CHAPTER 11

Global Migration of Talent: Drain, Gain, and Transnational Impacts

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11.1 Introduction

An increasing part of globalization is the international competition for highly skilled professionals to fuel technology-driven developed and emerging economies. Tertiary educated emigrants and international students and alumni are the primary conduits of human capital transfer. Recent data suggest a steeply increasing trend in the proportion of high-skilled emigration to total emigration, reaching 35 percent by 2000 or an estimated 24 million, the majority from source countries in the Global South settled in OECD (Organization for Economic Co-operation and Development) countries[1] (Docquier and Rapoport 2012). This global competition for 'talent', particularly in the STEM fields, has implications for the educational and employment aspirations of youth in developing economies who often see study abroad and emigration as a promising avenue for income and professional advancement. Shortages of medical personnel in many industrialized countries, in part the result of aging populations, has also increased

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the demand for medical professionals and contributed to 'medical brain drain', particularly from sub-Saharan Africa, the Caribbean, and the Philippines. Whether or not the emigration of talent is a net gain or net loss for sending countries depends in large part on the 'return' trajectories of emigrants and, for those who may never return, the nature of their continued connectedness with countries of origin. It also depends, fundamentally, on the parallel investment in the quantity and quality of developing country institutions of higher education and employment generation for highly skilled graduates.

Studies on brain drain tend to differentiate trends in international student mobility from trends in emigration of skilled labor 25 years and older who were educated in their home countries. Nevertheless, the 'push' and 'pull' factors explaining the emigration decisions of young professionals are similar to those explaining decisions to study abroad, as well as whether and when to return to countries of origin. In this chapter, we first review the brain drain debate. Next we present relevant data on talent mobility, including international student mobility, focusing on consequences for human capital formation and institutional development in source countries. We conclude by developing a set of policy implications for mitigating 'brain drain' and capitalizing on the growing potential of diaspora and transnational communities to stimulate economic development and social change in countries of origin.

11.2 The Brain Drain Debate: A Review of the Literature

The economic literature generally defines 'brain drain' as the proportion of tertiary educated population that has emigrated from a country. In some data sets, this group is restricted to emigrants 25 years and above to gauge permanent skilled migration versus student mobility (Docquier et al. 2009; Capuano and Marfouk 2013). Which countries are more likely to experience an exodus of skilled human capital? According to Docquier and Rapoport, the highest rates of tertiary educated emigration are observed in the lower-middle income countries, "where people have both the incentives and the means to emigrate" (2012, p. 684). Regionally, the highest rates of brain drain are found in the Caribbean, the Pacific (Oceania), Central America, and sub-Saharan Africa (Docquier et al. 2009). About one in three of sub-Saharan African emigrants had tertiary education in 2000. Globally, countries with 30 percent or higher skilled emigration in descending order include: Haiti, Sierra Leone, Ghana, Kenya, Laos, Uganda, Eritrea,

Somalia, El Salvador, Rwanda, and Nicaragua (Capuano and Marfouk 2013, from Docquier et al. 2009).

The debate on brain drain relates to the 'winners' and 'losers' at a national or subnational level. Those who argue emigration leads to brain drain claim the majority of tertiary educated emigrants from developing countries are educated in government subsidized institutions of higher learning established to build human capital for national development. Hence a direct loss for source countries occurs when a country's human capital is depleted through permanent or long-term emigration at the expense of governments, further exacerbated by lost future tax revenues (Capuano and Marfouk 2013). Another argument for why emigration leads to delayed development is concern for the radically reduced supply of innovators needed to drive economic growth and social change. This is especially relevant for smaller source countries with skilled emigration rates of 30 percent or higher. While a counter argument is that these individuals provide remittances which can be growth stimulating, clearly private remittances cannot compensate for the societal losses sustained by source countries, as noted in Collier (2013).

A number of economists have countered brain drain concerns by hypothesizing that skilled emigration may actually lead to 'brain gain' for source countries under certain conditions. They argue that the prospect of emigration to countries with higher returns to education induces greater investment (public and private) in education and skills acquisition to prepare for employment or study abroad. Net brain gain results when more individuals are propelled to invest in higher education (or invest more per capita) than actually succeed in out-migrating, leading to a net increase in the stock of highly educated residents. A study by Beine et al. (2008) shows mixed results on brain gain from a data set of emigration rates by education levels for 127 developing countries.

