



# Introduction and Overview

*Dominik Kopiński and Pádraig Carmody*

With capital scarcity and urgency to kick-start development, foreign direct investment (FDI) has been considered a holy grail in many African capitals in recent decades, and particularly since the advent of structural adjustment programs (SAPs) from the late 1970s onwards, sponsored by the World Bank and International Monetary Fund (IMF). Understood as cross-border investment geared toward purchasing domestic assets or creating greenfield ones, but involving a long-term relationship, rather than one-off financial transactions, FDI offers plenty of potential benefits to host countries. FDIs may not only bring jobs, foreign exchange, tax

---

D. Kopiński (✉)

Institute of Economics, University of Wrocław, Wrocław, Poland  
e-mail: [dominik.kopinski@uwr.edu.pl](mailto:dominik.kopinski@uwr.edu.pl)

P. Carmody

Department of Geography, Trinity College Dublin, Dublin, Ireland  
School of Tourism and Hospitality, University of Johannesburg, Johannesburg,  
South Africa

P. Carmody

e-mail: [carmodyp@tcd.ie](mailto:carmodyp@tcd.ie)

revenues, and help to boost the country's exports, but also enable local firms to access knowledge generated overseas that otherwise would not be readily available. They are often also considered instrumental in spurring industrialization and structural transformation, which in most places on the continent still remains elusive.

No wonder FDI enjoys special treatment in African countries that have adopted a range of often expensive measures to attract foreign investors and “roll out the red carpet” for them, often in race-to-the-bottom fashion. This raises a question of the efficiency of scarce public funds used for the purpose of encouraging foreign firms to invest in Africa. In actuality, it turns out that FDI may be easier to attract than benefit from. Many FDI's have failed to bring about the positive effects policy-makers and perhaps African societies alike hoped for, and some have destroyed jobs, crowded out indigenous firms, damaged the environment, and abused fragile tax systems. Probably nowhere is this double-edge nature of FDI more pronounced than in Africa, where historic skepticism toward FDI, and its association with colonialism is compounded by the historically thorny relationship with global capitalism more generally. FDI has been often seen as a form of neo-colonialism, particularly when it is viewed using the dependency theories lens.

Against this backdrop, FDI-induced knowledge transfer and how it can play a role in the structural transformation of the continent is something this book seeks to unpack. More specifically, it asks whether Chinese FDI contributes to the structural transformation of African economies, as suggested by some observers. Productive knowledge should be understood more broadly here than is common and encompasses foreign technology, skills, managerial techniques, product qualities, and other ideas that might potentially bring about changes in productivity.

The seeming obsession with raising productivity might certainly seem odd. Productivity is of course not everything, however, to cite Nobel laureate Paul Krugman, in the long term it is almost everything, as it allows the “pie to grow”, allowing for further reinvestment, innovation, and social distribution of surplus in a positive sum way. Understandably, Africa, which is lagging behind the rest of the world in productivity measures, is eager to catch up by tapping into the existing productive knowledge, although there have been concerns expressed in recent years that the structure of global value chains allows most productivity gains to be captured by lead firms in global value chains, generally headquartered in more advanced economies (Selwyn and Leyden 2022).

Seen as “mastering ways of doing things” economic or productive knowledge can be accessed via various channels, among which FDI is considered a valuable contribution (Farole and Winkler 2014). In a sense, foreign companies with their superior technology entering the host market can be likened to contagious diseases in the way in which they may spread impacts, in a manner similar to public goods, i.e., once knowledge is made available—or “leaked”—it can be enjoyed by many actors in a non-rivalrous and non-excludible way. In turn, once this leaked knowledge is tapped into by local firms and used to increase productivity, it then amounts to an effect called spillover, if these companies have the requisite capacities and technology to engage in learning and absorption and are not more disadvantaged by the greater competitiveness of foreign investors. And if these microeconomic effects snowball and ignite deeper, structural changes in the entire economy, it can become a powerful driver of industrialization. Some Asian “miracles” provides robust evidence of how this may actually materialize (Rasiah 1995; Cheyng and Lin 2004; Liu 2008).

