, increasing investment activities and, consequently, spurring economic growth and, in turn, poverty reduction.

Debt relief programs have been embraced by proponents as necessary policy tools for tackling the poverty problem in LDCs. By reducing debt stock and thereby debt service payments, these programs are expected to improve the fiscal space of beneficiary countries, enabling them to channel their scarce resources into more productive areas (Heller 2005; Bird and Milne 2003). In contrast, critics of debt relief programs have argued that poor countries do not suffer from a debt overhang[3] but rather from poor institutions (Arslanalp and Henry 2005; Asiedu 2003) and lack of sound macroeconomic environment (Presbitero 2008). In fact, some studies have claimed that debt relief may actually worsen the economic situation in these countries by lowering the incentives for institutional and key macroeconomic reforms due to moral hazard (Bauer 1991; Easterly 2002) and adverse selection on the part of donor countries (Buiter and Srinivasan 1987).

Results based on direct empirical analysis of the effects of debt relief on growth are mixed. Marcelino and Hakobyan (2014), Dijkstra (2013), Fonchamnyo (2009), Yang and Nyberg (2009), and Hussain and Gunter (2005) agree that debt relief stimulated growth and reduced poverty in beneficiary countries. However, a narrow export base and deterioration in the terms of trade coupled with weak policy and institutional frameworks seem to have eroded some of the beneficial effects of debt relief. Johansson (2010), Chauvin and Kraay (2005), and Presbitero (2009), on the other hand, do not find any robust effects of debt relief on growth and show that institutional quality does not play a role in the debt relief–growth relationship.

The first debt relief initiatives were introduced in HIPCs in 1996. Since then, there has been 17 years of data (with 2013 being the most recent year for which data is available), making it possible to evaluate the distributive effects of debt relief in beneficiary countries. So far, a total of 14 HIPCs in Africa had successfully reached their decision point in 2000, providing 13 years within which we can evaluate the impact of pre-decision conditionalities that these countries were required to satisfy in order to reach the decision point. Some of these conditions included developing a poverty reduction strategy paper through a broad-based participatory process and establishing a track record of macroeconomic reforms and sound policies through IMF and WB supported programs. Currently, all of the HIPCs with the exception of Eritrea, Somalia, and Sudan are receiving full debt relief from the IMF and other creditors after reaching the completion point.

The rest of the chapter is organized as follows. The next section presents descriptive analysis on trends in debt and debt service of selected LDCs. This is followed by the empirical model and data description. The last three sections provide results of the estimated model robustness checks, and concluding remarks, respectively.

Trends in Debt and Debt Service

Approximately 63 percent of African countries are classified by the United Nations (UN) as least developed countries (LDCs). Of these LDCs, 82 percent are heavily indebted poor countries (HIPCs). LDCs constitute roughly 12 percent of the world population and more than 75 percent of that population lives in poverty. They produce less than two percent of the world's GDP and account for less than one percent of global trade in goods (UN 2011). These countries are characterized by low per capita income, low level of human development, and inadequate governance capacities and institutions. They are economically and structurally handicapped, limiting their resilience to vulnerability. For example, they are net food importers and a large percentage of their exports rely heavily on the primary sector, making them susceptible to commodity price shocks.

In the late 1960s, the UN started paying special attention to LDCs, which led to incorporation of pro-LDCs' special measures in the International Development Strategy for the second UN Development Decade. Later in 1981, the first UN Conference on LDCs was held in Paris, which has been followed by a succession of related conferences. The central objective of these conferences has been to develop and adopt a comprehensive program of action that would put LDCs on a sustained, accelerated, pro-poor growth and development path. Some of the commitments by development partners arising from these conferences have included increasing technical assistance and trade capacity, improving developed countries' market access and providing debt relief (United Nations 2011).

LDCs that are classified as HIPCs face an additional constraint related to external debt distress and the resulting debt service obligations (United Nations 2011). As such, HIPC Initiatives and Multilateral Debt Relief Initiative (MDRI) were created in 1996 (with enhanced HIPC Initiative in 1999) and 2005, respectively, to help eligible countries reduce their debt service spending and divert these funds to health, education, and other

social services. Of the 39 countries eligible or potentially eligible for HIPCs Initiative assistance, 36 (which include all the countries used in this chapter) have already reached the completion point and are currently receiving full debt relief from the IMF and other creditors. For these 36 countries, debt service payments declined by about 1.8 percent of GDP between 2001 and 2013 (IMF 2015). Moreover, average spending on health, education, and other social services has increased by about five times the amount of debt service payments (IMF 2015).

A number of LDCs covered in this study are richly endowed with natural resource. For example, between 1980 and 2013, roughly 45 (18) percent of these countries were exporting more than 17 (15) percent of their GDP as ores (fuel). In this section, we provide comparative descriptive analyses of debt and debt service of selected LDCs as a preface to understanding debt relief effects on economic growth in these countries. The full sample is disaggregated into two subsamples: resource-exporting countries (RECs) and non-resource-exporting countries (NRECs). This disaggregation allows us to assess the differentials, if any, based on resource endowment. An LDC is classified as REC if the share of fuels or ores exports in its GDP equals to or exceeds the 1979–2013 average of 15 and 17 percent, respectively. The countries that do not meet this criteria fall in the NRECs category. Table 19.1 (appendix) provides a list of LDCs in the two categories: 12 RECs and 13 NRECs. A total of 25 LDCs are included in the full sample.

In Fig. 19.1, we provide trends in public and publicly guaranteed (PPG) debt service ratio for LDCs, HIPCs, and SSA. This ratio is defined as the share of external debt service payments of principal and interest on long-

Table 19.1 List of 25 LDCs used in the analysis

Benin (July 2000)	Guinea (Dec. 2000)	Rwanda (Dec. 2000)
Burkina Faso (July 2000)	Guinea-Bissau (Dec. 2000)	Senegal (June 2000)
Burundi (Aug. 2005)	Liberia (March 2008)	Sierra Leone (March 2002)
Central Afr. Rep. (Sept. 2007)	Madagascar (Dec. 2000)	Togo (Nov. 2008)
Chad (May 2001)	Malawi (Dec. 2000)	Uganda (Feb. 2000)
Comoros (June 2010)	Mali (Aug. 2000)	Zambia (Dec. 2000)
Congo, Dem. Rep. (April 2006)	Mauritania (Feb. 2000)	Tanzania (July. 2000)
Ethiopia (Nov. 2001)	Mozambique (April 2000)	
Gambia, The (Dec. 2000)	Niger (Dec. 2000)	

Note: Decision point dates are in parenthesis

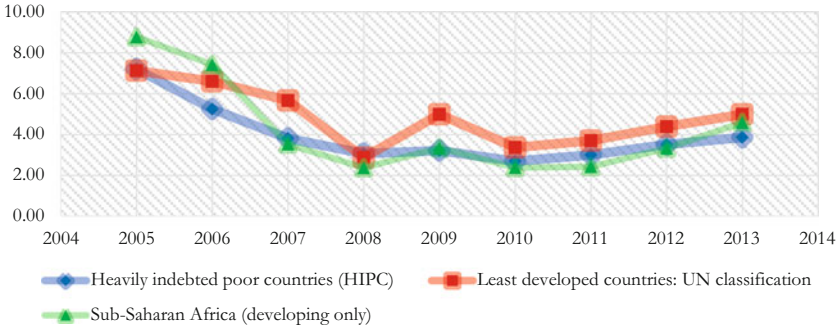

Fig. 19.1 PPG debt service (PPG and IMF only, percent of exports of goods, services, and primary income)

term and short-term debt in exports of goods and services for a given year. The debt service to exports ratio is a potential indicator of debt sustainability because it shows how much of a country's export revenue will be used to service its debt and thus, how vulnerable the payment of debt service obligations is to an unexpected fall in export proceeds. Moreover, a narrow version of the debt service ratio, focused on government and government-guaranteed debt service, can be a useful indicator of government debt sustainability and transfer risk (the risk that exchange rate restrictions are imposed that prevent the repayment of obligations) because it may provide some insight into the political cost of debt servicing.

Evidence in Fig. 19.1, which is based on data for 2005–2013 period, shows a sharp decline in debt service to export ratio in the three groups of countries between 2005 and 2008. For example, in 2005, PPG debt service was 8.8 percent of SSA's exports and, 7.2 percent of LDCS and HIPCs' exports. By 2008, it had declined to 2.4 percent in SSA and 2.9 percent in LDCs and HIPCs. This was followed by an upward trend, which started in 2008 and peaked in 2009, coinciding with the world financial crises. The rise was more pronounced in LDCs (by 72 percent) relative to HIPCs (by 15 percent) and SSA (by 39 percent). Indeed, during this period, there was a general decline in international trade in many parts of the world as incomes in developed countries declined following the housing and stock market crash that started in the United States. As such, the decline in exports of developing countries, including LDCs, HIPCs, and SSA, impacted their debt servicing obligations.

As the world got back onto a recovery path in 2009 from the crises, so did the increase in international trade, consequently leading to a decline in the debt service–export ratio of LDCs, HIPCs, and SSA. The decline was temporary, from 2009 to 2010. Since 2010, the ratio has been rising, with LDCs and SSA being impacted the most. Looking at the bigger picture, the debt service–export ratio has declined considerably between 2005 and 2013 in these countries. The biggest decline was observed in SSA, followed by HIPCs and LDCs with the percentage changes of 47.7, 45.8, and 31.9, respectively.

Figure 19.2 tracks the movement in the PPG debt service–export ratio for LDCs that are also classified as HIPCs. These movements are evaluated in two subsamples: RECs and NRECs. In both cases, there is a rise in the debt service–export ratio, mimicking a typical business cycle, with more picks and troughs in NRECs. For example, in RECs, the share of PPG debt service in exports increased from 13.2 percent in 1980 to 27.3 percent in 1986, where it peaked before it started declining, reaching 12.1 percent in 1992. From the 1992 trough, a final peak is observed in 1994, with the share at 22.1 percent of exports. Starting in 1994, there was an accelerated decline until 2010, where the share of PPG debt in these countries' export was only 3.1 percent. However, after 2010, the debt servicing obligations started picking up, climbing to 4.8 percent in 2012 and then to 9.7 percent in 2013.

A similar trend is observed in NRECs, where PPG debt service–export ratio increased from 8.7 in 1980 to 21.1 percent in 1991. It then dropped to 18.6 percent in 1994, peaked again at 28.3 in 1996, and thereafter, a continuous but irregular decline is observed until 2011. The lowest share of PPG debt service in NRECs' exports between 1980 and 2013 was at 3.1 percent in 2011. By 2013, this share had increased to 5.3 percent. Indeed,

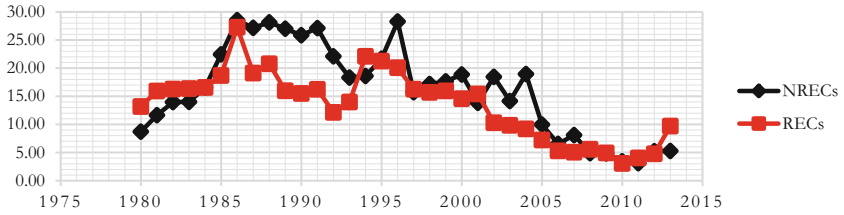

Fig. 19.2 PPG debt service (IMF only, percent of exports of goods, services, and primary income)

evidence in Fig. 19.2 confirms that debt service has been declining since 1996 in RECs and NRECs, coinciding with onset of the debt relief programs in these countries. Such evidence is also noted in Marcelino and Hakobyan (2014).

By focusing on payments, the debt service to exports ratio takes into account the mix of concessional and non-concessional debt, while its evolution over time, especially in medium-term scenarios, can provide useful information on lumpy repayment structures. For the purpose of understanding the evolution over time of concessional debt as a share of total debt, we provide the trend for RECs and NRECs from 1980 to 2013. The definition by OECD's Development Assistance Committee (DAC) of concessional lending (i.e., lending extended on terms that are substantially more generous than market terms) includes (1) official credits with an original grant element of 25 percent or more using a 10 percent rate of discount (i.e., where the excess of the face value of a loan from the official sector over the sum of the discounted future debt service payments to be made by the debtor is 25 percent or more using a 10 percent rate of discount) and (2) lending by the major regional development banks (African Development Bank, Asian Development Bank, and the Inter-American Development Bank) and from the IMF and World Bank, with concessionality determined on the basis of each institution's own classification of concessional lending.

Figure 19.3 suggests that the share of concessional debt in total external debt has been increasing in RECs and NRECs. However, the share is higher in NRECs relative to RECs. For example, it was 37.6 percent in 1980 in RECs, which increased to approximately 70 percent in 2005. By 2013, it

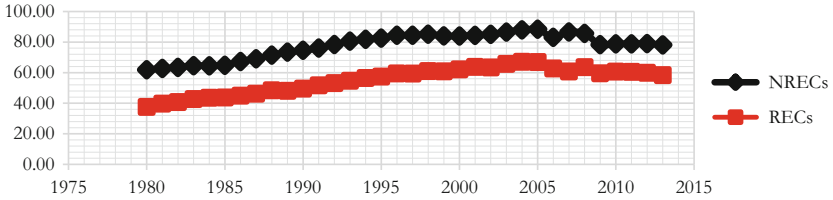

Fig. 19.3 Concessional debt (as percent of total external debt) in RECs and NRECs

had declined to 58.4 percent relative to its 2005 level. On the hand, the share in NRECs started at a higher level of 61.9 percent in 1980. It then increased to 88.4 in 2005 and declined to 78.1 percent by 2013. By all accounts, this evidence indicates that the share of concessional debt in total debt is higher in NRECs relative to RECs.

Estimation Strategy

In order to evaluate the debt relief effects in LDCs, we adopt a growth model as specified below:

$$\begin{aligned}&\Delta y_{it}\\&= \beta_0+\beta_1 y_{it-\tau}+\beta_2 Debt_{it-\tau}+\beta_3 pre1996+\beta_4 predp+\beta_5 postdp\\&+\beta_6 pre1996{*}Debt_{it-\tau}+\beta_7 predp{*}Debt_{it-\tau}+\beta_8 postdp{*}Debt_{it-\tau}\\&+\beta_9 FDI_{it-\tau}+\beta_{10} Infl_{it-\tau}+\beta_{11} Polity2_{it-\tau}+\beta_{12} Tel_{it-\tau}+\eta_t+\upsilon_i+\varepsilon_{it}\end{aligned} \quad (19.1)$$

where y_{it} is the natural logarithm of real output per capita in country i at time t. Country-specific and time fixed effects are denoted by υ_i and η_t, respectively. Δy_{it} is the average annual growth rate of output per capita in country i between the year t and t-τ, where τ takes the value of 4. In line with the growth literature, we average growth rate across four-year nonoverlapping periods. All independent variables are initial values at the beginning of each four-year period.

The major right-hand side variables of interest are debt service (*Debt*) and the three interaction terms (*pre1996*Debt*, *predp*Debt*, and *postdp*Debt*). The debt service is expressed as a percentage of exports of goods, services, and primary income, measuring the debt servicing obligation effects. Three dummy variables (*pre1996*, *predp*, and *prostdp*), which are entered as standalone arguments, as well as interaction terms with the debt service variable, capture the resulting unconditional and conditional economic growth effects accruing in those countries committed to the debt relief initiative process. The coefficients of the interaction terms are interpreted as the marginal effects of initial debt service on real per capita GDP growth: (1) prior to the debt relief programs (*pre1996*Debt*), (2) after the introduction of the debt relief programs in 1996 until the year a country reached its decision point *(predp*Debt)*, and (3) beyond the decision point (*postdp*Debt)*. We expect the interaction terms related to the years after the initiation of the debt relief program to be positive, signifying the

reduced debt burden on the domestic economic resource and, the added benefits of implementing the debt relief conditionalities.

The growth literature (Barro 1991; Levine and Renelt 1992; Sala-i-Martin et al. 2004) guides us in selecting the core set of growth determinants; however, the estimated model variables are constrained by data availability. The initial level of output per capita ($y_{it-\tau}$) is included to test for the presence of β-convergence. Furthermore, we include variables for globalization (*FDI*), measured as the percentage of foreign direct investment in GDP, and monetary policy (*Infl*) which is calculated as the logarithm of (1+ CPI inflation rate). Governance is measured by the *Polity2* index reported on a scale of −10 to +10; with −10 indicating strongly autocratic (political suppression) and +10 a strongly democratic (political freedom) political system. The percentage of population with access to fixed line telephone (*Tel*) is used as a proxy for the impact of infrastructure development. Measures of fiscal policy (which is usually proxied by government consumption spending) and domestic investment are excluded from the estimation model, due to being potential channels through which debt and debt service impacts growth as suggested by the debt overhang (Krugman 1988; Sachs 1989) and crowding-out (Cohen 1990) theories.

The estimation is conducted using system GMM (SGMM) approach of Arellano and Bover (1995) and Blundell and Bond (1998), which controls for endogeneity bias, measurement bias, unobserved country fixed effects, and other potentially omitted variables. Relative to difference GMM, SGMM is robust to weak instrument bias. It uses suitable lagged levels and lagged first differences of the regressors as their instruments. Furthermore, time dummies are included to remove universal time-related shocks from the errors (Roodman 2009).

Data

The analysis is conducted using a sample of 25 LDCs that are also HIPCs over the period 1979–2013 (Table 19.1). All economic variables used in generating Figs. 19.1, 19.2, and 19.3, and in the regressions, were downloaded from the World Bank's World Development Indicators database (WDI, 2016). The Polity2 governance index was obtained from the Polity IV Project (Marshall and Jaggers 2011). Table 19.2 provides summary statistics for selected variables of the growth regressions.