The data show slight brain gain for larger developing countries, including the major emerging economies of China, India, Brazil, and Indonesia, whereas small- and mid-size countries with mid-level tertiary enrolment combined with skilled emigration rates of 20 percent or higher experience brain drain without the compensatory brain gain. Worldwide, there are more losers than winners, and, whereas the net gains of the winners rarely exceed 1 percent of the skilled labor force, "in contrast the losses of the losers can be substantial and exceed 10 percent in many small Caribbean and Pacific countries" (Beine et al. 2008, p. 26). Furthermore, increased tertiary enrolment rates may be the result of factors unrelated to the

prospect of out-migration, namely, increased government emphasis and spending on higher education.

The literature is clear that immigrant remittances mitigate the private losses of skilled emigration. However, we can agree that remittances[2] do not take the place of fiscal investments in education or lost tax revenue, nor do they replace the resident talent needed for development.[3] Under what circumstances may remittances contribute to brain gain and other positive social changes in source countries? When skilled emigrants come from low-income households, remittances tend to go toward basic needs, school fees, and farms and other small businesses, improving the livelihoods and future economic prospects of migrant families and their communities through positive externalities. Further, remittances can substitute for missing or 'thin' markets for rural credit, health insurance, and social security. Remittances also serve as a form of savings for skilled emigrants aspiring to return home in circumstances that allow them to live well and establish businesses or accept positions in academia or government with less than competitive compensation. These positive externalities will be less impactful when skilled emigrants, including international students, come from upper middle class or high-income households.[4] Evidence indicates their remittances are largely spent on higher end consumption, often in real estate.

A study by Gibson and McKenzie (2011) provides evidence of heterogeneity across countries in sending remittances. These authors analyzed remittance data for over 6000 skilled emigrants living in 11 OECD countries and found that for most sending countries, less than half of tertiary educated migrants send remittances. They also found a strong negative correlation between source country per capita income levels and proportion of skilled emigrants who remit; hence, the poorest countries benefit most from remittances. For instance, less than 20 percent of highly educated Mexican and Chilean emigrants remit, compared to over 60 percent for Senegal and the Democratic Republic of Congo.

Further evidence of skilled emigrants from Africa sending remittances back to source countries can be found in a recent retrospective mixed methods tracer study of African alumni of international universities. Marsh et al. (2016b) found that 60 percent of alumni who remained abroad contribute remittances to their home countries, often to pay school fees for siblings and other relatives, and to support aging parents. The same study found that beyond consumption remittances, 40 percent of African alumni living in the

diaspora are making productive investments in their home countries, in some cases paving the way for an eventual return.

Another growing pathway through which highly educated emigrants are contributing to home countries has been described as 'brain circulation'. There are significant benefits to a source country's capacity for innovation and productivity when the outflow of talent turns homeward with state-of-the-art skills, capital, and international connections. One way to look at brain circulation is brain gain to both the source and receiving country. Recent literature suggests that the 'Asian Tigers'—Hong Kong, Taiwan, South Korea, and Singapore—have profited significantly from brain circulation and, after decades of brain drain, brain circulation is increasingly the story of China and India. There is also evidence that an increase in patenting activity by foreign-born inventors leads to an increase in foreign direct investment to immigrant countries of origin (Docquier and Rapoport, cited in Foley and Kerr 2011, p. 710). In the volume, The International Mobility of Talent: Types, Causes, and Development Impact, the editor asks, "*when can talent mobility serve sending countries?*" (Solimano 2008, p. 13), and the success stories of the aforementioned countries are presented as case studies.