Importantly, bringing knowledge from abroad is not sufficient to bring structural change, as this book succinctly and determinatively demonstrates. First, local firms need to exist and to be able to appreciate and absorb foreign knowledge, and more importantly—put it into productive use. This requires certain skills, technological literacy, sometimes prior knowledge, research and development (R&D) investment, etc. According to one scholarly camp, drawing their inspiration, among others, from the work of Findlay (1978) and more generally from the Veblen-Gerschenkron effect (Gerschenkron 1952; Peri and Urban 2006), the larger the knowledge gap between FDI home and host countries and firms, the more effective knowledge assimilation will be. Other scholars assume that being too technologically distant may actually hinder rather than helps to adapt foreign knowledge because the gap in capabilities is too big to be bridged (Glass and Saggi 1998). Nonetheless, some kind of technological gap is needed for knowledge to be effectively absorbed and utilized, as otherwise, local firms are already operating at, or close to, the technological frontier. Although it is also important to qualify this as not all FDI is created equal. Not all foreign firms bring new productive knowledge—some multinational companies set up their presence with low-technology goods, that offer few learning opportunities to local firms. Others use entry modes that supposedly limit spillovers, such as greenfield projects (as opposed to, for instance, acquisitions), or

operate in manufacturing enclaves with little interaction with domestic industries. Secondly, some sectors are by their very nature less spillover spawning—for instance, it has been long suspected that mining, due to its high capital and import intensity, involves less learning opportunities than (Singer 1950), even though commodity-driven industrialization has not been ruled out (Kaplinsky 2011). Thirdly, some host countries are institutionally more conducive to knowledge transfer than others. They may not offer macroeconomic stability, give few incentives or encouragement to investors or protect them from coercive or rent-seeking bureaucrats or politicians. Here particularly local content policy, which this book looks at in a number of chapters, is vital. Finally, drawing on the works of Albert Hirschman, who is rightly considered a founding father of development economics, linkages are something to focus on, before one tackles spillovers. Without sufficient linkages, i.e., industrial interactions between firms, knowledge transfer will be crippled, and with it productivity improvements in the local economy.

### IS CHINESE FDI DIFFERENT?

As noted above Western FDI has often been seen to be extractive on the continent. It has historically been heavily concentrated in mining and other extractives, which have produced a perceived association with the “resource curse”. While much Chinese FDI has also flowed into extractives its patterns are sometimes thought to be more diverse, with many new greenfield projects in manufacturing for example.<sup>1</sup> Indeed, some go so far as to suggest that Chinese manufacturing FDI is making Africa into “the next factory of the world” (Sun 2017), although this seems overblown given the general and continuing trend toward deindustrialization on the continent (Carmody et al. 2020). However, the continent has also been the site of multifarious contracted overseas projects (COPs) in infrastructure in particular, such as railways, roads, and power stations. While this is not FDI as such, these “investments” have potentially important implications for Africa’s industrialization (Calabrese 2022) such as through creating a more connected local economic ecosystem, for example.

<sup>1</sup> Although Calabrese (2022) notes that while the UK invests very little in manufacturing in Africa the pattern for France, the USA, and China in this regard is very similar.

There are a variety of reasons why Chinese FDI might be different from Western-originating flows. These include: (1) potentially different sectoral composition, with different linkage, spillover, and other effects, (2) the fact that large state-owned enterprises (SOEs) take a leading role in Chinese investment and are subject to political oversight and motivation, and the fact that many of them want to offshore excess capacity away from China, (3) that Chinese firms may operate at more appropriate technological levels that can be more easily absorbed by local firms. Wegenast et al. (2019) demonstrate that Chinese-controlled companies are generate fewer local jobs compared with non-Chinese foreign firms as a result of their “inwardness”. Chinese multinational companies (MNCs) are also often less concerned with compliance with local sourcing policies and thus function differently at managerial and operational levels (Rui et al. 2017).

Lee (2017) notes that some Chinese SOEs engage in what she calls “encompassing accumulation” in Africa: that is that they also respond to their home government incentives around ensuring access to supplies of critical natural resources for the Chinese economy for example. They are able to accommodate these imperatives because they are not driven by quarterly stock market returns in the way that Western-originating corporations are. They also, indirectly, have access to other resources that Western corporates do not, such as the world’s largest foreign currency reserves of over three trillion dollars in China. This meant, for example, that whereas many Western or other originating corporates cut back their investments in the copper industry in Zambia in the wake of the North Atlantic Financial Crisis, some Chinese SOEs saw it as a buying opportunity, earning them plaudit for “staying power” or loyalty in the process (Carmody and Hampway 2010). Nonetheless, Chinese FDI also has similarities, including drawbacks, with Western-originating investment, and consequently, its transformative potential should not be overdrawn.