Table 19.2 Summary statistics for selected variables (1979–2013)

	Mean	*Std. Dev.*	*Min*	*Max*	*N*
GDP per capita growth (annual %)	0.54	7.069	−50.236	91.673	906
Debt service (PPG and IMF only, % of exports of goods, services, and primary income)	14.445	13.472	0	101.889	865
Total debt service (% of exports of goods, services, and primary income)	16.675	15.951	0.006	134.788	813
Interest payments on external debt (% of exports of goods, services, and primary income)	6.56	6.675	0.006	69.814	813
Inflation, GDP deflator (annual %)	58.711	907.792	−16.933	26765.86	905
Foreign direct investment, net inflows (% of GDP)	3.169	9.078	−82.892	89.476	867
Fixed telephone subscriptions (per 100 people)	0.629	0.808	0	4.781	956
Government expenditure on education as % of GDP	3.376	1.38	0.704	10.208	361
Health expenditure, public (% of government expenditure)	10.778	4.151	1.621	32.636	510

Results

This part presents the estimated results, where debt service is measured by total debt service, PPG and IMF debt service, and interest payments on external debt, all of which are expressed as a percentage of exports of goods, services, and primary income. For each debt service measure, we estimate three models corresponding to the three samples: Full, RECs, and NRECs. The regression results are reported in Tables 19.3 through 19.6.

The results in Tables 19.3 through 19.6 show that debt service has robust but detrimental effects on economic growth in LDCs for all specifications of debt service. These effects are much higher in RECs compared to NRECs. For example, a ten percent increase in the share of total debt service in exports of goods, services, and primary income decreases growth in real GDP per capita by 0.5 and 0.4 percent annually in a four-year period in RECs and NRECs, respectively. When PPG debt service is used, growth rate declines by 0.7 in RECs and 0.2 percent in NREC, for every ten percent increase in this type of debt service share in exports of goods, services, and primary income of these countries. Also, a ten percent increase in the share

Table 19.3 Debt relief effects on real GDP per capita growth of HIPCs (1979–2013)

	Total debt service (% of exports of goods, services, and primary income)			*Debt service (PPG and IMF only, % of exports of goods, services, and primary income)*			*Interest payments on external debt (% of exports of goods, services, and primary income)*		
	Full	*RECs*	*NRECs*	*Full*	*RECs*	*NRECs*	*Full*	*RECs*	*NRECs*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
Initial GDP	−0.043***	−0.058***	−0.015**	−0.050***	−0.083***	−0.015***	−0.039**	−0.072***	−0.015***
	(0.009)	(0.003)	(0.007)	(0.013)	(0.014)	(0.002)	(0.016)	(0.016)	(0.004)
Debt service	−0.028*	−0.049***	−0.037**	−0.028*	−0.072***	−0.021**	−0.095***	−0.151**	−0.095***
	(0.015)	(0.012)	(0.018)	(0.016)	(0.023)	(0.009)	(0.035)	(0.069)	(0.022)
Inflation	−0.021***	−0.025***	−0.007	−0.015**	−0.050***	−0.016**	−0.011	−0.046***	0.002
	(0.008)	(0.007)	(0.014)	(0.008)	(0.008)	(0.007)	(0.008)	(0.010)	(0.004)
FDI	0.118**	0.343*	−0.055	0.156***	0.180***	0.271***	0.128**	0.148**	−0.035
	(0.058)	(0.184)	(0.080)	(0.058)	(0.060)	(0.103)	(0.051)	(0.068)	(0.029)
Fixed-line tel	2.450**	0.916	1.385	3.399***	6.274***	1.538***	3.761***	5.935***	0.376
	(1.063)	(1.472)	(1.821)	(1.266)	(1.234)	(0.500)	(1.272)	(1.296)	(0.903)
Governance	0.040	0.076	0.030	0.044	−0.018	−0.042	0.003	−0.037	−0.003
	(0.059)	(0.094)	(0.038)	(0.056)	(0.066)	(0.033)	(0.059)	(0.068)	(0.026)
No. of observations	112	57	60	115	57	68	107	55	51
No. of countries	25	12	13	25	12	13	25	12	13
Sargan test (Prob. $> \chi^2$)	0.145	0.33	0.559	0.144	0.21	0.26	0.161	0.257	0.138
Arellano–Bond (Prob. > Z)	0.433	0.315	0.702	0.392	0.289	0.805	0.369	0.162	0.8012
No. of instruments	12	12	12	12	12	12	19	13	12
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Real GDP per capita growth is averaged over four-year periods. All variables are measured as initial values at the beginning of the four-year period. Standard errors are in parentheses. ***$p<0.01$; **$p<0.05$; * and $p<0.1$. Arellano–Bond test that average autocovariance in residuals of order 2 is 0 has H0: no autocorrelation. All values are based on two-step estimator

of interest payments on external debt in exports of goods, services, and primary income leads to a reduction in growth rate of RECs by 1.5 percent, compared to 0.9 percent in NRECs.

In Tables 19.4, 19.5, and 19.6, the measures of debt relief effects on growth are introduced. The first three columns of each table provide estimates of unconditional effects and columns 4–6, conditional effects. The unconditional debt relief effects as measured by the dummy variables, pre-1996 and post-decision point, are positive where significant. On the contrary, the dummy for pre-decision point tend to be negative but insignificant. For example, in cases where total debt service is used (Table 19.4), pre-1996 dummy, which signifies the period before debt relief programs were introduced, is significant and positive in the full sample and NRECs. On the other hand, post-decision point dummy is significant and positive across the three samples. In models where debt service effects are measured by PPG debt (Table 19.5), pre-1996 dummy is significant in the full sample and RECs while the post-decision point dummy is significant only in the full sample.

When debt service is proxied by interest payment on external debt (Table 19.6), pre-1996 dummy is significant in the full sample and NRECs, with the post-decision point dummy being significant only in the full sample. In all the aforementioned cases, the unconditional marginal debt relief effects are positive. The only instance in which pre-decision point dummy is significant but with negative effects is when interest payments on external debt are used as a measure of debt service.

The above results imply a number of things. First, we find that unconditional debt relief effects as measured by pre-1996 dummy variable tend to be positive where significant. As previously noted, we expected the coefficient of this dummy variable to be negative, consistent with the detrimental effects of debt service obligations prior to the debt relief program, and the findings in empirical literature of the presence of debt overhang in HIPCs, low income and other developing countries (Clements et al. 2003; Chowdhury 2001; Pattillo et al. 2011). Thus, one plausible explanation for the observed positive effects is that prior to the initiation of the HIPC debt relief program in 1996, these countries might not have been honoring their debt service obligations and instead, diverted those limited resources to growth-enhancing programs. Another interesting observation is that in two out of the three models estimated for each sample, the coefficient of this dummy variable is significant in NRECs relative to only one case in RECs.

Table 19.4 Debt relief effects on real GDP per capita growth of HIPCs (1979–2013)

	Full	*RECs*	*NRECs*	*Full*	*RECs*	*NRECs*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Initial GDP	−0.052***	−0.087***	−0.028***	−0.014***	−0.045***	−0.008
	(0.0140)	(0.019)	(0.007)	(0.004)	(0.012)	(0.007)
Total debt service	−0.036**	−0.066***	−0.043***			
	(0.015)	(0.023)	(0.011)			
*dpre96** Total debt service				−0.039**	−0.026	−0.038*
				(0.019)	(0.054)	(0.020)
*dpredp** Total debt service				−0.015*	−0.016	0.037
				(0.008)	(0.017)	(0.023)
*dpostdp** Total debt service				0.009	0.097**	0.180***
				(0.020)	(0.047)	(0.065)
dpre1996	1.129**	0.047	2.013***			
	(0.503)	(0.613)	(0.560)			
dpre-decision point	−0.267	−3.354	0.369			
	(0.373)	(3.961)	(0.673)			
dpost-decision point	1.344***	2.800**	1.385***			
	(0.442)	(1.386)	(0.455)			
Inflation	−0.014*	−0.039	−0.023	−0.014	−0.012	−0.010
	(0.008)	(0.033)	(0.017)	(0.012)	(0.020)	(0.011)
FDI	0.199	0.293	−0.151**	0.095	0.150**	−0.081
	(0.139)	(0.243)	(0.063)	(0.066)	(0.070)	(0.089)
Fixed-line tel	2.957**	7.307***	−6.140	1.534***	1.068	3.771
	(1.419)	(2.206)	(4.724)	(0.541)	(2.545)	(3.244)
Governance	−0.008	−0.069	−0.075*	−0.030	−0.002	−0.070
	(0.065)	(0.088)	(0.043)	(0.025)	(0.095)	(0.043)
No. of observations	103	55	52	99	57	55
No. of countries	25	12	13	24	12	13

Sargan test (Prob. > χ^2)	0.19	0.45	0.12	0.258	0.513	0.369
Arellano–Bond (Prob. > Z)	0.17	0.30	0.34	0.295	0.438	0.674
No. of instruments	15	15	15	14	14	14
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Note: Real GDP per capita growth is averaged over four-year period. All variables are measured as initial values at the beginning of the four-year period. Debt service is measured as total debt service (% of exports of goods, services, and primary income). Standard errors are in parentheses. ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$. Pre-1996—dummy variable that takes the value of 1 for the years 1979–2013, and 0 otherwise. Pre-decision point dummy takes the value of 1 from 1996 to the year a country reached its decision point, and 0 otherwise. Post-decision point dummy variable takes a value of 1 for the years after a country reached its decision point and if a country, and 0 otherwise. Arellano–Bond test that average autocovariance in residuals of order 2 is 0 has H0: no autocorrelation. All values are based on two-step estimator

Table 19.5 Debt relief effects real GDP per capita growth of HIPCs (1979–2013)

	Full	*RECs*	*NRECs*	*Full*	*RECs*	*NRECs*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Initial GDP	−0.054***	−0.085***	−0.018***	−0.041***	−0.080***	−0.020***
	(0.012)	(0.013)	(0.006)	(0.010)	(0.024)	(0.005)
Total debt service	−0.027*	−0.108***	−0.043*			
	(0.015)	(0.032)	(0.026)			
*dpre96*PPG* debt service				−0.039***	−0.255**	−0.027
				(0.014)	(0.112)	(0.020)
*dpredp*PPG* debt service				0.005	0.126	0.046**
				(0.029)	(0.389)	(0.021)
*dpostdp*PPG* debt service				0.249**	0.619	0.146***
				(0.109)	(0.518)	(0.044)
dpre1996	1.284***	2.074*	1.987			
	(0.344)	(1.171)	(1.641)			
dpre-decision point	0.256	0.374	−1.017			
	(0.377)	(1.089)	(0.988)			
dpost-decision point	1.004***	0.956	−0.304			
	(0.278)	(0.725)	(1.009)			
Inflation	−0.015**	−0.057***	−0.029**	−0.018*	−0.174***	−0.011
	(0.006)	(0.013)	(0.013)	(0.009)	(0.047)	(0.009)
FDI	0.139*	0.502***	−0.0679**	0.037	1.345***	0.179**
	(0.071)	(0.168)	(0.033)	(0.070)	(0.394)	(0.083)
Fixed-line tel	2.604**	4.689***	3.975	4.320***	−2.885	7.727
	(1.199)	(1.177)	(6.858)	(0.920)	(6.680)	(6.386)
Governance	−0.034	−0.065	0.007	0.050	−0.056	−0.039
	(0.044)	(0.068)	(0.073)	(0.070)	(0.222)	(0.044)
No. of observations	109	57	57	109	49	60
No. of countries	25	12	13	25	12	13

Sargan test (Prob. > χ^2)	0.264	0.291	0.205	0.232	0.756	0.264
Arellano–Bond (Prob. > Z)	0.498	0.110	0.260	0.163	0.383	0.374
No. of instruments	21	15	15	14	13	14
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Note: Real GDP per capita growth is averaged over four-year period. All variables are measured as initial values at the beginning of the four-year period. Debt service is measured as PPG and IMF debt service (percent of exports of goods, services, and primary income). Standard errors are in parentheses. ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$. Pre-1996—dummy variable that takes the value of 1 for the years 1979–2013, and 0 otherwise. Pre-decision point dummy takes the value of 1 from 1996 to the year a country reached its decision point and 0 otherwise. Post-decision point dummy variable takes a value of 1 for the years after a country reached its decision point and if a country, and 0 otherwise. Arellano–Bond test that average autocovariance in residuals of order 2 is 0 has H0: no autocorrelation. All values are based on two-step estimator

Table 19.6 Debt relief effects on real GDP per capita growth of HIPCs (1979–2013)

	Full	*RECs*	*NRECs*	*Full*	*RECs*	*NRECs*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Initial GDP	−0.050***	−0.083***	−0.022***	−0.043***	−0.096***	−0.008
	(0.012)	(0.019)	(0.009)	(0.010)	(0.014)	(0.006)
Interest payments on external debt	−0.127***	−0.208***	−0.186***			
	(0.024)	(0.073)	(0.030)			
dpre96 *Interest payments				−0.074	−0.150**	−0.051
				(0.047)	(0.062)	(0.085)
dpredp *Interest payments				0.021	−0.083***	0.135**
				(0.041)	(0.022)	(0.066)
dpostdp *Interest payments				0.625***	0.538***	0.571***
				(0.173)	(0.132)	(0.160)
dpre1996	1.580***	0.298	2.828***			
	(0.352)	(0.672)	(0.352)			
dpre-decision point	−0.541**	−2.302	−0.583			
	(0.244)	(2.293)	(0.459)			
dpost-decision point	0.994***	3.133	0.968			
	(0.308)	(2.198)	(0.715)			
Inflation	−0.012*	−0.032**	−0.033***	−0.020**	−0.023	−0.015
	(0.007)	(0.013)	(0.012)	(0.010)	(0.016)	(0.010)
FDI	0.242***	−0.006	−0.116*	0.075	0.544*	−0.129
	(0.081)	(0.110)	(0.068)	(0.077)	(0.322)	(0.079)
Fixed-line tel	2.511*	5.523***	−8.548***	4.652***	14.85***	4.877
	(1.290)	(1.448)	(3.088)	(1.019)	(3.915)	(3.542)
Governance	−0.035	−0.040	−0.048	0.042	−0.024	−0.086**
	(0.048)	(0.091)	(0.048)	(0.071)	(0.089)	(0.044)
No. of observations	103	55	52	103	55	55
No. of countries	25	12	13	25	12	13

Sargan test (Prob. > χ^2)	0.393	0.382	0.194	0.207	0.851	0.272
Arellano–Bond (Prob. > Z)	0.466	0.149	0.114	0.157	0.268	0.264
No. of instruments	21	15	15	14	14	14
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Note: Real GDP per capita growth is averaged over four-year period. All variables are measured as initial values at the beginning of the four-year period. Debt service is measured as interest payments on external debt (% of exports of goods, services, and primary income). Standard errors are in parentheses. ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$. Pre-1996 – dummy variable that takes the value of 1 for the years1979–2013, and 0 otherwise. Pre-decision point dummy takes the value of 1 from 1996 to the year a country reached its decision point, and 0 otherwise. Post-decision point dummy variable takes a value of 1 for the years after a country reached its decision point and if a country, and 0 otherwise. Arellano–Bond test that average autocovariance in residuals of order 2 is 0 has H0: no autocorrelation. All values are based on two-step estimator

Second, the coefficient for the pre-decision point dummy is insignificant in all cases except in the model where interest payment on external debt is used as a measure of debt service, and only in the full sample. Furthermore, contrary to our expectations, the sign is negative. This finding could be attributed to the pre-decision point conditions imposed by the WB and IMF on these countries. Of particular interest are the two conditions that required participating countries to (1) establish a track record of reform and sound policies through the IMF and WB supported programs and (2) develop a PRSP through a broad-based participatory process in the country. There is a possibility that these conditions might have imposed negative effects on the economy during this period. In fact, a study by Burnside and Fanizza (2004) showed that the conditionalities did not provide a net relaxation of the government's lifetime budget constraint. In other words, if the government faced initial budgeting constraint (prior to the debt relief), it still faced the same constraint, and maybe bigger after the initiation of the relief programs, especially if these programs negatively impacted foreign aid flows.

Third, the sign of the coefficient of the post-decision point dummy was as expected. This suggests that once these countries reached the decision point and started receiving interim debt relief, their economies benefited from the additional resource that would have otherwise been used to service the debt. Moreover, there is a possibility that the benefits of implementing the pre-decision point conditions might have had a time lag. It is well known that investing in poverty reduction programs such as health and education; enacting policies that promote macroeconomic stability, improve institutional quality and governance; and improving general public sector service delivery have long-term rather than short-term economic growth effects. Thus, investments and policies made during the pre-decision point period might have materialized in the post-decision point period.

The results of the conditional marginal effects of debt relief programs are as expected, especially in the cases of the interaction terms between debt service measures, and pre-1996 (dpre96*Total debt service) and post-decision point (dpostdp*Total debt service) dummies. Specifically, where significant, we find negative effects in the former and positive effects in the latter regardless of the sample used (Columns 4–6 in Tables 19.4, 19.5, and 19.6). For every ten percentage point increase in debt service (total or PPG debt) as a share of exports of goods, services, and primary income in the years prior to 1996, real GDP per capita growth decreased by 0.4 (full sample), 2.6 (RECs), and 0.4 (NRECs) percent annually in a four-year

period. In the case of a ten percent increase in interest payments on external debt as a share of exports of goods, services, and primary income, robust negative growth effects are observed only in RECs with a magnitude of 1.5 percent (Table 19.6, column 6) for the years before the debt relief programs.

The robust and positive effects of interaction between post-decision point dummy and debt service variables suggest that debt relief through the HIPCs and MDRI programs were successful in mitigating the negative debt service impact on economic growth in beneficiary countries after reaching their decision point. In models where this interaction term is significant, the magnitude of effect on growth ranges between 2.5 (PPG debt service, Table 19.5) and 6.3 (interest payments on external debt, Table 19.6) percent in the full sample; 0.9 (total debt service, Table 19.4), and 5.4 (interest payments on external debt, Table 19.6) percent in RECs. For NRECs, the magnitude of effect on growth is 1.5 (PPG debt service, Table 19.5) and 5.7 (interest payments on external debt, Table 19.6) percent for every ten percentage point increase in the debt service share in exports of goods, services, and primary income after the decision point.

The marginal effects of debt relief for pre-decision point interaction term are mixed. For example, in cases where it is significant, the impact is negative with a magnitude of 0.8 percent in RECs (Table 19.4, column 5), but positive in NRECs with magnitudes of 0.5 (Table 19.4, column 6) and 1.4 (Table 19.6, column 6) percent for every ten percentage point increase in debt service obligations as a share of exports of goods, services, and primary income.