While it is intuitively clear that high rates of skilled emigration can delay and impede institutional and political development in source countries, especially where return rates are low and there is little evidence of brain circulation, there are some examples that suggest positive political change arising from skilled emigrant influences. For instance, studies from Cape Verde, Mexico, and Senegal have demonstrated how households with migrants are more likely to participate in political processes for change such as voting and lobbying (Collier 2013). With radically reduced transaction costs for communication, emigrant communities can be in constant contact with their home communities and are poised to play a role in influencing economic decisions, political alliances, and core values which can lead to institutional change. Precisely because of the potential influence of skilled emigrants, authoritarian governments tend to be suspicious of their diaspora populations and may try to thwart the types of positive externalities that more open societies enjoy. There is considerable evidence of the strong influence on democratic governance by foreign trained nationals who return home, bringing with them not only technical knowledge but exposure to the democratic principles and processes of the country of study (Batista and Vicente 2011; Collier 2013; Chauvet and Mercier 2014).

11.2.1 The Special Case of Medical Brain Drain (MBD)

One field where the case of brain drain has been argued quite convincingly is in health care. Most foreign health professionals recruited and absorbed into OECD economies were fully educated and trained in their home countries, representing a double or triple loss for source countries in terms of educational investment, drain of scarce medical personnel, and foregone tax revenue. These losses are only partially attenuated by remittances. Studies have paid particular attention to medical brain drain (MBD) from countries of sub-Saharan Africa with very high patient-to-doctor ratios and poor public health indicators. The Philippines and Caribbean nations are also large suppliers of health talent to OECD countries, particularly nurses and elder care specialists. High rates of emigration by doctors and nurses are directly in response to the difficult working conditions, poor facilities, and low pay in source countries, on the one hand, and the privileged position of doctors and skilled nurses in the USA, Canada, and Europe, on the other. Even when foreign doctors are denied positions commensurate with their training, their situations are usually better than at home. As conditions in hospitals and clinics improve in countries of origin, there is the possibility and some evidence of return migration.

Several studies (Clemens and Pettersson 2006; Leipziger 2008; Uwaifo-Oyelere 2011; Docquier and Rapaport 2012; Capuano and Marfouk 2013) show data that substantiate significant MBD from Africa: 19 percent for the entire continent and 28 percent for sub-Saharan Africa, with widely varying rates for individual countries. Data on African-born health professionals employed abroad show that approximately one-fifth of African-born doctors (65,000) and one-tenth of African-born professional nurses (70,000) were employed overseas in a developed country in 2000. The 16 countries with 50 percent or higher proportion of physicians practicing abroad are Angola, Cape Verde, Congo, Equatorial Guinea, Ghana, Gambia, Guinea Bissau, Kenya, Liberia, Malawi, Mozambique, São Tome, Senegal, Tanzania, Zambia, and Zimbabwe. When South Africa is included as a destination, the rates are higher, particularly for Zimbabwe and other bordering countries. Average rates of MBD were found to be lower outside of Africa, about 13 percent in South Asia, and less than 10 percent in other regions (Clemens and Pettersson 2006).

An analysis by the World Bank on talent mobility concludes that policies to induce expatriate doctors to return home with moderate financial incentives are unlikely to be effective (Leipziger 2008). The income and work

environment differences are too great. Similarly, policies to restrict recruitment of foreign doctors and nurses on ethical grounds, notably in the UK, have not substantially reduced MBD. Nevertheless, there are many examples of health professionals who have studied and worked abroad and returned to their countries to become leaders in medical schools, research institutes, and health ministries, many at the forefront of controlling the HIV-AIDs pandemic. The US National Institutes for Health Fogarty Program sponsored dozens of African and Asian physicians to pursue graduate degrees in epidemiology and other public health fields in the USA, with return rates exceeding 80 percent, and even higher if employment with international agencies such as UNICEF and Centers for Disease Control and Prevention (CDC) is included (Marsh et al. 2016b). The newly appointed first director of Africa CDC, Dr. John Nkengasong, for instance, pursued his PhD in Europe and further study in the USA and now returns to Africa, "to provide strategic direction and promote public health practice within Member States" (The African Union Commission 2016).