The answer to the question of whether or not Chinese FDI is different then is a qualified yes, depending on the type of capital involved: state-backed or “flexible” (Camba 2020). Flexible capital is similar to Western capital which is profit focused in orientation, but the Chinese state still has significant oversight over notional capital through instruments, such as subsidies, Communist Party cells, and the National Intelligence Act of 2017, which forces companies to hand over data to the Chinese state if requested (Zufle 2023). This gives Chinese FDI a politicized character

that many others do not have and this is compounded by the fact that for example according to Shi and Li (2019 quoted in Large 2021: 162),

In Zambia, a ‘pyramid of power’ exists within Chinese associations from the Chinese embassy at the top, to associations and individual Chinese and companies; some associations ‘may even take orders directly from home-land governments (provincial and municipal) and promote subnational and party policies within the Chinese community in Zambia.

This means that Chinese FDI is embedded in what can be called the “webpower” of the Chinese state. While this is packaged in the rhetoric of win-win globalization and South-South cooperation, the primary objective of this structure of power is to promote economic growth and development in China and thereby secure the continued rule of the Chinese Communist Party (CCP). This suggests that there is no particular political incentive to promote linkages and/or spillovers in external FDI host countries, although this varies depending on things like local sourcing and content agreements, for example. However, in some cases, Chinese firms have breached agreements on local content, in the building of Kenya’s Standard Gauge Railway, for example, arguing that local suppliers are insufficiently reliable to source from.

This is not so much the question of Chinese firms, but African economies in general, but also ongoing structural changes in China, and global capitalism (?).

This book broadly addresses these questions.

In Chapter 2, Dominik Kopyński and Pádraig Carmody elaborate on the general context of the political economy of FDI and spillovers on the African continent. They depart from the concept of FDI, noting that it has enjoyed special treatment across Africa, despite the continent’s historically thorny relationship with global capitalism. They point out that the development pay-off of FDI is not automatic, and foreign capital is often much easier to attract than benefit from. They further proceed to discuss the central concept of the book, which is spillover effects, and the, often neglected in the debate, Hirschmanian linkages, which are instrumental in technology transfer. This setting of the stage is followed by a discussion on Chinese investment and its potential role in Africa’s transformation and duplicating the trajectories of industrialization in other parts of the world. In this, they discuss some celebratory

accounts arguing that China is not just assisting Africa with industrialization but in fact, turning it into “the next factory of the world”, but also more sobering views regarding the role of China, highlighting the detrimental role of African elites, certain features of Chinese-style capitalism and the fact that with China’s economic clout having grown on the continent, African countries have been experiencing deindustrialization rather than the industrial upgrading.

Chapter 3 by Dominik Kopyński examines in more detail the macroeconomic and microeconomic effects of FDI. It offers a comprehensive overview of the FDI literature spanning several decades and analyzing more than a hundred FDI-related publications. It seeks to provide a nuanced perspective on the effects FDI has on economic growth, the balance of payments, trade, wages, or employment in the host countries. As the literature is very diverse and far from conclusive on what FDI actually does to the host country’s economy, particularly in the long term, and particularly in low-income countries, there is no shortcut in explaining forces at work and various aspects that might affect the final verdict on whether FDI contribution to development is positive or not. As bitterly pointed out by Lipsey and Sjöholm that “on almost every aspect of this question there is a wide range of empirical results in academic literature with little sign of convergence” (Lipsey and Sjöholm 2005: 23). This chapter is particularly concerned with the so-called spillover effects that happen to be the central theme of the book, the multiple channels through which spillovers can materialize, and the factors that determine them. By doing this, the chapter paves the way for the empirical investigation in Angola and Zambia, which heavily borrows from the wealth of the literature on the topic and is structured according to its findings.