Generally, our findings in Tables 19.4 through 19.6 suggest that the conditions imposed by the WB and IMF on the HIPCs for reaching the decision point might have stimulated growth in NRECs but imposed short run negative effects in RECs. However, after reaching the decision point and started receiving interim debt relief, the accrued benefits from debt relief programs are apparent in both RECs and NRECs. This suggests that the underlying differences in economic structure did not matter once these countries started receiving debt relief and hence reducing the financial constraints from debt servicing obligations.

The estimated coefficients of the control variables in Tables 19.3 through 19.6 are largely consistent with the findings in the empirical growth literature. In most specification, we observe the presence of beta convergence within the sample as signified by the negative sign of the coefficient of initial

per capita GDP. In the cases where significant, initial levels of FDI and fixed line telephone are found to stimulate growth over the four-year period. On the other hand, increase in inflation rate hampers growth.

Robustness Checks

We conducted several robustness checks but restrict our discussions to the notable results and abstain from reporting the detailed estimates due to space limitations. For example, we estimated the baseline equation with the dependent variable averaged over five years. The effects of initial debt services and debt relief on growth had much resemblance to those observed in Tables 19.5 and 19.6. Next, we specified the dependent variable as GDP growth instead of real GDP per capita growth. The results are also similar to those in the baseline regressions.

Conclusion

In the late 1990s, the World Bank and International Monetary Fund initiated a series of debt relief programs for HIPCs based on the idea that high levels of indebtedness impede growth by discouraging domestic and foreign investment. This chapter has evaluated the effects of these debt relief programs on growth in a sample of 25 LDCs in Africa over the period 1979–2013 by grouping the sample into resource-exporting countries (RECs) and non-resource-exporting countries (NRECs). An LDC was classified as REC if the share of fuels or ores exports in its GDP was equal to or greater than the 1979–2013 average of 15 and 17 percent, respectively. The countries that did not meet these criteria fell in the NRECs category.

Trend analysis showed that debt service to export ratio has been declining since 1996 in RECs and NRECs, coinciding with the onset of debt relief programs. This decline was more pronounced in NRECs with a percentage change of 89.1 between 1996 and 2010, relative to 84.7 in RECs.

In the estimated models, debt service was measured by total debt service, PPG and IMF debt service, and interest payments on external debt, all of which were expressed as a percentage of exports of goods, services, and primary income. Three dummy variables (*pre1996*, *predp*, and *prostdp*), which were entered as standalone arguments, as well as interaction terms with the debt service variables, captured the resulting unconditional and conditional economic growth effects accruing in those countries committed

to the debt relief initiative process. Results showed that debt service had robust negative effects on economic growth in LDCs for all specifications of debt service. These effects were higher in RECs compared to NRECs.

With reference to the debt relief impact, unconditional effect measured by pre-decision point dummy was not significant in all cases except in the model where interest payment on external debt was used as a measure of debt service, and only in the full sample. Furthermore, contrary to our expectations, the sign was negative. This finding could be attributed to the pre-decision point conditions imposed by WB and IMF on these countries. There is a possibility that those pre-conditions might have imposed negative effects on the economy during the period between 1996 and when a country reached its decision point. In fact, a study by Burnside and Fanizza (2004) showed that conditionalities did not provide a net relaxation of the government's lifetime budget constraint. In other words, if government faced initial budgeting constraint (prior to the debt relief), it still faced the same constraint, and maybe bigger after the initiation of the relief programs, especially if these programs negatively impacted foreign aid flows.

On the other hand, unconditional effects measured by the post-decision point dummy were positive and significant as expected, suggesting that once these countries reached their decision points and started receiving interim debt relief, their economies benefited from the additional resources that would have otherwise been used to service the debt. Moreover, there is a possibility that the benefits of implementing the pre-decision point conditions might have had a time lag, whereby investments and policies made during the pre-decision point period might have materialized in the post-decision point period.

The results from the conditional debt relief effects measured by the interaction terms reinforce the above findings. For example, we find mixed results during the pre-decision period where a one percent increase in the debt service–export ratio stimulated growth in NRECs but retarded in RECs. On the contrary, once these countries reached their decision point and started receiving interim debt relief, a one percent increase in debt service as a share of export stimulated growth across the samples. This suggests that the underlying differences in economic structure did not matter once these countries started receiving debt relief and, hence reducing the financial constraints from debt servicing obligations.

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CHAPTER 20

Debt Sustainability and Direction of Trade: What Does Africa's Shifting Engagement with BRIC and OECD Tells Us?

Kelbesa Megersa and Danny Cassimon

Introduction

Most African countries are not able to finance their budget and, therefore, depend to a large extent on external financing (IMF and World Bank 2012). Domestic sources of finance are insufficient to cover the cost of infrastructure and social services. For instance, the annual spending on infrastructure was about US$45 billion in 2015, while an estimated US$90–100 billion was needed. Since aid money is limited, developing countries are increasingly looking for alternative channels, including non-concessional external borrowing. External financial flows to Africa are estimated to have reached close to US$200 billion in 2013 (AfDB, OECD and UNDP 2015). However, given the recent debt relief in some of the countries in the region,

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non-concessional lending to African countries from those of the traditional lender OECD member countries happened to be more often than not limited.[1]

Brazil, Russia, India, and China (BRIC) countries represent the largest and most important emerging market economies of the world.[2] This group of countries (China in particular) is increasingly competing with OECD member countries as major Africa's trading partners (De Grauwe et al. 2012).[3] Further, they are also serving as a growing source of finance, be it aid grants or loans on concessional and non-concessional terms. The loan pledged at successive 'Forum on China Africa Cooperation' (FOCAC) summits are exemplary of these shifts. For example, US$5, 10, and 20 billion in loans were announced at the third (2006), fourth (2009), and fifth (2012) FOCAC summits, respectively (FOCAC 2015). However, the growing role of financing which flows from BRIC to Africa's low-income countries (LICs) is rekindling 'debt worries', where years of efforts made by OECD creditors, the IMF, and World Bank to achieve debt sustainability in the region are being undermined (Reisen and Ndoye 2008).

Given the apparent importance of BRIC and OECD economic blocks to Sub-Saharan Africa (SSA), the main objective of this chapter is to assess various aspects of external public debt sustainability versus SSA's evolving trade engagement with BRIC and OECD member countries. In the analysis, we focus on trade links since some of the core debt sustainability measures debt-to-exports and debt service-to-exports ratios. Further, given the significant link between exports and GDP cycles in SSA economies (Gurara and Ncube 2013; Diallo and Tapsoba 2014), the trade links with OECD and BRIC could have an effect on 'debt-to-GDP' ratio. This latter ratio is in fact the prominently used measure of indebtedness as its level signifies whether or not a country is able to easily service its debt. In this regard, we first analyze to what extent BRIC and OECD member countries are contributing to Africa's exports and GDP growth. We then test how much this export and GDP growth contributes to maintaining the debt sustainability benchmarks set by the joint IMF-World Bank Debt Sustainability Framework (DSF).

The analysis is based on annual bilateral trade data gathered from IMF's Direction of Trade Statistics (DOTS), FDI net inflows data from World Bank's World Development Indicators (WDI), bilateral FDI data from UNCTAD, National accounts data from the World Bank's and OECD's National Accounts datasets, Debt indicators from World Bank's International Debt Statistics (IDS), and country policy scores from the World Bank's Country Policy and Institutional Assessment (CPIA) database.

The chapter is structured as follows. The next section discusses the evolution of debt in SSA, followed by an analysis of the contributions of the OECD and BRIC to debt sustainability in SSA. The last two sections presents other dimensions of bilateral relationships that are not directly encompassed in the debt sustainability exercise, and concluding remarks, respectively.

Debt Evolution and Sustainability Framework

Debt as a percentage of GDP rose steeply across SSA countries in the 1970s and 1980s before exploding in the early 1990s (Fig. 20.1). It then started a steep descent in the late 1990s and early 2000s, mostly due to debt relief programs such as the HIPC initiatives (Cassimon and van Campenhout 2007; Cassimon and Essers 2013).

In many SSA countries, a large portion of its external debt is owed to multilateral creditors such as the IMF, the World Bank, and African Development Bank. As shown in Fig. 20.2, multilateral debt constituted more than 50% of overall external public debt in almost half of SSA countries in 2013. Further, it accounted for 40% or more in nearly two-thirds of SSA

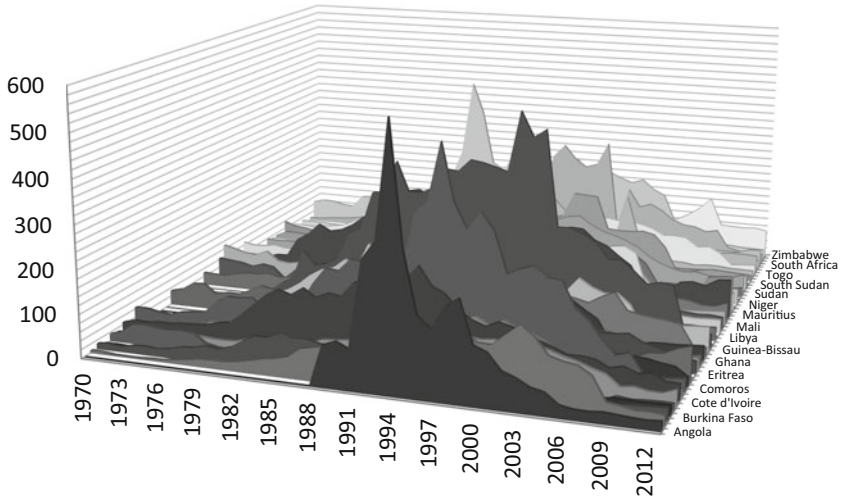

Fig. 20.1 Evolution of external public debt (% of GDP) (*Source*: World Bank's IDS 2015)

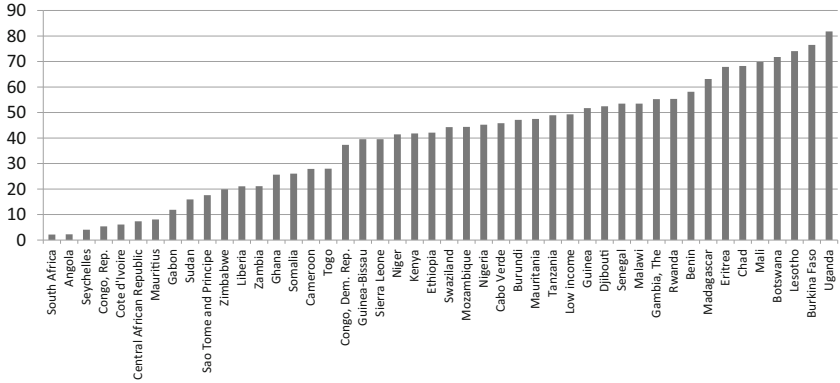

Fig. 20.2 Multilateral debt (% of total external debt) in 2013 (*Source*: World Bank's IDS)

countries. Generally, the share of multilateral debt in overall debt is greater in SSA's poorer economies than in relatively more developed countries like South Africa and Mauritius, and resource-rich countries such as Angola, Gabon, and the Republic of Congo.

An important issue in the study of debt is its sustainability. As such, the World Bank and IMF (2012)[4] introduced in 2005 the Debt Sustainability Framework (DSF) to conduct external (and public) debt sustainability analysis (DSA) for LICs in a standardized manner. Apart from helping to improve LIC borrowing behavior, the DSF also guides various bilateral and multilateral donors-creditors in their grant and loan disbursement decisions.[5]

The DSF compares the external public and publicly guaranteed debt stocks and service of LICs against various thresholds. If debt levels (measured against GDP, exports, and revenue) are all below the suggested thresholds, then a country's level of debt is assumed to be sustainable (Appendix 1). However, to address the heterogeneity of developing countries, the framework sets different thresholds depending on whether the countries have 'weak', 'medium', or 'strong' policy scores. The country policy scores used in the DSF come from World Bank's Country Policy and Institutional Assessment (CPIA) index. The framework tells that LICs that score better on CPIA are assigned higher debt sustainability thresholds. Put differently, the underlying assumption is countries with 'strong' policies and

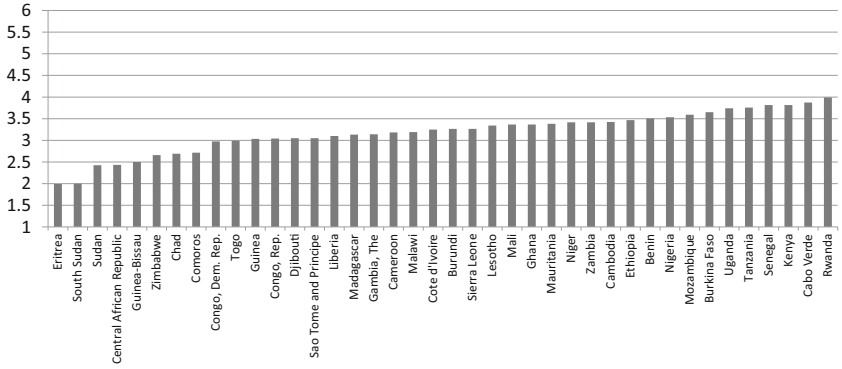

Fig. 20.3 Distribution of SSA countries by CPIA policy scores in 2014 (*Source*: World Bank's CPIA)

institutions are better placed to withstand macroeconomic shocks compared to 'weaker' ones (Dabla-Norris and Gunduz 2014; Megersa and Cassimon 2015).

Figure 20.3 indicates that most SSA's LICs have relatively low CPIA scores. The majority of countries score below the CPIA median of 3.5, falling in the weak ($\leq$3.25) or lower-medium (3.25–3.5) CPIA range. This implies low debt sustainability thresholds for most SSA countries. In 2014, Eritrea and South Sudan, for example, kept their debts below 30% of GDP and 100% of exports according to the DSF. Conversely, countries such as Rwanda and Kenya which have relatively robust technocratic institutions, by SSA standards, and high-quality policy accumulated debt up to 50% of GDP and 200% of exports without causing alarms of debt distress.

Debt Sustainability Through Export and GDP Growth

The Export Channel

In order to examine the contributions of BRIC and OECD countries to export growth in SSA, we disaggregate gross exports of SSA to BRIC, OECD, and the rest of the world (ROW) as shown in Fig. 20.4. The figure reveals that OECD countries have been serving as prime destinations of SSA exports. About 80% of exports were made to the OECD up until the early

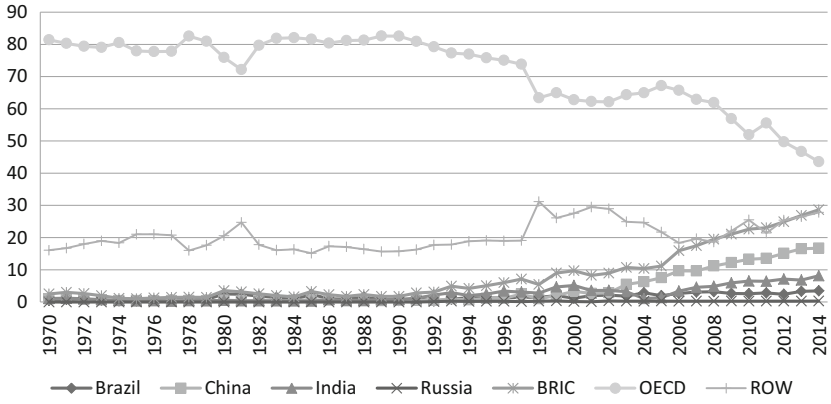

Fig. 20.4 SSA exports by destinations (% of total) (*Source*: IMF's DOTS)

1990s. However, recently, BRIC have risen from below 5% in late 1980s to about 30% of exports in 2014. The primary player in the club of BRIC is China, which in 2014 received almost 17% of SSA exports. In the same year, India followed China at about 8%. Since 2008, BRIC have received nearly as much of SSA's exports as the rest of the world combined, excluding OECD. These trends indicate that although OECD countries remain the major export market and receive over 40% of SSA's exports, BRIC are likely to overtake the OECD as the biggest export market of SSA countries.

Trends in *debt-to-export ratio* (Figs. 20.5 and 20.6) and *debt service-to-export* ratio (Figs. 20.7 and 20.8) indicate that OECD countries have overwhelming impact on SSA's debt sustainability. This could be attributed to the fact that OECD member countries are the largest export destinations for SSA, especially until the early 2000s. In recent years, however, BRIC (particularly China and India) are catching up fast.

Figure 20.6 portrays similar information to Fig. 20.5. While the former is good at giving the longer-term (1970–2014) evolution of debt-to-exports ratio, it is difficult to reveal recent trends in the debt sustainability landscape and the relative contributions of OECD and BRIC. As shown in Fig. 20.5, the 'hypothetical' graph of debt-to-exports ratio (i.e. the one that excludes exports to OECD) spikes to high levels in the same period. As previously noted, this emanates from the duality of high debt levels in SSA and near total export market domination by OECD in this period.

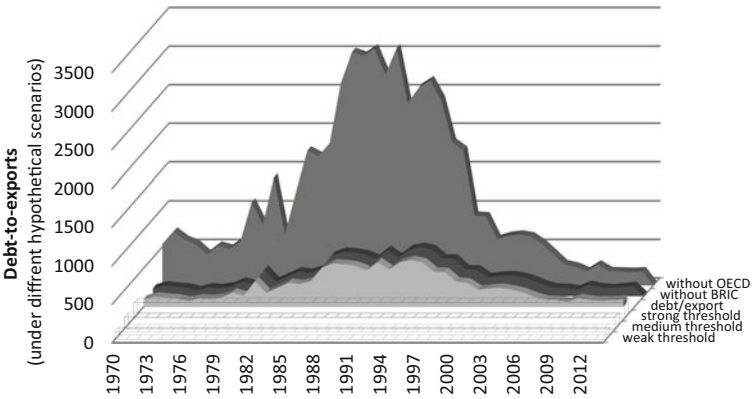

Fig. 20.5 SSA's debt-to-exports ratio, sustainability thresholds, and hypothetical scenarios of *'no export to given destination'* (*Source*: World Bank's IDS and IMF's DOTS)

Recent trends in debt-to-exports (Fig. 20.6) show that the average debt-to-exports values for SSA countries have been sustainable since 2004, when the 'strong' debt sustainability threshold is used. However, given the low policy and institutional rating of most SSA countries, the safest threshold would be the one marked as the 'weak' debt sustainability threshold (Fig. 20.3). Going by this stricter standard, it is evident that debt-to-export values have been sustainable since 2006. There is an interesting exception where debt-to-export values spiked briefly and crossed the threshold in 2009. This corresponds to the global financial crisis where African exports were severely depressed due to recessions in most countries, especially OECD. The alternative hypothetical scenarios of no exports to OECD and BRIC still show that the exclusion of OECD has a bigger detrimental impact toward debt sustainability, when debt is measured against export levels. However, even in the short span of the 14 years shown in Fig. 20.6, the growing convergence between OECD and BRIC is unmistakably seen. For instance, the exclusion of the OECD (unlike BRIC) made debt extremely unsustainable say in 2003, as compared to 2013.