In sum, increasing rates of high-skilled emigration, pulled by the global competition for talent from universities and science-driven industries, continue to drain human resources from countries with limited higher education and economic opportunities. For the larger source countries with dynamic economies, primarily in Asia, the brain drain is being redressed with high rates of return migration and sometimes delayed return after decades abroad, as well as the growth of transnational knowledge networks and joint ventures led by expatriates and diaspora communities, so-called brain circulation. Receiving countries are clear 'winners' in the global talent competition, particularly the high-tech corporate sector and internationalizing universities. For those countries left behind, a range of policy responses are available to reverse or mitigate the negative consequences of the exodus of their professionals and highly talented students—policy instruments that require separate and joint actions by receiving and source countries. Where there is bound to be a substantial lag before these high emigrant regions and countries can compete in skilled labor markets, the option of engaging their expatriates in productive exchanges is an important intermediary solution. These policy directions will be addressed in the final section of the chapter.

11.3 Trends in International Student Mobility

International student mobility and the transfer of human capital across borders have grown significantly in the twenty-first century. Globalization has played a major role in facilitating this movement. The expansion in transportation technology, internet access, mobile technologies, and other similar innovations have all fostered the movement of human capital across borders. Tertiary educated emigrants and international students who remain in their countries of study are the primary conduits of human capital transfer.

One of the indirect benefits of globalization is the desire of more students to gain experience outside their home country. According to UNESCO's Institute of Statistics (UIS), there are currently over 4.5 million globally mobile college and university students, a significant increase from 4.1 million in 2013 (UNESCO-UIS 2016; IIE 2016a). According to UIS data, the number of international students has tripled since 1990 and doubled since 2000. Projections to 2025 vary from a low of 5 million to a high of 8 million foreign students (Guruz 2008). Still, today the percentage of international students is only 2 percent of tertiary enrollment globally (an estimated 4 percent in the USA, over 10 percent in top receiving European nations), a reminder that most higher education is still received locally (UNESCO-UIS 2016). Given demographic trends and the high cost of an international education, we expect that most of the burgeoning demands for higher education in the Global South will be met through the growth and expansion of local public and private universities. Permanent emigration of individuals who receive tertiary education locally will continue to be an important channel through which brain drain occurs.

Where do these students go and which countries are they coming from? The USA is the leading host with over one million international students in the 2015/2016 academic year or about 20 percent of the total (IIE 2016a). The second largest host of international scholars is the UK with about 10 percent. The next ten top receiving countries for international students in descending order are France, Australia, Germany, Russia, Japan, Canada, China, Italy, South Africa, and Malaysia (IIE 2016a).

While developed countries host more international students currently, the last decade has shown signs of changes in the direction and flow of where students study globally (British Council 2015). Recent data from UIS show the enrollment share of the top five destination countries declined from 56 percent in 2000 to 50 percent by 2013 (UNESCO-UIS 2014).

Emerging and growing destinations for global students in Asia include China, Malaysia, South Korea, and Singapore, while South Africa continues to be a strong pull for students throughout Africa. Confirming the trend are data showing an increased share of international students studying within regions versus across regions over the last 15 years (ICEF Monitor 2016). For example, between 1999 and 2013, the share within sub-Saharan Africa rose from 18 percent to 22 percent. In Central and Eastern Europe, it rose from 25 percent to 40 percent, and within the Arab states, it rose from 12 percent to 30 percent, with Saudi Arabia and United Arab Emirates now both sharing the third most popular destinations for students from the region behind France and the USA (UNESCO-UIS 2014). These figures indicate a continuing expansion of higher education systems in regional destination hubs for local and international students. International students are attracted to these hubs in part because of recent tighter visa restrictions to some top destination countries (e.g. USA, Europe) and in part because of the rising tuition fees in these same countries. At the same time, regional hub universities are investing heavily in improving quality and signaling their readiness for internationally competitive students.

Data from IIE show that an estimated 12 percent of foreign students in US universities received some form of government scholarship in 2014/2015 and about 70 percent received no scholarship support (IIE 2016b, c). A large majority of international students are self-funded with personal and family resources, which explains the need and crafting of Sustainable Development Goal (SDG)-Target 4b to substantially increase the number of scholarships available to nationals of least developed countries by 2020 (Balfour 2016).[5] There is a dearth of reliable data on scholarships globally, sources of funding, countries of origin, and socioeconomic characteristics of recipients, deficiencies that will require immediate attention to ensure adequate monitoring of progress on Target 4b.