Chapter 4 by Pádraig Carmody and Dominik Kopyński aims to provide a critical overview of the existing China-Africa spillovers. They note that given the Chinese economic presence on the continent since the launching the going out strategy at the turn of the millennium has now spanned more than two decades, with billions of dollars invested across the continent, and across diverse sectors. It is conspicuous that the effects of these investments remain under-researched. They also noted despite relatively few rigorous studies, scholars’ general views on the contribution of Chinese firms to Africa’s development somehow appear to have tilted toward a somewhat positive perspective. They point out that one of the reasons may be a diverse landscape of Chinese economic presence that blur the picture—from building infrastructure to trade and

mounting debt. In fact, if the focus is narrowed down to linkages and spillover effects, the empirical evidence demonstrating their occurrence, particularly in an economy-wide fashion, is modest. In this chapter, they also point out various methodological pitfalls the China-Africa academic community needs to consider in order to properly examine the Chinese footprint, such as confusing knowledge transfers with knowledge spillovers or over-generalizing based on sectoral studies. The chapter concludes with a preliminary explanation of the absence of spillover effects, which is a springboard section to explore the relationship more deeply further in the volume.

Chapter 5 by Jarosław Jura and Dominik Kopyński addresses conceptual and methodological challenges that the authors have encountered while investigating linkages and spillovers in Angola and Zambia. These challenges are couched in a wider problem termed “Eurocentrism”, a term originally coined by Samir Amin, which has been inspirational for legions of scholars, and consequently “conceptual Eurocentrism”, popularized by Gareth Austin who points out that using concepts derived from Western science to analyze “Africa’s past”, particularly its economic history, is ill-advised, as many terms assumed to be universal by Western economists cannot be usefully applied when investigating the development trajectories of African economies. In this spirit, Jura and Kopyński critically look at the scholarly attempts to scrutinize Chinese FDI and its effects, particularly spillover effects. They begin their discussion with the terms FDI and MNCs which have been axiomatic pillars of the spillover literature, yet as the fieldwork that the authors conducted in Angola and Zambia showed, their practical suitability may be questionable. Three types of conceptual biases are diagnosed in the chapter. Firstly, most FDI and investment-like activity in Africa is carried out by small and medium Chinese firms, which either have no headquarters back in China or are registered in Africa with no traceable cross-border capital transactions. Secondly, although many Chinese business activities in Africa are not FDI, they may potentially still contribute to linkage formation and technology transfers. Thirdly, while Chinese MNCs may in theory conform to the Western definition, beyond the formal facade many are MNCs in little more than name. This chapter is concluded with a discussion on the advantages and disadvantages of different methodologies scholars utilize to undertake spillover studies and a postulate that “multimethodology” research technique should be considered more widely.

Chapter 6 opens the empirical part of the book, where fieldwork



findings are discussed in various dimensions. In this chapter, Jaroslaw Jura and Paulo de Carvalho shift the spotlight to the institutional and cultural obstacles hindering the emergence of Chinese spillover effects in Angola. Their findings are derived mostly from 61 in-depth interviews conducted in Angola in 2019 and 2022 with foreign diplomats, local journalists, academics, officials, politicians, and Chinese entrepreneurs. In terms of institutional constraints, they point to the strong presence of the state in both Angola and China and the Angola post-war realities that necessitated large-scale infrastructure projects which were mostly underpinned by bilateral contracts. The top-down approach and state-driven policy made it more difficult to adjust those projects to local needs, which in turn has not yielded the expected developmental outcomes. They also make the general case for a more detailed analysis of cultural constraints, and of how things such as informal network-based business relations compounded by deep-running mutual mistrust or attitudes toward corruption and exchanging favors affect the transfer of knowledge and FDI spillovers in Angola.

In Chapter 7, Andrzej Polus explores the political and institutional context behind the (lack of) spillover effects arising from Chinese private investments in Zambia. He argues that dysfunctional institutions in Zambia are to be primarily blamed for a lack of spillovers, which he likens to mythical unicorns—whose appearance and behavior are well described, despite the fact they do not actually exist. This disappointing lack of spillovers is partly down to the fact that the political elite has not changed, and the class of professional civil servants needed has not been created. Polus uses the concept of “habitus” developed by Pierre Bourdieu and finds no arguments rebutting the claim that the institutional habitus developed during the Second Republic had changed/disappeared after 1991. In this he underscores the role of corruption, yet observes that this phenomenon is the effect of the durable dispositions rooted in Zambian institutions—dispositions that allow ineffectiveness and the seizure of state funds and where control over an institution is regarded as providing informal permission to derive personal benefits by politicians and office holders. Polus concludes that these are crippled and underperforming institutions that should be seen as a force working against the spillover effects.