The *debt service-to-export ratio* (Fig. 20.7) and the detailed developments in the post 2000 period (Fig. 20.8) provide a similar trend to the analysis of debt-to-export. The actual debt service-to-export ratios appear to be well over 25% between the early 1980s and late 1990s (Fig. 20.7). This makes

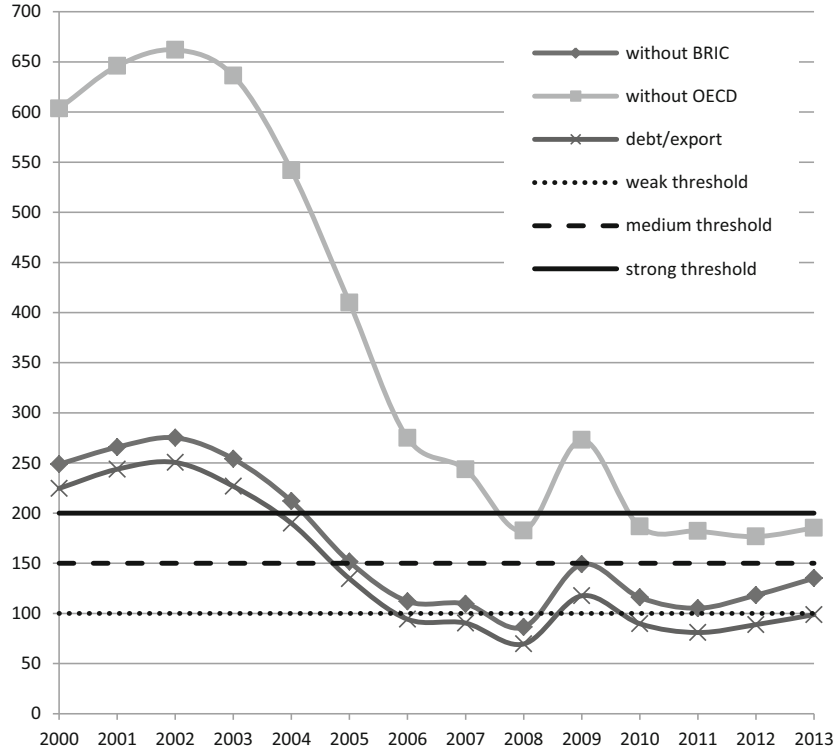

Fig. 20.6 Post 2000 trend of debt to exports (*Source*: World Bank's IDS and IMF's DOTS)

debt profiles of SSA countries in the period highly unsustainable. The analysis in the hypothetical scenario of no exports to OECD and BRIC reveals that debt service-to-export ratio would be enormously elevated when exports to OECD are excluded, compared to BRIC. As previously indicated, this could be justified by dominance of OECD as SSA's export market.

Focusing on recent trends of debt service-to-exports, it is evident that the relative impact of the OECD toward debt sustainability (measured by debt service-to-export ratio) has been rapidly matched by BRIC. However, OECD countries still make a relatively bigger impact. Further, unlike the 1980s and 1990s, debt service-to-export ratio has largely been within

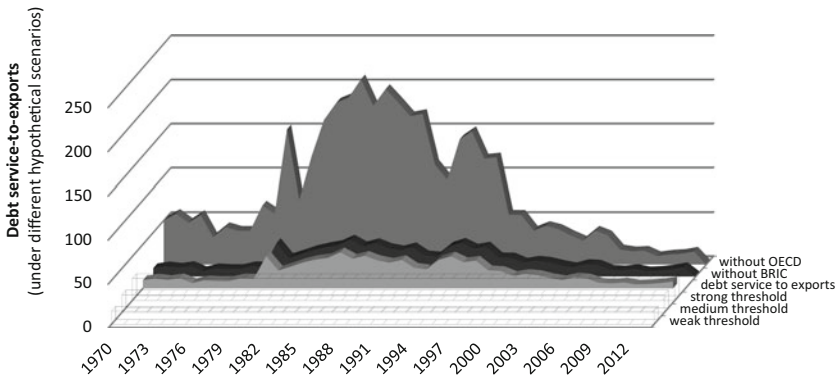

Fig. 20.7 SSA's debt-service-to-exports ratio, sustainability thresholds, and hypothetical scenarios of '*no export to given destination'* (*Source*: World Bank's IDS and IMF's DOTS)

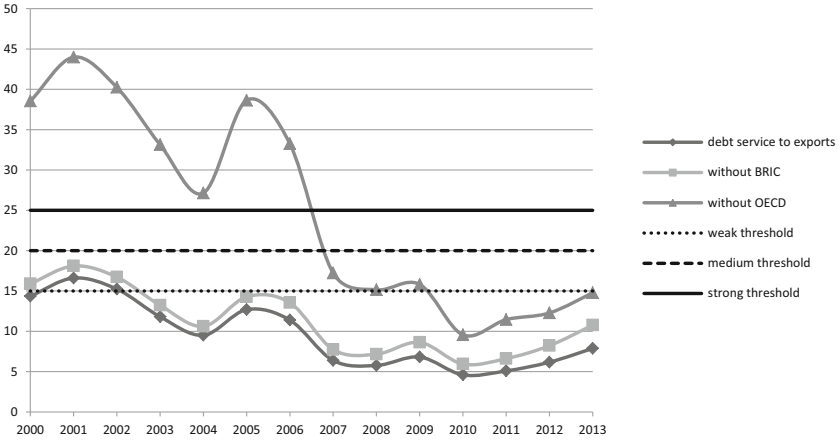

Fig. 20.8 Post 2000 trend of debt-service-to exports (*Source*: World Bank's IDS and IMF's DOTS)

'sustainable' threshold bands. In fact, since mid-2000s, the debt profile of SSA (measured by debt service-to-exports) has been exceptionally good that the hypothetical exclusion of exports either to OECD or BRIC fails to drive the ratio to unsustainable territories.

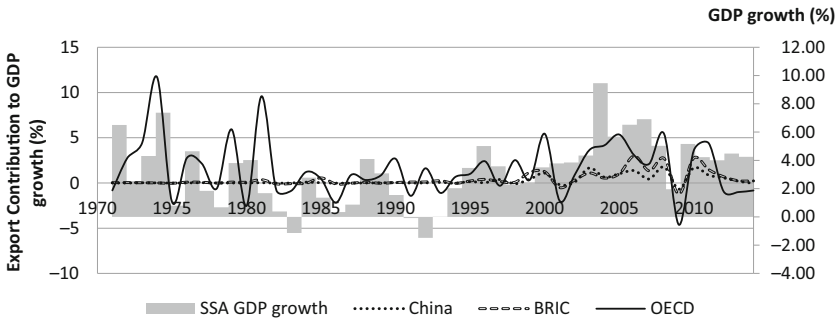

Fig. 20.9 Growth decomposition (% point contribution of exports to SSA GDP growth) (*Source*: IMF's DOTS and World Bank's WDI)

The GDP Channel

Figure 20.9 shows the contribution of exports (by destination i.e. BRIC, OECD, China) to SSA's GDP growth. The growth accounting used to compute the contribution of exports to GDP growth is given in Appendix 2. There are two interesting stories to read from the graph. First, the bar graphs (GDP growth) and the line graphs (export contribution) are more or less synchronized. This shows the extent to which SSA's GDP growth depends on its (commodity) exports to the outside world. The close trend and synchronization between global commodity demand (or price) cycles and SSA's growth cycle has been widely documented in the economic literature (Ademola et al. 2009; Diallo and Tapsoba 2014).

Second, one observes a clear difference while comparing the three line graphs that represent the contribution of exports to OECD for SSA's GDP growth versus BRIC and China. From Fig. 20.9, it is evident that exports to OECD, over the whole period, waver far away from the horizontal zero line, which signifies zero export contribution to GDP growth. This means that increase/decrease in export growth to OECD has played a significant role in increasing/decreasing GDP growth in SSA. By contrast, in BRIC, the line graph was nearly flat up until the late 1990s. This implies that exports to BRIC had negligible impact on SSA's growth prospects.

However, since early 2000s, there is a significant boost to GDP growth contributed by exports to BRIC and especially to China. The export contributions of OECD and BRIC in this recent (post 2000) period also seem to be 'synchronized' and nearly 'balanced'. They are 'synchronized' in the

sense that the graphs representing OECD and BRIC are rising and falling together. For instance, there is an upward trend in early 2000s, a downward trend around the 2008/2009 global financial crisis period, and then a recovery in 2010/2011 period and then falling back afterwards again. The export contribution of the two economic blocks is also 'balanced' or quite comparable in recent years, although the OECD still played a slightly bigger role.

A further analysis of the relationship between debt and GDP, which is measured by the debt-to-GDP ratio,[6] revealed that the ratio was unsustainable for most SSA countries from early 1980s to mid-2000s. In these periods, debt sustainability for most of these countries was characterized by weak and medium sustainability thresholds. Using the strong sustainability threshold, debt had also not been sustainable in the periods spanning late 1980s to early 2000s. This pattern is consistent with the sustainability analysis discussed before which employed debt-to-exports and debt service-to-exports to measure debt sustainability.

However, unlike in the previous, we do not observe a similar massive change in debt sustainability in the hypothetical scenarios that exclude export contributions of OECD and BRIC. This is partly straightforward since the former debt sustainability measures have 'export' values as their denominators. For instance, reducing the value of exports to OECD will automatically raise the debt-to-export ratios and give a much bigger weight to the contribution of OECD to SSA's debt sustainability. On the other hand, debt-to-GDP ratio will be less affected by export swings compared to debt-to-exports ratio. It is easy to assume, given that GDP growth depends on many factors besides exports[7] and could justify the absence of considerable difference (in Fig. 20.10) between the trends in actual debt-to-GDP value and the hypothetical debt-to-GDP.

The debt-to-GDP ratio in SSA has been relatively sustainable since post 2000 (Fig. 20.11), attaining strong sustainability threshold especially after 2004. Further, unlike the debt-to-export and debt service-to-export measures, in the debt-to-GDP there is no considerable rise in debt sustainability concerns if international trade links with OECD and BRIC are excluded. In these hypothetical scenarios, debt-to-GDP closely follows the actual debt-to-GDP ratio and within the weak sustainability thresholds in the post 2005 period. Even if there was a hump in debt-to-GDP ratio coinciding with the 2008/2009 recession, it still remains sustainable, even when using the most restrictive (weak) sustainability threshold.

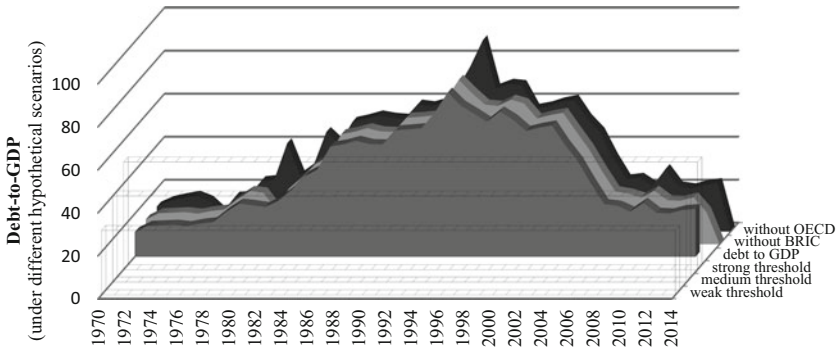

Fig. 20.10 SSA debt-to-GDP ratio, sustainability thresholds and hypothetical scenario of '*no trade with given destination'* (*Source*: World Bank's IDS and IMF's DOTS)

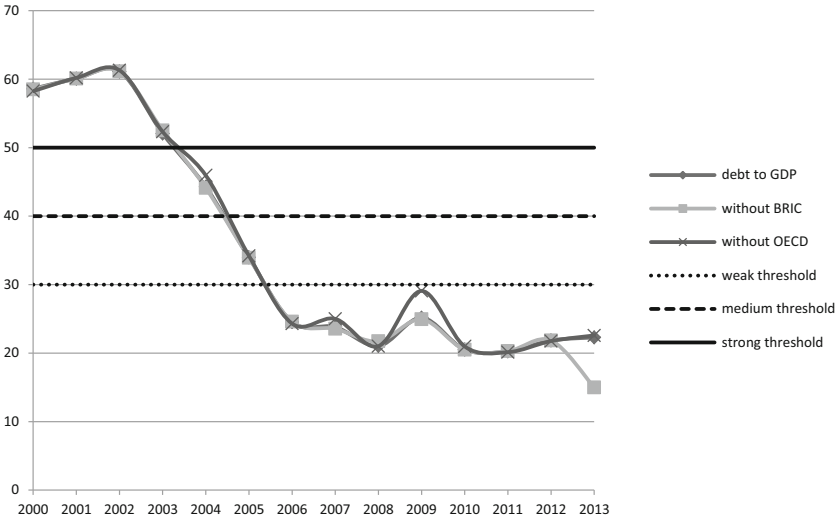

Fig. 20.11 Post 2000 SSA debt-to-GDP scenario with sustainability thresholds (*Source*: World Bank's IDS and IMF's DOTS)

Relationships Between Sub-Saharan Africa and China

The foregoing analysis does not provide detail information about the relationship between SSA and OECD, BRIC and the rest of the world on trade, investment, and aid flows. Namely, the inclusion of FDI, aid flows and bilateral debt would add an interesting and pragmatic dimension to the analysis.[8] We would also like to note that this leaves an interesting area of inquiry for future research. Yet, we attempt to reflect more on the complexity of SSA's bilateral relations with its economic partners and the impact this has on debt sustainability by particularly focusing on China. Even if neither the FDI data from UNCTAD (which is from China's Ministry of Commerce) nor aid flows and bilateral debt data taken from '*AidData*' are fully accurate, they give some glimpse into the trends in Chinese bilateral engagements in SSA.[9]

The data from these sources shows that in recent years, China's investment in SSA has grown rapidly. For instance, between 2003 and 2012, Chinese FDI into SSA jumped from about US$70 million to over US$2.5 billion (Table 20.1). Some of the biggest beneficiaries of this FDI include South Africa, Nigeria, Zambia, and D.R. Congo. In the same period, Chinese global FDI footprint increased from about US$2.85 to US $87.80 billion. An interesting observation of Chinese FDI has been the fact that much of it goes to other developing countries. For instance, in 2012, its FDI to developing countries amounted to about US$70 billion, while the same value for advanced economies was about 13.5 billion. Historically, China has benefited from FDI that it received from advanced economies.

According to 'AidData', Chinese aid to Africa rose from about a billion dollars at the turn of the century to over nine billion in 2012. Even if it is difficult to know the exact values, the information revealed remarkable Chinese aid flows (Strange et al. 2013). Some of the biggest beneficiaries (which received over a billion dollars in 2012 according to 'AidData') include Congo Rep., Tanzania, Sudan, Ethiopia and Zimbabwe (Fig. 20.12).

The conclusion from the preceding analysis is that, aid flows (from emerging donors including China and the traditional donors of OECD group) play a role in boosting SSA's GDP growth. However, existing literature documents some controversies regarding empirical foundations

Table 20.1 China's FDI outflow (millions of US$)

Region/economy	*2003*	*2006*	*2009*	*2012*
World	2854.65	17633.97	56528.99	87803.53
Developed economies	211.44	519.51	7042.83	13508.35
Developing economies	2604.61	16564.98	48779.79	70016.64
Africa	74.81	519.86	1438.87	2516.66
North Africa	4.86	153.57	358.49	365.12
SS Africa	**69.95**	**366.29**	**1080.38**	**2151.54**
Angola	0	22.39	8.31	392.08
Botswana	0.8	2.76	18.44	21.1
Cameroon	0	0.73	0.82	17.65
Congo	0	13.24	28.07	98.8
Congo, Democratic Rep. of	0	36.73	227.16	344.17
Côte d' Ivoire	0.62	−2.91	1.51	3.61
Equatorial Guinea	0	10.19	20.88	138.84
Eritrea	0	0	0	1.96
Ethiopia	0.98	23.95	74.29	121.56
Gabon	0	5.53	11.88	30.69
Ghana	2.89	0.5	49.35	208.49
Guinea	1.2	0.75	26.98	64.44
Kenya	0.74	0	28.12	78.73
Liberia	0	−7.03	1.12	12
Madagascar	0.68	1.17	42.56	8.43
Malawi	0	0	0	10.33
Mali	5.41	2.6	7.99	44.42
Mauritania	1.7	4.78	6.53	30.87
Mauritius	10.27	16.59	14.12	57.83
Mozambique	0	0	15.85	230.52
Namibia	0.62	0.85	11.62	25.12
Niger	0	7.94	39.87	−195.94
Nigeria	24.4	67.79	171.86	333.05
Rwanda	0	2.99	8.62	5.02
Senegal	0.65	0	11.04	4.47
Seychelles	0	0	0	53.4
Sierra Leone	0	3.71	0.9	7.69
South Africa	8.86	40.74	41.59	−814.91
Togo	0	4.58	8.91	20.59
Uganda	1	0	1.29	9.79
United Rep. of Tanzania	0	12.54	21.58	119.7
Zambia	5.53	87.44	111.8	291.55
Zimbabwe	0	3.42	11.24	287.47

Source: UNCTAD FDI/TNC, based on data from P.R. China's Ministry of Commerce (MOFCOM) [Foreign Direct Investment (FDI) and Transnational Corporations (TNC)]

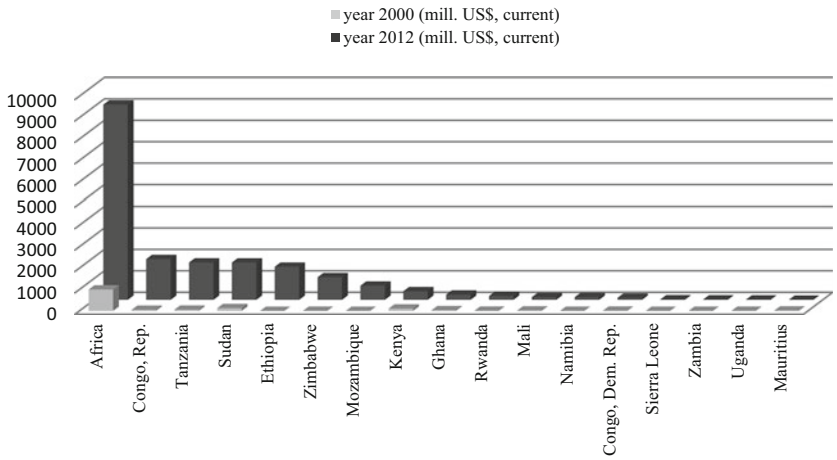

Fig. 20.12 Chinese aid flows to African countries (millions of current US$) (*Source*: Aid Data database (http://china.aiddata.org))

of this argument. Some studies, such as Burnside and Dollar (2000) and Brautigam and Knack (2004), have shown that aid has in fact played a negative role in growth. This stands in contradiction with the traditional view of aid as a positive driver of growth in the developing world (Hansen and Tarp 2000; Dalgaard et al. 2004). The availability of contradictory results demonstrate the complex nature of the bilateral ties between SSA and OECD versus BRIC and the consequences of the ties.