What can we learn from the trends highlighted above? First, global student mobility is growing but remains concentrated among a few countries. Second, while the developed world was the recipient of most of the inflows in the past, trends are changing and regional players in the Global South, such as China, Malaysia, Singapore, South Africa, Saudi Arabia, and the United Arab Emirates, are emerging or maturing as hosts. Finally, recent data show that the share of international students that receive scholarship support, particularly from governments, is very low with negative implications for education access and equity. SDG Target 4b aims to reduce this deficit. However, given that least developed countries are historically

more likely to experience brain drain, putting in place the right incentives to facilitate return or mitigate brain drain for countries of origin of international scholarship recipients is also imperative.

11.4 Knowledge-Based Economies and Competition for Skilled Labor

The global competition for skilled labor, particularly in STEM fields where industrial demand continues to outpace supply, is a growing component of globalization. Countries compete with one another to attract the 'best minds' to fuel science and technology-driven industries, research institutes, and universities. The process of securing the best and the brightest differs across countries depending on where they are in the development process. For fully developed countries, the strategy involves both recruiting and retaining national superior talent and, as needed, recruiting STEM talent from abroad—graduate students and professionals. For developing countries that have experienced an exodus of talent in the past, the strategy also involves facilitating the process of return migration, sometimes at odds with the interests of host countries.

There is ample evidence that the demand for products and services that draw on STEM-related expertise is expanding worldwide. For example, in the USA, between 2012 and 2016 requests by businesses for H-1B visas (foreign-worker visas) exceeded the 85,000 supply available each year. While anecdotal evidence suggests some gaming of the H1-B application process (Ghosh 2016), the demand for skilled workers in STEM fields in the USA and the inability of US natives to meet this need is real and fueling hopes for skilled emigration in many parts of the world. At present Indian nationals claim by far the largest number of H1-B visas.

In Canada, we also note policies that reflect a competition for skilled labor. Promising skilled labor permanent residency status is a huge incentive that is used to sway top talent to pick Canada as a destination versus other developed countries. The Canadian point system was adjusted in the 1980s to place more emphasis on education and skills as criteria for granting permanent residency. This change led to a large increase in emigration of highly skilled labor to Canada. The Canadian point system has been adapted for use by several other countries such as Singapore, Australia, and New Zealand.

Is the competition for skilled labor expected to decline or rise in the coming years? Dobbs et al. (2012) project by 2020 a global surplus of up to 95 million low-skilled workers and a global shortage of up to 95 million high- and medium-skilled workers. The policies and programs that competing countries put in place today will either position them as winners or losers in the bid to secure and hold on to tertiary educated labor in diverse fields. Of the 95 million new skilled jobs, the Dobbs et al. report projects nearly half or 45 million will be generated in developing countries and will require, for the most part, medium-skilled workers. This projection has important implications for investment in appropriate postsecondary training targeted to fill this demand, particularly high-quality vocational training. Although only a small fraction of future skilled workers will be educated abroad, perhaps 10 percent or less, there will be increased pressure for those on government scholarships to return home and assume lead technical and managerial positions. In the next section, we will discuss some of the policies and programs pursued by emerging and developing countries to drive return migration and facilitate brain circulation.

11.5 Source Country Policies and Programs to Incentivize Return and Brain Circulation

As highlighted above, return migration is on the rise. Some countries where brain drain was a significant issue in the twentieth century are now experiencing a return home of skilled migrants, including the delayed return of international students. In addition, some countries are beginning to leverage their diaspora populations to invest significant resources and expertise in home country industries and institutions, mitigating to varying degrees the initial brain drain effects. We consider some of the policies and programs employed by select countries both to incentivize return and to capitalize on the goodwill of successful diaspora communities to invest in their home countries. For international scholarship programs interested in promoting social change in the countries of origin of their scholars and fellows, a strategically important course of action would be to encourage alumni who remain in the diaspora to pursue professional alliances in their countries/regions of origin and to facilitate their 'giving back' irrespective of geographic location.