Chapter 8 by Hangwei Li unpacks profiles, motives, and features of Chinese investors in Zambia and Angola. She draws on two rounds of

fieldwork conducted in 2019, when the project team visited and interviewed 50 Chinese companies in Lusaka, Zambia and Luanda, Angola (25 in each country). Li observes that despite some similarities, Chinese firms operating in Africa are very heterogeneous, which looms particularly large when seen through the lens of “varieties of capital” (Lee 2017). She also points out that contrary to some folk wisdom circulated in the West, which assumes that Chinese investors are closely connected to the Chinese government or even act as sleeper cells, Beijing does not interfere with their daily operations. Interestingly, some private investors expressed frustration at the lack of support available from the Chinese government, policy banks, or the Bank of China in their business dealings on the continent. Li then proceeds to examine different motivations driving Chinese ventures in Angola and Zambia, observing that these are not only pull factors that explain the investors’ ventures into the continent (big markets, growth potential, etc.), but increasingly more push factors, such as intense domestic competition, ongoing structural changes in the Chinese economy and excess capacity. She also debunks several misconceptions regarding labor localization, quoting one manager who notes that Chinese owners want to “fire as many Chinese workers as possible and replace them with locals”, as they are becoming too expensive to retain versus available labor force.

In Chapter 9, Wojciech Tycholiz focuses on the absorptive capacity of the industrial sector in Zambia, departing from the premise that in order for linkages and spillovers to occur, a country requires relatively robust and well-functioning local industries. He draws on the case of the manufacturing sector in Greater Lusaka Areas and fieldwork conducted among domestic manufacturing firms. There are many interesting insights from this research regarding both Chinese investors and the state of the Zambian economy. Firstly, Chinese investors and Zambian companies rarely intersect and/or cooperate, thus linkages are rare, let alone spillover effects. Not only do Chinese firms tend to operate in manufacturing enclaves or bubbles, but also local, non-indigenous firms, which are, perhaps surprisingly, often entities run by Zambians of Indian ancestry. The dualism of the local manufacturing sector represents one of our study’s major findings. Tycholiz proceeds to explain this seeming enclave character of Chinese manufacturing, pointing to three general problems: structural disarticulation of the local economy, its small size, and specific endogenous characteristics of the Chinese investors. In conclusion, he quotes Gallagher and Zarsky (2007: 101) who bitterly pointed

out that “expecting FDI to automatically stimulate economic growth and transform industry – and designing policies accordingly – is more likely to generate enclaves than spillovers”. Sadly, the empirical evidence he presents in the chapter supports this view.

In the concluding Chapter 10, in their quest to shed light on scant linkages and spillovers associated with Chinese FDI Jarosław Jura and Kaja Kałużyńska tackle two inter-related questions: First, how are Chinese investments in Africa truly perceived in the region? And, second, has this followed the same downward trend seen in the overall image and perception of China and the Chinese in Africa. The authors have studied African media’s image of China and the Chinese for almost a decade, and they still come across discrepancies between what is written in the media and what is said by local people. Here they utilize data harvesting to screen African media images of Chinese investments, with what they consider the most important Chinese “image generator”—the official gazette of the Central Committee of the Chinese Communist Party. Jura and Kałużyńska point out that there is a great disconnect between declarative effects peddled by pro-government African media, which resemble China’s *People’s Daily*, and the realities on the ground, which are strikingly less impressive. They explain this approach by a number of factors, such as scant funding for journalistic investigations, lack of transparency, and the general opacity compounded by the African side. They, however, also observe an emerging shift as Chinese loans beginning are increasingly perceived more as a burden for both countries than a means of supporting development. They offer a conclusion that reveals a rather sorry picture of China’s involvement. Heralded as the dawn of a significant developmental push for Africa, there is little to support the enthusiasm.

## REFERENCES

- Calabrese, L. (2022). *Industrialising Africa: Why China’s Investments Matter for Africa*. <https://www.theigc.org/blogs/industrialising-africa/industrialising-africa-why-chinas-investments-matter-africa#:~:text=The%20majority%20of%20China’s%20financing,all%20firms%20on%20the%20continent>.
- Camba, A. (2020). The Sino-centric Capital Export Regime: State-Backed and Flexible Capital in the Philippines. *Development and Change*, 51(4), 970–997. <https://doi.org/10.1111/dech.12604>.
- Carmody, P., & Hampwaye, G. (2010). Inclusive or Exclusive Globalization: The Impacts of Asian-Owned Businesses in Zambia. *Africa Today*, 56(3), 84–102.