China has been pledging millions and billions of dollars for various mega projects in SSA (Table 20.2). The channel of financing, the type of projects involved, and the total sums budgeted varies greatly. Nonetheless, what is more important to note is that China's increasing role in funding big African infrastructure projects.

However, as shown in Fig. 20.2, bilateral debt is still a smaller component of overall debt in most SSA countries, particularly the less developed ones that cannot borrow on non-concessional terms.[10] Most SSA countries still primarily depend on concessional (and multilateral) sources of debt to finance their numerous development projects.

Table 20.2 Chinese loans, grants, export credits, and debt forgiveness given to African Countries (millions of US$)

Year	*Recipient*	*Project*	*Flow*	*Value*
2000	Africa, regional	US$1 billion of African debt cancelled; may not be bilateral	Debt forgiveness	1697
2003	Cameroon	Memve'ele Dam	Loan	674
2003	Sudan	Construction of the Merowe hydroelectric dam	Loan	836
2004	Angola	Phase 1 of national rehabilitation project	Loan	1507
2004	Zimbabwe	ZESA secures funding for Lake Kariba Power Plant	Loan	1010
2006	Equatorial Guinea	US$2 billion oil-backed loan	Loan	2692
2006	Mauritania	US$3 billion loan for oil exploration, sewage systems, iron mine, road	Loan	4037
2006	Nigeria	Infrastructure in exchange for preferential oil right bidding	Vague	5383
2006	Nigeria	Light Rail Network	Loan	673
2007	Sudan	Construction of railway from Khartoum to Port Sudan	Export credits	1377
2008	Madagascar	Construction of hydroelectric plant	Loan	1421
2009	Angola	Agricultural development	Loan	1200
2009	Cameroon	Loan for water distribution project	Loan	775
2009	Ethiopia	Concessional Ex-Im bank loan for dam construction	Loan	2249
2009	Ghana	US$3B loan from China Development Bank for oil project, road project, others	Loan	3000
2009	Mauritius	East-West corridor, ring road, bus way, and harbor bridge	Loan	782
2009	Mozambique	China builds Agricultural Research Center/agriculture station	In-kind grant	700
2010	Ghana	China grants US$6b concessionary loan	Loan	5485
2010	Zambia	Chinese firm to build Kafue Gorge power plant (2010 commitment)	Loan	930
2011	South Africa	Financial cooperation agreement	Loan	2072

Source: Strange et al. (2013)

Conclusion

In this chapter, we have done a comparative analysis of the contribution of OECD member countries and BRIC to the evolution of sub-Saharan Africa (SSA)'s foreign debt sustainability. Using data for the period 1970–2014,

the analysis shows how external demand for SSA goods and services by OECD and BRIC helps to lower debt-to-exports, debt service-to-exports, and debt-to-GDP ratios and, in turn, impact growth. Results show that debt levels across SSA raised from 'relatively' low levels to unsustainable levels starting in late 1980s to early 2000s. This is consistent with debt literature.

The analysis employs the IMF-World Bank debt sustainability framework thresholds[11] and compares these 'desired' debt thresholds to (i) 'actual' and (ii) 'hypothetical' debt ratios. The 'hypothetical' debt ratios represent the contributions of OECD and BRIC and they are 'what would have materialized' if the contributions (e.g. external demand) from OECD and BRIC were assumed to be absent. The hypothetical debt ratios are, thus, used as a 'stress test' (i.e. major shock) on the debt sustainability scenario. These ratios help us to answer the question: by how much will 'hypothetical' scenarios elevate the debt ratios of SSA?

While answering the above question, we focus on the post 2000 period because the 'actual' debt levels of most SSA countries were already unsustainable in the decades prior to 2000. The results show that 'debt-to-exports' and 'debt service-to-exports' ratio would be highly susceptible while 'debt-to-GDP' much less so. This result is also evident since 'export' is the denominator of 'debt-to-exports' and 'debt service-to-exports' ratios. Yet, in recent years (especially in the post global financial crisis period), SSA's debt profile seems rather sustainable and resilient to 'potential' shocks from OECD and BRIC. This stands in stark contrast to the historical evidence, where debt was mostly unsustainable.

We also reflect up on the complex and multifaceted bilateral interaction between SSA economies and their OECD and BRIC partners by focusing on FDI, aid flows, and bilateral loans. The additional analysis complements the basic empirical exercise—which omits these areas of bilateral relations due to data constraints and methodological intricacy. In analyzing these latter aspects, we particularly focus on China since it provides an interesting example to the rapidly evolving bilateral relations between SSA and the outside world. Our analysis shows that new actors such as China (just like the traditional OECD partners) are having significant involvement with SSA economies. This also has a clear positive trend where the flow of foreign 'development' funds via FDI, aid, and loan packages appears to be accelerating over the years. The overall implication of this is that SSA's

development partners play a bigger role to the region's growth prospects, that is, much more than what their contribution as trade partners would suggest. This, ultimately, makes them crucial to the region's dual long-term objectives of balancing economic growth with debt sustainability.

Given SSA's big need for development finance, on the one hand, and the growing flow of loans from traditional and emerging actors, on the other hand, there is a worry that many SSA countries might again run in to debt challenges. To avoid new episodes of potential debt distress, SSA governments have to work further in maintaining a reasonable degree of fiscal prudence and macroeconomic stability. Similarly, external creditors (e.g. sovereign creditors such as OECD and BRIC countries and major institutional creditors or banks) should identify ways that can gauge their lending policies meet the sustainability of debt in SSA's borrower nations.

Acknowledgment We would like to thank Evelyn Wamboye, Esubalew Alehegn Tiruneh, and Dennis Essers for their useful comments and inputs. All remaining errors are ours.

Appendix 1

Contribution to Debt Sustainability (OECD Vs. BRIC)

We examine the Contribution of OECD and BRIC to debt sustainability in African countries via exports as follows. Suppose Debt_{it} represents the debt owed by country 'i' at time 't', Export_{it} = Gross value of exports by country '*i*' at year '*t*', $\text{Export}_{\text{BRIC } it}$ = Value of exports to BRIC by country '*i*' at year '*t*', and $\text{Export}_{\text{OECD } it}$ = Value of exports to OECD by country '*i*' at year '*t*'; we could represent the debt-to-exports ratio in the 'hypothetical scenario' of no exports to OECD as (in %);

$$\left(\frac{\text{Debt}_{it}}{\text{Export}_{it} - \text{Export}_{\text{OECD } it}}\right) * 100 \tag{20.2}$$

We could then assess the contribution of OECD countries to the debt sustainability of African countries (via export channel) by comparing the above hypothetical ratio (Eq. 20.2) with the actual debt-to-exports ratio. In a similar fashion to Eq. 20.2, we capture the debt-to-exports ratio in the

'hypothetical scenario' of no exports to BRIC. We also examine the hypothesis that the relative contribution of the OECD (via the export channel) to African countries' debt sustainability is higher than that of BRIC. We approach this as

$$\left(\frac{\text{Debt}_{it}}{\text{Export}_{it} - \text{Export}_{\text{OECD}\,it}}\right) > \left(\frac{\text{Debt}_{it}}{\text{Export}_{it} - \text{Export}_{\text{BRIC}\,it}}\right) \tag{20.3}$$

This would mean that the OECD countries play a bigger role to debt sustainability measured against exports (at year 't'). However, we will also look at the historical evolution of the contribution of BRIC and OECD to debt sustainability on the above measure. This is important to do since there is a presumption that BRIC are playing an increasing role as compared to OECD.

We also analyze if the contributions of BRIC and OECD to debt sustainability enables SSA countries to meet the specific debt sustainability requirements of the DSF. We will do so by testing whether the DSF debt targets (thresholds) are still met in the 'hypothetical' absence of exports to BRIC or OECD. Given the heterogeneity of developing countries on the bases of policy strength and institutional qualities (Fig. 20.3 in section 'Debt Evolution and Sustainability Framework'), the DSF sets three categories of debt sustainability thresholds for debt-to-exports[12]:

$$\left(\frac{\text{Debt}_{it}}{\text{Export}_{it}}\right)_{\text{Threshold}} = \begin{cases} 100\% \text{ if weak policy (CPIA} \leq 3.25) \\ 150\% \text{ if medium policy } (3.25 < \text{CPIA} < 3.75) \\ 200\% \text{ if strong policy (CPIA} \geq 3.75) \end{cases} \tag{20.4}$$

The assessment we make can be stated as

$$\left(\frac{\text{Debt}_{it}}{\text{Export}_{it} - \text{Export}_{\text{OECD}\,it}}\right) \times > \left(\frac{\text{Debt}_{it}}{\text{Export}_{it}}\right)_{\text{Threshold}} \text{and/or} \left(\frac{\text{Debt}_{it}}{\text{Export}_{it} - \text{Export}_{\text{BRIC}\,it}}\right) > \tag{20.5}$$

That is, we argue that in the absence of export links to OECD or BRIC, country 'i' will not achieve the DSF targets since this will lead to

high debt-to-exports ratios. We will also conduct an analysis for 'debt service-to-exports' and 'debt-to-GDP' ratios in a similar fashion to the analysis we make for the debt-to-exports ratio above (Eqs. 20.2–20.5 above). Within the framework of the GDP channel, we examine the contribution of BRIC and OECD to debt sustainability in SSA countries via GDP growth as indicated in Appendix 2. However, we use different thresholds for 'debt-to-GDP' ratio for the three categories of policy/institutional qualities in SSA economies. The debt-to-GDP sustainability thresholds (as in IMF-WB DSF) are given as:

$$\left(\frac{\text{Debt}_{it}}{\text{GDP}_{it}}\right)_{\text{Threshold}} = \begin{cases} 30\% \text{ if weak policy (CPIA} \leq 3.25) \\ 40\% \text{ if medium policy (3.25} < \text{CPIA} < 3.75) \\ 50\% \text{ if strong policy (CPIA} \geq 3.75) \end{cases} \tag{20.6}$$

In the absence of trade and investment links to OECD or BRIC, we hypothesize that country 'i' will not achieve the DSF targets since this will increase the debt-to-GDP ratio—by depressing its GDP.

Appendix 2

Determining the Contribution of OECD and BRIC to SSA's GDP Growth

Our estimation of the contribution of export growth to GDP growth is based on the basic national accounts identity, namely:

$$Y_{it} = C_{it} + I_{it} + G_{it} + (X_{it} - M_{it}), \quad i = 1 \ldots k \text{ and } t = 1 \ldots n \tag{20.7}$$

where

Υ_{it} = National income of country *'i'* at year 't'
C_{it} = Consumption of country *'i'* at year 't'
I_{it} = Investment of country *'i'* at year 't'
G_{it} = Government expenditure of country *'i'* at year 't'
X_{it} = Exports of country *'i'* at year 't'
M_{it} = Imports of country *'i'* at year 't'

If we differentiate the above equation with respect to time (t), we will get the following expression:

$$\tilde{Y}_{it} = \tilde{C}_{it} + \tilde{I}_{it} + \tilde{G}_{it} + \left(\tilde{X}_{it} - \tilde{M}_{it}\right) \tag{20.8}$$

where $\tilde{Y}_{it} = \frac{dY_{it}}{dt}$ and so on for the other terms.

If we represent the net exports part of the right-hand side equation (i.e. $\tilde{X}_{it} - \tilde{M}_{it}$) with $\widetilde{NE}_{it}$, we may present the above equation as:

$$\tilde{Y}_{it} = \tilde{C}_{it} + \tilde{I}_{it} + \tilde{G}_{it} + \widetilde{NE}_{it}, \quad i = 1 \ldots k \text{ and } t = 1 \ldots n \tag{20.9}$$

For further analysis, we may again rewrite the above left- and right-hand side terms as follows:

$$\frac{\tilde{Y}_{it}}{Y_{it}} = \frac{\tilde{C}_{it}}{C_{it}}\frac{C_{it}}{Y_{it}} + \frac{\tilde{I}_{it}}{I_{it}}\frac{I_{it}}{Y_{it}} + \frac{\tilde{G}_{it}}{G_{it}}\frac{G_{it}}{Y_{it}} + \frac{\widetilde{NE}_{it}}{NE_{it}}\frac{NE_{it}}{Y_{it}}, \quad i = 1 \ldots k \text{ and } t = 1 \ldots n \tag{20.10}$$

In this setting, the ratios $\frac{C_{it}}{Y_{it}}, \frac{I_{it}}{Y_{it}}, \frac{G_{it}}{Y_{it}}$ and $\frac{NE_{it}}{Y_{it}}$ represent the shares of national income accounted by consumption, investment, government expenditure, and net exports, while the ratios $\frac{\tilde{Y}_{it}}{Y_{it}}, \frac{\tilde{C}_{it}}{C_{it}}, \frac{\tilde{I}_{it}}{I_{it}}, \frac{\tilde{G}_{it}}{G_{it}}$ and $\frac{\widetilde{NE}_{it}}{NE_{it}}$ represent the growth rates of the respective variables. The four right-hand side additives of Eq. (20.10) represent by how much GDP would grow following a growth in any of these parts. For instance, $\frac{\widetilde{NE}_{it}}{NE_{it}}\frac{NE_{it}}{Y_{it}}$ or $\frac{\widetilde{NE}_{it}}{Y_{it}}$ represents the growth in GDP as a result of a corresponding growth in net exports, while $\frac{\tilde{X}_{it}}{X_{it}}\frac{X_{it}}{Y_{it}}$ or $\frac{\tilde{X}_{it}}{Y_{it}}$ represents the GDP growth attributable to growth in gross export value of goods and services. By splitting net exports by its destination in to BRIC, OECD, and the rest of the world (ROW), we can make comparisons about the relative importance of these trade partners to SSA countries' GDP growth. That is:

$$\widetilde{NE}_{it} = \widetilde{NE}_{\text{OECD } it} + \widetilde{NE}_{\text{BRIC } it} + \widetilde{NE}_{\text{ROW } it}, \quad i = 1 \ldots k \text{ and } t = 1 \ldots n \tag{20.11}$$

Notes on Contribution of Exports to GDP Growth

Lin and Li (2002) argue that the basic national income identity-based analysis underestimates the effect of exports on GDP growth since increases

in exports can also have an effect on consumption, investment, and imports. To ascertain this argument, we run regressions using a simple bivariate model (Eq. 20.1) of consumption, investment, and imports versus exports, which shows the trade elasticities for SSA countries.

$$\log(Z_{it}) = \beta_0 + \beta_1 \log(X_{it}) + \epsilon_{it}, \quad i = 1 \ldots n \text{ and } t = 1 \ldots T \tag{20.1}$$

where

$Z_{it} = [C_{it}, I_{it}, M_{it}]$
C_{it} = Consumption of country *'i'* at year 't'
I_{it} = Investment of country *'i'* at year 't'
M_{it} = Imports of country *'i'* at year 't'
X_{it} = Gross value of exports by country *'i'* at year 't'

The above model is estimated via pooled least squares (PLS) and fixed effects (FE) models, where the latter regressions are intended to control for country heterogeneity within the sample. The dataset is an unbalanced panel of 45 countries in SSA, over the period of 1960–2014. For the list of countries included in the panel regressions, see Table 20.3 in Appendix.

The coefficients of exports in the three bivariate models (the elasticities of consumption, investment and imports with respect to exports) are all significant (Table 20.4). This goes to show that a boost in SSA exports to OECD, BRIC, or elsewhere in the world would augment not only imports but also consumption and investment figures. Therefore, the overall effect of exports on the economic growth would be larger in reality than what the

Table 20.3 List of SSA countries included in the panel regressions in Table 20.4

Angola	Congo, D.R.	Ghana	Mauritania	Seychelles
Botswana	Congo, Rep.	Guinea	Mauritius	Sierra Leone
Burkina Faso	Cote d'Ivoire	Guinea-Bissau	Mozambique	South Africa
Burundi	Djibouti	Kenya	Namibia	Sudan
Cabo Verde	Equatorial Guinea	Lesotho	Niger	Tanzania
Cameroon	Eritrea	Liberia	Nigeria	Togo
Central Africa Rep.	Ethiopia	Madagascar	Rwanda	Uganda
Chad	Gabon	Malawi	Sao Tome	Zambia
Comoros	Gambia, The	Mali	Senegal	Zimbabwe

Table 20.4 Effects of growth in SSA exports on consumption, investment, and imports

	PLS	*FE*	*PLS*	*FE*	*PLS*	*FE*
	Consumption	*Consumption*	*Investment*	*Investment*	*Imports*	*Imports*
Country effects	No	Yes	No	Yes	No	Yes
Exports	0.715***	0.612***	0.909***	0.945***	0.852***	0.922***
	(0.015)	(0.014)	(0.008)	(0.010)	(0.005)	(0.006)
Constant	7.796***	9.946***	1.587***	0.857***	3.358***	1.948***
	(0.326)	(0.298)	(0.165)	(0.201)	(0.104)	(0.123)
R^2	0.699	0.699	0.865	0.865	0.929	0.929
N	923	923	1933	1933	2100	2100
$F(1, N)$	2134.59	1864.32	12368.22	8934.82	27451.15	22894.72

Note: Standard errors in parentheses. *$p < 0.10$, **$p < 0.05$, ***$p < 0.010$

simple national income accounting identity would tell us. This would specially be the case if the indirect positive impacts (of export growth) reflected in consumption and investment growth outweigh import growth. The implication of this being, rising exports to OECD and BRIC would play a vital role toward the dual policy targets of economic growth and debt sustainability in SSA economies.

Notes

1. For more on the multilateral debt relief initiative for African countries, specifically the 'Heavily Indebted Poor Countries' (HIPC) initiative, see Easterly 2002; Ndikumana 2004; Cassimon and Essers 2013; Cassimon and Verbeke 2014.
2. BRIC constitutes Brazil, Russia, India and China. In years, South Africa has been added to the group to become 'BRICS'. However, given the fact that South Africa itself is in our economic region of interest (i.e. SSA), we do not include it in the club of emerging powers. Rather, we consider it as part of SSA.
3. This paper uses the same definition and country list as World Bank and IMF in its use of the term 'OECD', i.e. Organization of Economic Development. This group of countries largely represents the

world's most advanced countries that have been SSA's traditional economic partners. In its current form, the specific list of countries in the group includes; Australia, Japan, Austria, Korea Rep., Belgium, Luxembourg, Canada, Mexico, Chile, Netherlands, Czech Republic, New Zealand, Denmark, Norway, Estonia, Poland, Finland, Portugal, France, Slovak Republic, Germany, Slovenia, Greece, Spain, Hungary, Sweden, Iceland, Switzerland, Ireland, Turkey, Israel, United Kingdom, Italy, and United States.

4. External debt (also known as foreign debt) represents the gross debt owed to foreign creditors by a country. Public debt (alternatively termed as sovereign debt or national debt) signifies the debt owed by national governments.
5. The DSF uses 'present value' (PV) in its analysis of debt sustainability and in setting sustainability targets (thresholds). However, empirical studies often use nominal debt figures since adequate long-term PV debt data is not readily available. This study will also use nominal debt data which is available from the World Bank's IDS database. Yet, the study will borrow the debt sustainability thresholds of the DSF as rough guidelines of sustainability.
6. The debt-to-GDP ratio is the ratio between a country's government debt and its gross domestic product (GDP). A low debt-to-GDP ratio indicates an economy that produces and sells goods and services sufficient to pay back debts without incurring further debt.
7. GDP does not change proportionally to the changes in exports. It will take a simultaneous decline in consumption, investment, government expenditure and external demand (net exports) to comparatively skew GDP. Further, the fact that we are considering net exports (which theoretically have a zero value in a balanced trade scenario) to represent the external demand from either the OECD or BRIC means that there is a smaller deviation as compared to an alternative scenario where we might consider only exports.
8. Given the limitations of accessing continuous (and reliable) bilateral time series data, the above exercise did not include these dimensions in the basic debt sustainability analysis given in section 'Debt Sustainability Through Export and GDP Growth'.
9. On bilateral data such as aid flows, Brautigam (2010) documents the difficulty of getting data from major emerging economies (e.g. Russia, China, India, and Brazil).

10. At the core of the discussion about what levels of 'debt-to-GDP' are sustainable for countries at different levels of economic development is also a debate about the complex link between the nominator (debt) and the denominator's growth (i.e. GDP or economic growth). In this regard, there is a rich and ongoing discussion as can be seen from Panizza and Presbitero (2013, 2014), Eberhardt and Presbitero (2015), Megersa (2015), Megersa and Cassimon (2015).
11. The DSF is the current formal debt sustainability framework used not only by the IMF and WB, but also by governments and policy makers of developing countries and various multilateral institutions (see section 'Debt Evolution and Sustainability Framework').
12. See IMF and World Bank (2012) for the debts sustainability thresholds within the DSF analysis.

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CHAPTER 21

Managing Resource Price Volatility: Exploring Policy Options for the Democratic Republic of Congo

Emmanuel Pinto Moreira

Introduction

Many developing countries with large endowments of natural resources face daunting challenge, including macroeconomic volatility and Dutch disease-related phenomena. Despite the economic prospects of discovering natural resources, managing those resources effectively poses a serious challenge. Developing countries have often experienced *natural resource curse*, essentially in the form of weak institutions, low efficiency of public spending, poor governance, and heightened risks of civil conflicts (van der Ploeg 2011). Moreover, commodity price volatility creates macroeconomic instability, especially in economies that heavily rely on extractive commodity exports. And sharp inflow of foreign currency associated with resource windfalls may lead to Dutch disease effects, in which nonresource-traded goods will be less competitive on the export market due to currency appreciation.

The natural resource management framework has been dominated by the permanent income hypothesis (PIH) approach. According to the PIH, resource windfalls should be saved in their entirety in the form of financial

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assets, and to ensure fiscal sustainability, the nonresource primary deficit should be limited to the perpetuity value of resource wealth. In turn, given a projection for nonresource revenue, the nonresource primary balance benchmark translates an estimate of the sustainable level of expenditure (Baunsgaard et al. 2012; Lundgren et al. 2013). However, recent studies questioned the relevance of the PIH for low-income countries[1] as it ignores that these countries are both capital and credit constrained. This suggests to devise more flexible fiscal management frameworks that allow governments to scale up spending financed by resource revenue to meet the urgent infrastructure needs—and other productive sectors, such as education and health—while maintaining fiscal and macroeconomic stability.

Using Agénor's (2016) model, this chapter studies the optimal allocation of revenue windfalls between spending now and saving in a sovereign fund in the context of the Democratic Republic of Congo (DRC).[2] Agénor developed a dynamic stochastic general equilibrium (DSGE) model for a small open low-income country where access to public capital is limited. It also incorporates other features, including an explicit account of imperfect access to world capital markets and a direct complementarity effect between public capital and private investment. Simultaneously, public capital is also subject to congestion and absorption constraints, which depend on the relative scale of investment itself and affect the quality and effectiveness of infrastructure spending.

The remainder of the chapter is organized as follows. Section 'Stylized Facts' presents some background analysis and stylized facts about the resource sector in DRC. Section 'The Model' presents the structure of the model and its steady-state solution. Calibration of the model is discussed in section 'Calibration'. The macroeconomic impact of resource price and price and production windfalls, and their implication for the optimal allocation of these windfalls, are discussed in section 'Macroeconomic Effects and Optimal Allocation of Resource Windfalls'. Sensitivity analysis is performed in section 'Sensitivity Analysis'. The last section summarizes the main results and their implications for macroeconomic policy in DRC.

Stylized Facts

With a GNP per capita of US$380 in 2014,[3] DRC is a low-income country endowed with vast natural resource wealth. The extractive sector accounts for about two-thirds of DRC's GDP in 2014, while it represents about 97 percent of export earnings (Table 21.1). Besides its contribution to

Table 21.1 DRC: contribution of the natural resources sector to DRC's economy (2000–2014)

Year	*% of export receipts*
2000	83.6
2002	15.6
2004	19.9
2006	98.7
2008	98.8
2010	97.7
2011	97.6
2012	98.3
2013	97.8
2014	97.3

Source: Author's calculation based on Government, World Bank, and IMF Database

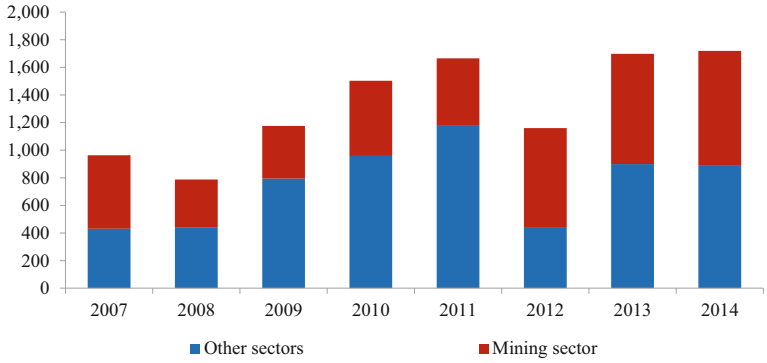

Fig. 21.1 DRC's FDI in mining and non-mining sectors, 2007–2014

GDP, the mining sector provides provincial employment and business opportunities; although in some cases, it played a role in fueling conflicts. Overall, mining exerts an ambiguous impact on development.

The mining sector has been the major source of income. After the war ended in 2002, economic growth averaged 5.8 percent a year. However, by 2007, after five years of continued growth largely attributed to the commodity price boom and construction activity, the economy returned to prewar (1994) levels. Furthermore, the post-conflict performance was less impressive compared to other African countries.

DRC is well integrated in the global economy, with total trade reached 95 percent of GDP by 2014. Despite a slight drop in 2008, foreign direct investment (FDI) remained around five percent of GDP in (Fig. 21.1).

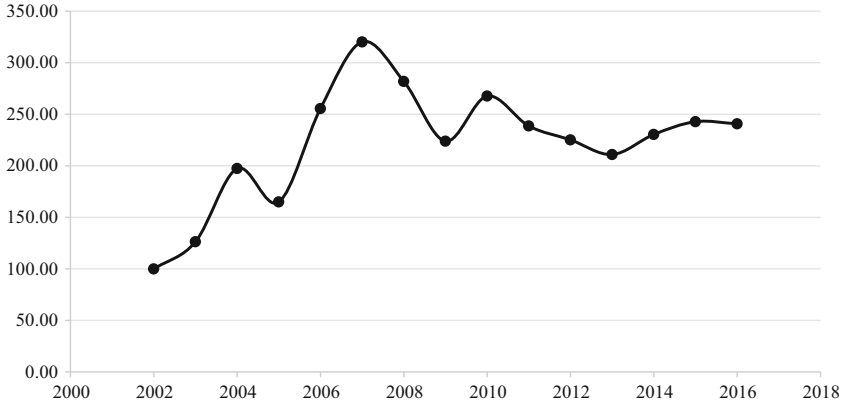

Fig. 21.2 DRC's terms-of-trade index (2002: 100)

Mining is the most integrated sector with the global economy, as its output is almost completely designated for exports. Correspondingly, a fall in demand contracts the sector and lead into dire consequence for suppliers and DRC's economy as a whole.

DRC's economic structure makes it more prone to exogenous shocks, reflected in high terms of trade volatility (Fig. 21.2). Thanks to their low marginal costs, large mines remained open in 2009 when copper and cobalt prices collapsed. The sharp decline in the 2009 growth rate is due to a contraction in artisanal mining, since miners could no longer sell their products to small-scale smelters. The marginal cost of smelters was around US$4000 per ton, and they were closed when the price dropped well below US$3000 per ton. In sum, while large-scale mines are important for economic growth, artisanal mining continues to be important for employment. [4] Prospects for linkages and value additions of the mining sector need to be utilized effectively. The 2013 World Development Report (World Bank 2013) shows that extractive industries tend to have weak linkages, with dismal impact on employment 1–2 percent of the total workforce.

The foregoing discussion demonstrates DRC's dependence on natural resources, which means that price fluctuations of its exports can be major sources of economic volatility. In this context, an important question is whether a sovereign wealth fund (SWF) would help to mitigate volatility. SWFs are state-owned investment vehicles investing in real and financial assets. [5] An important advantage of SWFs, given their long-term investments

nature with low leverage, is their long-term stabilizing effect on a country's future income. This could be particularly important for DRC, given its overreliance on natural resources.

The Model

Consider a three-sector open economy producing a non-renewable resource (identified with superscript R), a nonresource tradable good (identified with superscript T), and a nontradable good (identified with superscript N). The world price of a unit of the nonresource tradable good is unity and purchasing power parity (PPP) holds for these goods. Thus, assuming that the nominal exchange rate is fixed and normalized to unity, prices measured in foreign currency are equivalent to relative prices expressed in units of the tradable good. Nonresource tradables and nontradables are produced competitively. The nontradable good is a perishable and then is a pure consumption good, whereas the nonresource tradable good can be either consumed or invested. Private investment falls on nonresource tradables only, whereas public investment consists of both nonresource tradables and nontradables. Both households and the government spend on tradables and nontradables and can borrow from world capital markets. In line with the evidence for many low-income countries, labor is perfectly mobile across sectors. In contrast, private capital (which is used in the production of both nonresource tradables and nontradables) is imperfectly mobile in the short run—due to costs to reallocating physical assets across production sectors—and perfectly mobile in the long run.

Resource Production and Prices

Resource output, Y^R, is a flow endowment owned by the government; its extraction requires no use of factor inputs. It is not consumed domestically and follows an exogenous deterministic process[6]:

$$Y^R/Y^R = \left(Y^R{}_{-1}/Y^R\right)^{\rho YR}\exp\left(\varepsilon^{yR}\right) \tag{21.1}$$

where Y^R is the steady-state value of Y^R, $\rho YR \in (0,1)$ measures the degree of persistence, and ε^{yR} is a normally distributed random shock with zero mean and a constant variance.

The real resource price, p^R, relative to the foreign-currency price of nonresource tradables, is exogenously determined outside the home country and denominated in foreign currency. It also follows an exogenous deterministic process:

$$p^R/p^R = \left(p^R{}_{-1}/p^R\right)^{\rho pR}\exp\left(\varepsilon^{pR}\right) \tag{21.2}$$

where p^R is the steady-state value of p^R, $\rho pR \in (0,1)$ measures the degree of persistence, and ε^{pR} is again a normally distributed random shock with zero mean and a constant variance.

Nonresource Production

Nonresource production consists of nonresource tradables, Y^T, and nontradables, Y^N. The production function for both goods requires labor, private capital, and public capital:

$$Y^T = \left(L^T\right)^{\beta T}\left(K^{PT}\right)^{1-\beta T}\left(K^I/K^P\right)^{\omega} \tag{21.3}$$

$$Y^N = \left(L^N\right)^{\beta N}\left(K^{PN}\right)^{1-\beta N}\left(K^I/K^P\right)^{\omega} \tag{21.4}$$

where L^i, with i = N,T, is employment in sector i, K^{Pi} the private capital stock in sector i, K^P the economy's total stock of private capital, K^G the stock of public capital, $\beta N, \beta T \in (0,1)$, and $\omega > 0$. In these equations, public capital is partially rival and subject to congestion, as measured by the aggregate private capital stock.[7] In addition, Eqs. (21.3) and (21.4) assume the elasticity of output with respect to (congested) public capital is the same in both sectors.

Profit maximization yields:

$$w = \beta T\left(Y^T/L^T\right), \quad r^{KT} = (1-\beta T)\left(Y^T/K^{PT}\right) \tag{21.5}$$

$$zw = \beta N\left(Y^N/L^N\right), \quad zr^{KN} = (1-\beta N)\left(Y^N/K^{PN}\right) \tag{21.6}$$

where w is economy-wide wage rate (measured in terms of foreign currency), which is the same in both sectors given the assumption of perfect labor mobility, r^{Ki} is the rental rate of capital in sector i, with i = N,T, and $z = 1/P^N$ is the real exchange rate.

Households

Consumption decisions follow a two-step process: households first determine the optimal path of total consumption over time, C, and then allocate that amount at each moment in time between spending on nonresource tradables and nontradables.

The representative household's lifetime utility is ∞

$$U = E_t \Sigma \Lambda^s \left\{ (1 - 1/\varsigma)^{-1} (C_{t+s})^{1-1/\varsigma} - [\eta_L/(1+\psi)](L_{t+s})^{1+\psi} \right\}, \; s = 0 \quad (21.7)$$

where E_t is the expectations operator, $\Lambda \in (0,1)$ is a discount factor, $\varsigma > 0$ the intertemporal elasticity of substitution, ψ the inverse of Frisch elasticity of labor supply, and $\eta_L > 0$ a preference parameter which captures the disutility of work.

The stock of private capital evolves according to

$$K^P = \left(I^P{}_{-1}\right)^{\varphi K} \left(K^I{}_{-1}/K^P{}_{-1}\right)^{1-\varphi K} + \left(1 - \delta^P\right) K^P{}_{-1} - \Gamma\left(K^P, K^P{}_{-1}\right) \quad (21.8)$$

where I^P is private investment, $\delta^P \in (0,1)$ is a constant rate of depreciation, $\varphi K \in (0,1)$, and $\Gamma(K^P, K^P{}_{-1})$ is an adjustment cost function. As in Agénor (2016), gross private investment must be combined with (congested) public capital to generate effective private investment, in order to capture a *direct* complementarity effect between private investment and public capital. This effect operates independently of the effect of public capital on the rate of return of private capital, as captured in Eqs. (21.5) and (21.6).

The capital adjustment cost function takes the standard quadratic form:

$$\Gamma\left(K^P, K^P{}_{-1}\right) = 0.5\kappa\left(K^P/K^P{}_{-1} - 1\right)^2 K^P{}_{-1}, \quad \kappa > 0 \quad (21.9)$$

The flow budget constraint of the representative household is given by

$$\begin{aligned} D^P{}_{+1} = {} & \left(1 + r^W\right) D^P - \left(1 - \tau^{NR}\right)\left(Y^T + z^{-1} Y^N\right) \\ & - \psi^R \left(1 - \tau^R\right) P^R Y^R + C + I^P + T^L \end{aligned} \quad (21.10)$$

where D^P is household foreign-currency debt, r^W the cost of borrowing abroad, $\tau^{NR} \in (0,1)$ the tax rate on nonresource income, T^L lump-sum taxes, $\tau^R \in (0,1)$ the share of resource revenues going to the government

(with $1-\tau^{R}$ therefore representing the share going to private agents, both residents and non-residents), and $\psi^{R} \in (0,1)$ the share of these resource revenues going to domestic households.