- Carmody, P., Kragelund, P., & Riberedo, R. (2020). *Africa's Shadow Rise: China and the Mirage of African Economic Development*. London: Zed.
- Cheying, K., & Lin, P. (2004). Spillover Effects of FDI on Innovation in China: Evidence from the Provincial Data. *China Economic Review*, 15(1), 25–44.
- Farole, T., & Winkler, D. (2014). Making Foreign Direct Investment Work for Sub-Saharan Africa. In *International Bank for Reconstruction and Development/The World Bank*. <https://doi.org/10.1596/978-1-4648-0126-6>.
- Findlay, R. (1978). Relative Backwardness, Direct Foreign Investment, and the Transfer of Technology: A Simple Dynamic Model. *Quarterly Journal of Economics*, 92(1), 1–16. <https://doi.org/10.2307/1885996>.
- Gallagher, K., & Zarsky, L. (2007). *The Enclave Economy: Foreign Investment and Sustainable Development in Mexico's Silicon Valley*. Cambridge, Mass: MIT Press.
- Gerschenkron, A. (1952). Economic Backwardness in Historical Perspective. In B. F. Hoselitz (Ed.), *The Progress of Underdeveloped Areas*. University of Chicago Press.
- Glass, A. J., & Saggi, K. (1998). International Technology Transfer and the Technology Gap. *Journal of Development Economics*, 55(2), 369–398. [https://doi.org/10.1016/S0304-3878\(98\)00041-8](https://doi.org/10.1016/S0304-3878(98)00041-8).
- Kaplinsky, R. (2011). *Commodities for Industrial Development: Making Linkages Work*. UNIDO Working Paper 01/2011.
- Large, D. (2021). *China and Africa: The New Era*. Medford: Polity Press.
- Lee, C. K. (2017). *The Specter of Global China: Politics, Labor, and Foreign Investment in Africa*. Chicago and London: University of Chicago Press.
- Lipsev, R. E., & Sjöholm, F. (2005). The Impact of Inward FDI on Host Countries: Why Such Different Answers? In T. H. Moran, E. M. Graham & M. Blomström (Eds.), *Does Foreign Direct Investment Promote Development* (pp. 23–43). Washington DC: IIE.
- Liu, Z. (2008). Foreign Direct Investment and Technology Spillovers: Theory and Evidence. *Journal of Development Economics*, 85(1), 176–193.
- Peri, G., & Urban, D. (2006). Catching-up to Foreign Technology? Evidence on the “Veblen-Gerschenkron” Effect of Foreign Investments. *Regional Science and Urban Economics*, 36(1), 72–98. <https://doi.org/10.1016/j.regsciurbeco.2005.09.001>.
- Rasiah, R. (1995). Foreign Capital and Industrialization in Malaysia. In *Foreign Capital and Industrialization in Malaysia*. Palgrave Macmillan UK. <https://doi.org/10.1057/9780230377585>.
- Rui, H., Zhang, M., & Shipman, A. (2017). Chinese Expatriate Management in Emerging Markets: A Competitive Advantage Perspective. *Journal of International Management*, 23(2), 124–138.

- Selwyn, B., & Leyden, D. (2022). Oligopoly-driven Development: The World Bank's Trading for Development in the Age of Global Value Chains in Perspective. *Competition & Change*, 26(2), 174–196.
- Singer, H. W. (1950). The Distribution of Gains Between Investing and Borrowing Countries. *American Economic Review*, 15, 473–485.
- Sun, I. Y. (2017). *The Next Factory of the World: How Chinese Investment Is Reshaping Africa*. Cambridge: Harvard Business Review Press.
- Wegenast, T., Krauser, M., Strüver, G., & Giesen, J. (2019). At Africa's Expense? Disaggregating the Employment Effects of Chinese Mining Operations in Sub-Saharan Africa. *World Development*, 118, 39–51.
- Zufle, S. (2023). *The Political Economy of China's Belt and Road Initiative in East Africa*. Cham: Springer.