In the first stage of the optimization process, households maximize (7), subject to (8), (9), and (10). The first-order conditions are[8]

$$E_t(C_{+1})^{-1/\varsigma} = C^{-1/\varsigma}/\Lambda\left(1+r^{W}\right) \tag{21.11a}$$

$$L = \left[\left(1-\tau^{NR}\right)w/\eta_L C^{-1/\varsigma}\right]^{\psi} \tag{21.11b}$$

$$\begin{aligned} E_t\Big\{ &\left[k\left(\left(K^{P}{}_{+1}/K^{P}\right)-1\right)+1\right)\Big]^{-1}(1-\tau^{NR})r^{K}{}_{+1}+1-\delta^{P} \\ &+0.5\kappa\left(\Delta\left(K^{P}{}_{+2}\right)^{2}/\left(K^{P}{}_{+1}\right)^{2}\right)\Big\} = 1+r^{W}, \end{aligned} \tag{21.11c}$$

together with the appropriate transversality conditions on K^{P} and D^{P}. In (11c), r^{K} is the rate of return on private capital, and $\Delta(K^{P}{}_{+2})^{2} = (K^{P}{}_{+2})^{2} - (K^{P}{}_{+1})^{2}$. Equation (21.11a) is the standard Euler equation, (21.11b) defines labor supply, and (21.11c) is the arbitrage condition that determines the demand for private capital.

Let C^{i} denote consumption of goods produced by sector i = N,T. In the second stage of the optimization problem, the representative household maximizes the sub-utility function

$$C = \left(C^{N}\right)^{\theta}\left(C^{T}\right)^{1-\theta} \tag{21.12}$$

where $\theta \in (0,1)$, subject to the budget constraint

$$C = C^{T} + z^{-1}C^{N} \tag{21.13}$$

The solution is given by

$$C^{N} = \theta z C, \quad C^{T} = (1-\theta)C \tag{21.14}$$

Government Budget and Sovereign Fund

The government receives revenues from resource production, T^{R}; taxes on nonresource income, T^{NR}; as well as lump-sum taxes on households, T^{L}. It also receives interest income on the stock of foreign-currency assets, F, held

in a sovereign fund, at the interest rate r^F. Total revenue, measured in foreign-currency terms, is thus given by

$$T = T^R + T^{NR} + T^L + r^F F, \text{ or equivalently,}$$

$$T = (1-\chi)\tau^R p^R Y^R + \tau^{NR}\left(Y^T + z^{-1}Y^N\right) + T^L + r^F F, \tag{21.15}$$

where $\chi \in (0,1)$ is the fraction of resource revenues saved in the sovereign fund.

In the initial steady state, government spending is set as fixed fraction $\psi^G \in (0,1)$ of aggregate output. In response to a resource price or quantity shock, however, we assume that (log) deviations in government spending from its steady-state value is given as a fraction $1-\chi$ of (log) deviations in resource revenues, and (log) deviations in interest income:

$$G^{SS}\ln\left(G/G^{SS}\right) = (1-\chi)T^{R,SS}\ln\left(T^R/T^{R,SS}\right) + r^F F^{SS}\ln\left(F/F^{SS}\right), \tag{21.16}$$

where the superscript SS is used to indicate a steady-state value.[9]

Government spending is allocated to infrastructure investment, I^G, and consumption of nontraded goods, $z^{-1}C^G$:

$$G = I^G + z^{-1}C^G \tag{21.17}$$

Both components of spending are set as fixed fractions of total expenditure:

$$I^G = \upsilon^G G, \quad z^{-1}C^G = \left(1-\upsilon^G\right)G \tag{21.18}$$

where $\upsilon^G \in (0,1)$. In turn, public investment is allocated in fixed proportions between spending on nontraded goods, I^{GN}, and spending on nonresource-traded goods, I^{GT}:

$$I^{GN} = \upsilon^{GN} z I^G, \quad I^{GT} = \left(1-\upsilon^{GN}\right)I^G \tag{21.19}$$

where $\upsilon^{GN} \in (0,1)$.

The stock of public capital evolves according to

$$K^I = \left(1-\delta^G\right)K^I_{-1} + \varphi_{-1} I^G_{-1} \tag{21.20}$$

where $\varphi \in (0,1)$ is an indicator of efficiency of spending on infrastructure and $\delta^G \in (0,1)$ is the depreciation rate. To capture absorption capacity constraints, the efficiency parameter is assumed to be negatively related with the ratio of public investment to public capital:

$$\varphi = \varphi_0 \left(I^G / K^I\right)^{-\varphi 1}, \text{where } \varphi_0, \ \varphi 1 > 0 \tag{21.21}$$

Public debt, D^G, is constant at $D^G{}_0$; the government's budget is balanced through changes in (lump-sum) taxes, so that

$$T = r^W D^G{}_0 + G \tag{21.22}$$

Accumulation in the sovereign fund is driven by

$$F_{+1} = \left(1 - \phi^F\right) F + \chi \tau^R p^R Y^R \tag{21.23}$$

where $\phi^F \in (0,1)$ is a coefficient that measures a management fee paid to non-residents, levied on the stock of assets held in the fund.

Market-Clearing Conditions and World Interest Rate

The market-clearing condition of the market for nontradable goods is given by

$$Y^N = C^N + C^G + I^{GN} \tag{21.24}$$

whereas the equilibrium condition of the labor market is given by

$$L = L^N + L^T \tag{21.25}$$

As noted earlier, private capital is imperfectly mobile across sectors. The stock of capital is given as a CES function of K^N andK^T:

$$K^P{}_{-1} = \left[\zeta K \left(K^{PT}\right)^{(\eta K - 1)/\eta K} + (1 - \zeta K)\left(K^{PN}\right)^{(\eta K - 1)/\eta K}\right]^{\eta K/(\eta K - 1)} \tag{21.26}$$

where $\zeta K \in (0,1)$ is the share of capital in the traded goods sector in the steady state, and $\eta K > 0$ is the elasticity of substitution between K^T and K^T. The aggregate rental rate of capital is thus given by

$$r^K = \left[(\zeta K)^{\eta K}\left(r^{KT}\right)^{1-\eta K} + (1-\zeta K)^{\eta K}\left(r^{KN}\right)^{1-\eta K}\right]^{1/(1-\eta K)} \tag{21.27}$$

which implies that, with perfect capital mobility in the long run, $r^{KN} = r^{KT} = r^K$.

The savings-investment balance (obtained by consolidating the budget constraints of the private and public sectors) is given by[10]

$$\begin{aligned} D_{+1} - F_{+1} = {} & \left(1 + r^W\right)D - Y^T + C^T + I^P + I^{GT} - \left(1 + r^F - \phi^F\right)F \\ & - \left[\psi^R + \left(1 - \psi^R\right)\tau^R\right]p^R Y^R, \end{aligned} \tag{21.28}$$

where $D = D^P + D^G$ is the economy's total stock of external debt.

Finally, the interest rate earned by the country's sovereign fund, r^F, is equal to the constant risk-free world interest rate, r^{WR}, whereas the market cost of foreign borrowing is set equal to the world risk-free rate and a risk premium, PR:

$$r^{WR} = \left(1 + r^W\right)(1 + PR) - 1 \tag{21.29}$$

In turn, the risk premium is positively related to the country's government debt-total output ratio:

$$PR = PR_0\left(D^G{}_0/Y\right)^{pr1} \tag{21.30}$$

where PR_0, $pr1 > 0$ and Y is aggregate output, defined as

$$Y = p^R Y^R + Y^T + z^{-1}Y^N. \tag{21.31}$$

Finally, the overall and the nonresource primary balances are defined as

$$opb = (1-\chi)\tau^R p^R Y^R + \tau^{NR}\left(Y^T + z^{-1}Y^N\right) + T^L - G \tag{21.32}$$

$$nrpb = \tau^{NR}\left(Y^T + z^{-1}Y^N\right) + T^L - G. \tag{21.33}$$

Steady State

The steady-state equilibrium of the model is described in detail in Agénor (2016). Most of the equilibrium conditions are standard; in particular, from

the Euler Eq. (21.11a), the steady-state world interest rate is given by the standard expression $r^W = \Lambda^{-1} - 1$. And from (21.11c), the economy-wide rental rate of capital is equal to $(1 - \tau^{NR})\, r^K = r^W + \delta^P$, whereas from (21.8) and (21.9), private investment is equal to $I^P = [\delta^P K^P / (K^I/K^P)^{1-\varphi K}]^{1/\varphi K}$, with the standard case (no direct complementarity, or $\varphi K = 1$) corresponding to $I^P = \delta^P K^P$.

Calibration

The model is now calibrated using various data sources, including DRC's National Institute of Statistics and the Central Bank of Congo, the World Bank's African Development Indicators (ADI), the IMF's World Economic Outlook (WEO), as well as parameter estimates from Agénor (2016) and various other papers.

For households, the intertemporal discount factor is set at 0.898, based on the estimates of the real interest rate and the depreciation rate of private capital provided below. The intertemporal elasticity of substitution, ς, is set at 0.2, in line with the evidence for low-income countries reported in Agénor and Montiel (2015). The Frisch elasticity of labor supply is set at 0.125 (implying that $\psi = 8$) to capture a fairly inelastic supply of labor. This is a fairly reasonable assumption for a low-income country like DRC. The preference parameter η_L is set at 0.14 to account for a weak effect of leisure on household utility. The share of nontradables in total consumption, θ, is set at 0.56, as in Rabanal and Tuesta (2013) for instance. The fraction ψ^R of the share of resource revenues not going to the government but instead to domestic households is assumed to be 0.1; thus, 90 percent of the resource income that is not going to the government budget accrues to non-residents.

The share of capital in the nonresource tradable sector, ζK, is calibrated at 0.6, to capture that the nonresource tradable sector is more capital intensive than the nontradable sector. The elasticity of substitution between nonresource-traded and nontraded goods, ηK, is set to 0.4, to capture a relatively low degree of substitution across production sectors. The rate of depreciation of private capital, δ^P, is set at 0.045, a fairly standard value. To capture initially high adjustment costs to private capital, the parameter κ is set at 25. The direct complementarity effect of public capital on private investment, φK, is assumed to be absent initially, which implies that $\varphi K = 1$. The sensitivity analysis with a positive value (i.e., a lower value of φK) will be discussed later.

The relative sizes of the different production sectors are calculated, based on the data published in the annual report of the Central Bank of Congo (2013, Table I.2). The size of the resource sector, which corresponds to $p^R Y^R/Y$ in the model, is calculated as the share of extraction industries in total GDP at factor cost—the relevant concept in the model—in 2012, that is, 31.3/95.4 = 32.8 percent. The size of the nonresource tradable sector in 2012, which corresponds to Y^T/Y in the model, is estimated by adding the nonresource primary sector (namely, agriculture, forests, etc.) to manufacturing industries, that is (9.0 + 7.8)/95.4 = 17.6 percent. Thus, the size of the nontradable sector in 2012, which corresponds to $z^{-1}Y^N/Y$, in the model, is determined residually and is given by 1–0.328–0.176 = 49.6 percent.

For the resource sector, and given the previous discussion about the magnitude of DRC's natural resources, the degree of persistence in production, ρyR, is taken to be very high at 0.96, and the standard deviation of the nonsystematic shock ε^{yR} is set at 0.1. For resource prices, the degree of persistence, ρyR, is set at 0.93 and the standard deviation of the nonsystematic shock ε^{pR} is set at 0.25, as in Maliszewski (2009).[11]

For the nonresource sector, elasticities of production with respect to labor, βN and βT, are set equal to 0.7 and 0.6, respectively, to capture the fact that production in the nontradable sector is relatively more labor intensive than production in the nonresource tradable sector (βN > βT). The elasticity of output with respect to public capital, ω, is set at 0.17, which corresponds to the long-run value estimated through meta-regression analysis by Bom and Ligthart (2014, Table 4) for core public capital. Thus, public infrastructure is equally productive in the production of tradables and nontradables.

Regarding the government, the fraction of resource revenues saved in the sovereign fund, χ, is set initially equal to 0. The initial stock of assets in the sovereign fund, F, is set at 1 percent of GDP (assumed to correspond to an initial lump-sum transfer from the government), whereas the coefficient ϕ^F, which measures the management fee paid to non-residents, is set as in Agénor (2016) at 0.25 percent of the stock of assets held in the fund.[12] The interest rate on assets held in the sovereign wealth fund, r^F, is set at 4 percent initially, and sensitivity analysis is conducted later on.

According to IMF data, total revenue and grants amounted to 20.1 percent of GDP in 2012 (corresponding to T/Y in the model), whereas total expenditure amounted to 19.6 of GDP in the same year. To abstract from debt accumulation, it is assumed that the overall balance, 0.5 percent of GDP, corresponds to the share of transfers to households in GDP. The

share of resource revenues in total revenues, corresponding to T^R/T in the model, is estimated at 26.5 percent, based on the calculations of Lundgren et al. (2013, Table 1) for 2010. To calculate τ^R, the formula $T^R/T = \tau^R p^R Y^R/T = \tau^R(p^R Y^R/Y)(Y/T)$ is used; given the above numbers, this formula gives $0.265 = \tau^R(0.331)(1/0.201)$, or $\tau^R = 16.1$ percent. In the same vein, to calculate τ^{NR} the formula $T^{NR}/T = \tau^{NR}(Y^T + z^{-1}Y^N)/T = \tau^{NR}[(Y^T + z^{-1}Y^N)/Y](Y/T)$, which gives, given the data provided earlier, $1 - 0.265 = \tau^{NR}(1 - 0.331)(1/0.201)$, or $\tau^{NR} = 22.1$ percent.[13]

The initial ratio of noninterest current spending in GDP, G/Y, is set equal to the share of total (interest-inclusive) expenditure in GDP for 2012, 19.6 percent, minus debt service after debt relief, 1.9 percent of GDP in 2012, and minus infrastructure investment, which is estimated by the World Bank at 2 percent of GDP in 2012 (of which 1.5 of GDP on road infrastructure). This gives $G/Y = 15.7$ percent. Thus, components of capital expenditure other than infrastructure investment in the budget data are treated as current expenditure.[14] Given this result, the share of infrastructure investment in total government spending, υ^G, can be estimated as $(I^G/Y)(G/Y)^{-1} = 0.02/0.157$ or equivalently $\upsilon^G = 12.7$ percent. As noted earlier, the steady-state solution of the government overall fiscal balance (22), which gives $T = r^W D^G + G$, is thus used to calibrate the initial value of lump-sum taxes, T^L, as a proportion of GDP.

The parameter that captures the allocation of investment in infrastructure to nontraded goods, υ^{GN}, is set at 0.62, within the range of estimates of the share of nontradables in total investment for Côte d'Ivoire, Gabon, Ghana, and Uganda reported by Bems (2008, Table 8). There are no direct data available for the efficiency of public investment in infrastructure in DRC; using the average value for the 30 sub-Saharan African countries (excluding South Africa) in the sample compiled by Dabla-Norris et al. (2012, Table 1), the efficiency parameter for public investment, φ, is set at 0.37.[15] The parameter φ_1 is set at the low value of 0.05 initially, which implies that φ_0, which is solved for residually, is equal to 0.33. The rate of depreciation of public capital, δ^P, is set at 0.035, a fairly standard choice.

External public debt as a share of GDP, D^G/Y, is set equal to 27.1 percent, which is equal to the ratio of general government gross debt to GDP in 2010, as estimated in the IMF's WEO database. Thus, all public debt is assumed to result from foreign borrowing. From the estimates compiled by Boyce and Ndikumana (2012, Table 1), the stock of private capital flight for DRC in the same year represented a staggering 258.4 percent of GDP.[16] Thus, the economy's net stock of external debt, as a share of GDP, can be calibrated at 27.1–258.4 = 231.3 percent. By this

metric, in the initial equilibrium, the country is a net creditor to the rest of the world. However, as noted earlier, due to market imperfections only the public debt matters in the determination of the risk premium.

The world risk-free interest rate (in foreign-currency terms), r^{WR}, is set initially at 0.017, which corresponds to the difference between recent averages on nominal yields on US treasury 30-year bonds and an average rate of US inflation of 2.0 percent. To estimate the country risk premium, and given that there are no data available for DRC, the spread on sovereign bonds issued by Kenya on international financial markets is used. Recent averages on nominal yields on 30-year sovereign bonds issued by that country is 13.3 percent; the risk premium (in foreign-currency terms) can thus be calculated as $[(1+0.113)/(1+0.017)]-1 = 0.094$. This also implies that the household discount factor is equal to $1/(1+0.113) = 0.898$, as noted earlier.[17] Finally, the elasticity of the risk premium with respect to the debt-output ratio, pr1, is set at 0.8 initially, and sensitivity analysis is reported later on.

Macroeconomic Effects and Optimal Allocation of Resource Windfalls

We now turn to estimate the macroeconomic effects of resource windfalls, together with an analysis of optimal allocation rules. First, the model is log-linearized in the vicinity of the initial steady state to obtain its solution.[18] We then consider an unanticipated and temporary positive shock to the real price of natural resources by 10 percent. The resource windfall corresponds therefore to the log-difference between actual resource revenues and their steady-state value (as defined in the log-linearized version of the model), weighted by their initial steady-state value.

Macroeconomic Effects

The properties of the model are illustrated using two extreme cases: a *full spending* case, where the windfall is spent entirely by the government (in proportions given by the initial composition of public expenditure), and a *full saving* case, where the windfall is entirely accumulated in the sovereign fund, and only the interest income is transferred to the budget and used to finance government spending. This second scenario is thus consistent with the PIH approach discussed earlier.

Consider first the *full spending* case. The direct effect of the windfall is an increase in revenues for the government and a positive wealth effect for domestic households. In turn, the increase in spending raises the demand for nontraded goods, and this leads to a real appreciation. The real appreciation in turn generates standard expenditure-switching effects on the demand side, and a shift toward production of nontradables, which raises the demand for labor in that sector. To maintain equilibrium in the labor market, the product wage (measured in terms of the price of nonresource tradable goods) must increase. This increase, however, is less than proportional compared to the movement in the real exchange rate, implying that the product wage in the nontradable sector falls. There is therefore a shift on the supply side toward the production of nontradables.

Simultaneously, the increase in private consumption raises the demand for leisure and lowers overall labor supply; hence, total employment falls, as workers reallocate from the nonresource tradables to nontradables. The expansion of the nontradable sector exceeds the drop in the production of nonresource tradables, implying total output growth. This tends to increase nonoil tax revenues. And because public debt is fixed, the debt-to-output ratio falls, lowering the risk premium. The reduction in the world interest rate also tends to reduce today's consumption through the intertemporal effect, thereby magnifying the initial increase associated with the wealth effect. However, the rate of return to private capital also falls, implying a drop in private investment and the rate of accumulation of private capital as well. At the same time, capital shifts gradually toward the nontradable sector and sustains expansion there.

Because the increase in government revenues is distributed across all components of expenditure, both public consumption and investment expand in the same proportion. The impact of higher public investment on the stock of public capital is partly mitigated by a drop in investment efficiency due to a relaxation of absorption constraints. However, because the private capital stock falls over time, the public-private capital ratio increases gradually, thereby increasing productivity of private inputs and promoting activity in the nonresource tradable and nontradable production sectors. Indeed, the increase in the public-private capital ratio raises the marginal product of labor, thereby contributing to the employment recovery. Activities in both sectors increase over time. The increase in government spending is large enough to translate into a weakening of the nonresource primary balance, despite the increase in nonresource tax revenues.

Overall, under full spending, a resource windfall generates the typical Dutch disease effects. However, the expansion in public investment and public capital stock (despite being mitigated by a drop in the efficiency of investment spending) attenuates these effects over time, as the increase in public capital benefits the supply side. These results are consistent with other studies that have emphasized the productivity effects of infrastructure.

Consider next the *full saving* case. Assets held in the sovereign fund increase rapidly as a share of output—the speed itself being a function of the size of the shock and its degree of persistence—and stabilize at about 250 percent of GDP. As described earlier, the interest income from the fund is used to finance both government consumption and investment, in line with initial spending allocations. The key difference with the previous case is that spending does not increase proportionally; it will rise only gradually over time. Because domestic households benefit to the same extent, private consumption rises just as before. The direct, *partial equilibrium* effect is an appreciation of real exchange rate, which induces the supply-side effects described earlier. However, because government spending is constant, and private investment falls, the increase in the supply of nontradables dominates the change in demand; the *general equilibrium* effect now is a *depreciation* of the real exchange rate (in contrast to the full spending case), together with a shift in production toward nontradables. Over time, because public investment increases, the public capital stock also rises, despite a drop in efficiency. As before, the public-private capital ratio increases over time. However, the deterioration in the nonresource primary balance is now more persistent.

To further illustrate how the transmission process of commodity price shocks is affected by our choice of parameters, two sensitivity tests were conducted in the full spending case: (a) the case where the sensitivity of the efficiency of spending on infrastructure parameter with respect to the ratio of public investment to public capital, $\varphi 1$, goes from -0.05 to -0.5 (see Eq. (21.21)), which captures stronger absorption constraints related to the government's capacity to select, implement, and manage investment projects, and (b) the case where the sensitivity of the risk premium to the public debt-to-output ratio, pr1, increases from 0.05 to 0.4 (see Eq. (21.30)), which captures higher sensitivity of world capital markets with respect to the domestic country's external debt position. In both figures, the continuous (blue) line corresponds to the benchmark case, whereas the dotted (red) line corresponds to the alternative scenario. Broadly speaking, the results are qualitatively similar to those discussed earlier. In the first case, for instance,

stronger absorption constraints mean a much larger drop in the efficiency of public capital on impact; consequently, the accumulation rate of public capital is weaker. Over time, this exerts negative effects on output in *both* nonresource sectors. In the second case, the initial drop in the risk premium documented earlier is also stronger, implying the drop in private investment while private consumption increases (through the intertemporal effect). Therefore, the appreciation of the real exchange is also more significant, which translates into a larger output expansion of nontradables and a stronger contraction of nonresource tradables, compared to the benchmark case described earlier.

Several other sensitivity tests could be conducted, regarding other parameters of the model—for instance, the elasticity of output with respect to public capital in production, or the share of labor in each sector. However, while these exercises can be of interest in their own right, we opt to focus on the main issues of this chapter—the optimal allocation of resource windfalls between spending today and spending tomorrow, through accumulation in a resource fund.

Optimal Allocation Rule

Here, we follow closely the approach proposed by Agénor (2016). Conceptually, the issue is to find the fraction $\chi \in (0,1)$ of the oil windfall that needs to be allocated to a sovereign fund, as defined in (15), and the fraction $1-\chi$ allocated to spending today. With $\chi < 1$, the government raises not only spending today but also all future spending by using some of the current windfall to increase its assets held in the sovereign fund. Formally, the optimal value of χ is determined so as to minimize a social loss function, $L(\chi)$, defined as a weighted geometric average of the volatility of private consumption (a measure of household welfare), V_C, and the volatility of the nonresource primary balance as a share of nonresource output, $V_{NRPB-NRY}$:

$$L(\chi) = (V_C)^{\mu}(V_{NRPB-NRY})^{1-\mu} \tag{21.34}$$

where $\mu \in (0,1)$ is the relative weight attached to household welfare.[19] Thus, if the government sets policy solely on the basis of household welfare (respectively, fiscal stability) considerations, then $\mu = 1$ (respectively, $\mu = 0$); in the general case, the higher μ is, the smaller the concern with fiscal stability. An alternative stability criterion is to determine χ so as to minimize

a generalized social loss function that involves a weighted average of the volatility of private consumption (as before) and a measure of macroeconomic volatility, defined in terms of a weighted average of the volatility of the nonresource primary balance as a share of nonresource output and the volatility of the real exchange rate (Agénor 2016).

Numerical experiments, using (unconditional) asymptotic variances, to calculate V_C and $V_{NRPB-NRY}$, show that the loss function (34) is convex (or U-shaped) in χ. The intuition behind this result, as discussed in Agénor (2016), is as follows. Spending all the revenues associated with a windfall creates a lot of volatility in the economy. As χ increases, more of the windfall is saved; the reduction in today's spending tends at first to reduce that volatility. However, as χ continues to rise, the interest income from the assets held in the sovereign fund becomes larger, and this tends to raise spending over time—thereby increasing volatility once again. Put differently, there is a *dynamic volatility trade-off* between spending now and spending later. The exact nature of this trade-off depends on a number of factors—the persistence of the price shock, the interest rate (net of management fees) on assets held in the sovereign fund, the efficiency of public investment, and so on.

Table 21.2 shows the minimum value of the loss function (34) and the associated optimal value of χ, for μ varying between 0 and 1 with a grid of 0.1, for a range of experiments. As noted earlier, for each value of μ, there is a U-shaped relationship between the loss function and χ; for lack of space, only the optimal values are reported. The first block in Table 21.2 shows these optimal values when the nonresource primary balance-to-nonresource output ratio is used to calculate fiscal volatility, as defined earlier (i.e., $V_{NRPB-NRY}$). The results indicate that if policymakers in DRC are only concerned with fiscal volatility ($\mu = 0$), then 50 percent of the windfall should be saved. By contrast, if they are only concerned with consumption volatility ($\mu = 1$), then the windfall should be entirely spent. In practice, one would expect policymakers to be concerned about both types of volatility. Thus, if we assume as a benchmark case, that policymakers are *equally* concerned with consumption and fiscal volatility, then it is optimal to save about 30 percent of the windfall.[20] This estimate can be refined by doing a finer grid search at intervals of 0.01 for instance instead of 0.1. We have done so in a few cases where the one-decimal grid search did not generate a clear difference when performing sensitivity analysis. Although these results are not reported here, it can be shown for instance that, in the interval

Table 21.2 Minimum loss function and optimal share of saving in a sovereign wealth fund, alternative scenarios 1/

	μ										
	0	*0.1*	*0.2*	*0.3*	*0.4*	*0.5*	*0.6*	*0.7*	*0.8*	*0.9*	*1*
Benchmark parameters											
Nonresource primary balance to nonresource output											
Minimum loss function	61.9	56.9	52.2	47.7	43.6	39.6	36.0	32.5	29.2	26.2	23.3
Optimal value of c	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.2	0.1	0.1	0.0
Nonresource primary balance to total output											
Minimum loss function	121.5	104.5	89.7	76.7	65.4	55.5	46.9	39.6	33.2	27.9	23.3
Optimal value of c	0.6	0.5	0.5	0.4	0.3	0.3	0.2	0.1	0.1	0.0	0.0
Overall primary balance to total output											
Minimum loss function	21.2	21.6	22.0	22.4	22.8	23.2	23.4	23.6	23.7	23.6	23.3
Optimal value of c	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.1	0.0
General index of macroeconomic volatility 2/											
Minimum loss function	12.9	13.9	14.9	16.0	17.1	18.2	19.3	20.3	21.3	22.4	23.3
Optimal value of c	0.5	0.5	0.5	0.4	0.4	0.3	0.2	0.2	0.1	0.0	0.0
Sensitivity analysis 3/											
Higher elasticity of output to public capital 4/											
Minimum loss function	61.9	80.4	104.3	134.7	174.1	223.6	286.6	365.5	463.7	587.0	737.7
Optimal value of c	0.5	0.5	0.4	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.0
Lower return on SWF 5/											
Minimum loss function	53.4	49.5	46.0	42.7	39.6	36.6	33.8	31.0	28.4	25.7	23.2
Optimal value of c	0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.2	0.1
Complementarity effect 6/											
Minimum loss function	63.1	64.3	65.3	66.4	67.5	68.4	69.0	68.9	68.3	67.7	67.1
Optimal value of c	0.5	0.4	0.4	0.4	0.4	0.3	0.2	0.0	0.0	0.0	0.0
Higher elasticity of risk premium 7/											
Minimum loss function	67.3	62.6	58.3	54.1	50.2	46.6	43.0	39.7	36.5	33.3	30.3
Optimal value of c	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.3	0.2	0.2	0.1

Full spending of interest income on infra investment											
Minimum loss function	71.1	67.9	64.5	61.0	57.3	53.4	49.4	45.6	41.8	38.3	35.2
Optimal value of c	0.5	0.4	0.4	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0

Notes:
1/ The table shows results for the Fundamental Loss Function unless otherwise stated
2/ Represents values for the loss function in terms of consumption volatility and macroeconomic volatility, defined using weights of 0.5 on both fiscal volatility (defined in terms of the nonresource primary balance to nonresource output) and real exchange rate volatility
3/ In all cases the loss function used involves the nonresource primary balance to nonresource output
4/ Increase in w from 0.17 to 0.22
5/ Decrease in rF from 4 percent to 3 percent
6/ Strength of the complementarity effect $j_K = 0.4$ instead of 1
7/ Higher pr1 from 0.25 to 0.4

0.4–0.5 of the benchmark case, the optimal value of χ for $\mu = 0.2$ is 0.44 rather than 0.4.

The second and third blocks in Table 21.2 show the values of the minimum loss function and the optimal value of χ when alternatively the fiscal volatility measure is based on (a) the nonresource primary balance over total output and (b) the overall primary balance over total output. In practice, these two measures are often used in fiscal policy analysis, so it is worth considering their performance in the context of these experiments. In addition, the fourth block of the table shows the results for the minimum loss function and the optimal χ when a more general index of *macroeconomic* volatility, involving not only the volatility of the nonresource primary balance as a share of nonresource output but also the volatility of the real exchange rate (with equal weights), is used, as in Agénor (2016). Although the results differ slightly from the benchmark case, they are remarkably consistent; the lower the concern with fiscal/macro volatility (the higher μ is), the smaller the proportion of the windfall that should be saved. Put differently, fiscal volatility is a key consideration when deciding whether and how much of a resource windfall should be set aside in a sovereign fund.

Sensitivity Analysis

To assess the robustness of the results established in the previous section, we considered changes in some key parameters and variables. The focus here is on the implications of these changes for the optimal allocation of resource windfalls between spending today and spending tomorrow, that is, the optimal value of χ, rather than their implications on the transmission mechanism of resource shocks to the economy—even though these implications are of interest in their own right.

Specifically, the following changes are considered: higher elasticity of output with respect to public capital, as measured by a value of ω of 0.22 instead of 0.17, consistent with the results in Agénor and Neanidis (2015); lower rate of return on assets held in the sovereign wealth fund, as measured by a value of r^F of 3 percent instead of 4 percent; stronger direct complementarity effect between public capital and private investment as measured by a value of φK of 0.4 instead of 1.0; higher elasticity of the risk premium with respect to the debt-to-output ratio as measured by a value of pr1 of 0.4 instead of 0.25; and full spending of interest income (following a resource windfall) on infrastructure investment, which is equivalent to setting υ^G to unity, from the initial steady-state value of 0.127.

The results of these experiments are reported in Table 21.2, using the original and preferred measure of fiscal volatility. In all cases, and as before, the weaker the concern with fiscal volatility is (the higher μ is), the larger the proportion of the windfall that should be spent today. However, in the benchmark case where policymakers are equally concerned with consumption and fiscal volatility (i.e., $\mu = 0.5$), the optimal value of χ varies across some of these experiments. In particular, in the case of a lower rate of return on the assets held in the sovereign funds, the optimal value is substantially higher at 0.6; by contrast, with full spending on investment, the optimal value is about 0.1. These results are fairly intuitive; with a lower return, more resources must be saved to achieve the same level of spending; otherwise, lump-sum transfers must fall and this would increase volatility in consumption. When all resources are spent on investment, output and nonresource revenues are higher, implying that the lower interest income associated with reduced accumulation of assets in the fund is mitigated. For all other experiments, the results are quite close to those obtained in the benchmark case—with equal concern for consumption volatility (household welfare) and fiscal volatility, it is optimal to save about one-third of a resource windfall into a sovereign fund.[21]

Finally, it is worth noting that in the case of a negative shock, the intuition is symmetric, with χ representing now the proportion of the resources that are *taken out* of the sovereign fund. With small withdrawals (χ low), the adverse shock creates volatile environment, in particular through a concomitant contraction in government spending. As χ increases (more and more resources previously saved are withdrawn from the fund), the adverse effect of the initial shock on spending is mitigated and volatility decreases at first. But as χ continues to rise and public outlays increase, volatility starts increasing again—albeit at a slower rate now, given that the interest income (which is also spent) generated by the lower level of assets held in the sovereign fund becomes smaller. Thus, the relationship between the loss function (34) and the parameter χ takes again a convex shape.

Conclusion

Managing natural resources effectively, in an environment of volatile commodity prices, continues to be a challenge in many developing countries. This chapter contributes to the ongoing debate on fiscal management rules that aim, in response to resources windfalls, to allocate sufficient resources to meet a country's needs in infrastructure investment—a critical step not

only to promote economic activity but also to achieve education and health outcomes—while at the same time maintaining fiscal and macroeconomic stability.

The main policy implication of the chapter in the context of DRC is that setting-up a SWF (in the form of a savings account) would help further improve DRC's fiscal policy, protect the economy against the volatility of resource price, strengthen fiscal buffers, and smooth consumption and maintain price stability.

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Notes

1. Collier et al. (2010), van der Ploeg (2011), IMF (2012), Lundgren et al. (2013), and van den Bremer and van der Ploeg (2013).
2. While Agénor's model considers a hypothetical low-income country, this paper is the first to apply the model to an actual country case.
3. Using Atlas method, for details see http://econ.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,contentMDK:20452009~menuPK:64133156~pagePK:64133150~piPK:64133175~theSitePK:239419,00.html.
4. Artisanal mining production in DRC was estimated at 90% in 2008 and the number of persons directly and indirectly dependent on this activity was estimated at 8 to 10 million, about 14–16% of DRC's population (World Bank, 2008)
5. For a recent review of the literature on sovereign wealth funds, see Alhashel (2015). Additional information can also be referred from Gelb et al. (2014) who discuss the pros and cons of a country's SWF being directly involved in domestic development finance.
6. In what follows, the time subscript t is omitted when there is no risk of confusion.
7. Agénor (2012, Chapter 1) for a discussion of congestion effects and alternative ways of measuring them in models with public capital.

8. See Agénor (2014) for details. In solving this optimization problem, it is assumed that the household does not internalize the complementarity effect; this is equivalent to setting $\varphi K = 1$ in (8).
9. Note that Eq. (21.16) applies only when solving for the optimal value of χ.
10. Equation (21.28) is obtained by combining Eqs. (21.10), (21.13), (21.15), (21.17), (21.22), (21.23), and (21.24), and noting that $I^G = I^{GT} + z^{-1} I^{GN}$.
11. Maliszewski's (2009) study focuses on oil prices; we use the same numbers for resource prices in general, given that these prices tend to exhibit strong co-movements.
12. Because the model is log-linearized near an initial steady state, an initially positive value of F is needed. The results are not much affected in a value smaller than 1 percent of output is used.
13. These calculations assume implicitly that the share of grants is also fixed as a share of GDP.
14. This is a reasonable assumption given that the model does not capture the stock effects of other productive components of public investment, on education and health for instance.
15. Dabla-Norris et al. (2012) define their metric on a range of 1 to 4 with an average value of 1.47 for the 30 countries; this value was simply divided by 4 to obtain an indicator between zero and unity.
16. The average for Sub-Saharan Africa in the same year was 78.7 percent.
17. This expression is derived from the steady-state relationship between the world interest rate and the discount factor, $r^W = \Lambda^{-1} - 1$.
18. The model is solved using DYNARE. An appendix summarizing the log-linearized equations is available upon request.
19. See Baunsgaard et al. (2012) for a more general discussion of the nonresource primary balance as an indicator of fiscal sustainability. Here we follow Lundgren et al. (2013, p. 34), in using nonresource output as a scaling variable.
20. It is worth noting that this value of χ is significantly lower than the value of 0.5 estimated in Agénor (2016) for a 'representative' low-income country, in the benchmark case where the government attaches equal weights to consumption volatility and fiscal volatility. This is consistent with the evidence, which suggests that following years of conflict, infrastructure needs in DRC are very high—even compared to other countries at the same level of per capita income.

21. Of course, a finer grid search of 0.01 would show more differences across the simulation results, given that a grid of 0.1 is not always sufficient to pass judgment. This would be the case, for instance, when comparing the results of the benchmark experiment with the case of a higher elasticity of output with respect to public capital, ω; for a benchmark value of $\mu = 0.5$ for instance, the optimal value of χ is 0.3 for $\omega = 0.22$, instead of 0.31 for $\omega = 0.17$.

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Note: Page numbers followed by "n" refers to notes.

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