In 2011, 109 countries, out of the 174 countries with available data, had policies to encourage the return home of their citizens (UN Department of Economic and Social Affairs 2013). A larger proportion of developing than developed countries have such policies: 66 percent versus 54 percent. Korea, China, and India are often touted as examples of countries that have begun to enjoy the benefits of return migration. Useful questions to ask are how these sending countries have achieved this outcome and what other countries are doing to foster return migration, leverage their diasporas, and facilitate brain circulation. Jonker (2008) suggests that policies employed by governments to encourage return of skilled immigrants can be divided into three: first, incentives to build migrant networks; second, temporary return programs; and third, programs aimed at permanent return. Below we describe a few important examples across regions of policies and programs to facilitate return and brain circulation.

11.5.1 Asia

In Asia, China has become a leader in attracting back both its skilled workers and its talented students who went abroad to study (see next chapter's case study by Qiang and Dongfang for detailed explanation of Chinese government programs). China has achieved this using a multipronged approach. For example, the Chinese Academy of Sciences (CAS) launched the 'Hundred Talents Program' in 1994 and the National Talent Development Plan in 2010. Scientists selected receive research grants, housing allowances, and competitive salaries and benefits as incentives to return. More than 20,000 high-level overseas professionals have been recruited via government-sponsored return programs (Wang 2013). The Chinese government has also encouraged diaspora-based scientists to participate in national development through supporting transnational research activities. For instance, the government facilitates Chinese scientists abroad to maintain a second lab in China, enabling transfer of expertise to home-based scientists during temporary but extended periods of time. The 'Two Bases Program', set up by The National Science Foundation of China (NSFC), has an added benefit of allowing foreign-based Chinese scientists to test out the possibility of a permanent return home before making a firm commitment. The government has also created numerous 'science and technology parks' with specific provisions for luring back high-tech entrepreneurs and engineers (UN General Assembly 2006).[6] The same strategy has been successfully adopted by Taiwan and South Korea.

While slower in its attempt to foster return migration of skilled labor than China, India has also initiated several programs focused on drawing talented Indians back home. For example, several fellowship programs have been set up by the Indian Ministry of Science and Technology (MST) aimed at attracting back leading scientists of Indian origin. India's Defense Research and Development Organization (DRDO), through its Talent Search Scheme, is actively recruiting returned Indian scientists. Other government policies in India have aimed at making effective use of migrant and diaspora networks. In 2004 India set up a Ministry of Overseas Indian Affairs with the goal of engaging diaspora communities to further enhance flows of remittances, investments, and other valued resources (Jonker 2008). For instance, the MST has set up a website for science and technology Indian professionals in the diaspora to network and engage in collaborative research projects with their counterparts in India.

In the private sector, one of the most outstanding examples of brain circulation is the technology boom in India, driven in large part by successful expatriate Indians partnering with skilled peers in their home country. Saxenian (2008) documents how Chinese and Indian engineers and entrepreneurs from Silicon Valley—many with first degrees from home and advanced degrees from the USA—are reversing the brain drain, "as they return home to work, establish partnerships or start new companies, while maintaining business and professional ties with the U.S." (Saxenian 2008, p. 119). Similarly, Nanda and Khanna (2010) found that Indians who worked abroad in the software and service industries and returned to form businesses in smaller, less-networked cities of India benefitted most from the diaspora connections. Thus, the brain circulation benefits have spread far beyond the main hub of Bangalore (Docquier and Rapoport 2012).

11.5.2 Eastern Europe

While there is much discussion of potential brain drain from Asia and Africa, less is said about the significant movement of skilled workers from Eastern European countries to Western Europe after these countries joined the European Union (EU). In Bulgaria, for example, rapid emigration in the 1990s and early twenty-first century led to a significant decline in the population. The government responded in 2008 with the first National Strategy of the Republic of Bulgaria for Migration and Integration (2008–2015) and a subsequent National Strategy in the Field of Migration, Asylum and Integration (2011–2020). The reasoning behind these

strategies was to attract back the Bulgarians who live abroad and to strengthen relations with diaspora-based Bulgarians (Ivanova 2012). Innovative initiatives include 'Tuk-Tam' that connects Bulgarians who have experiences living and working abroad and 'Back2BG.com' that provides Bulgarians with education and experience abroad information on professional development and employment prospects in Bulgaria. Two similar programs to encourage return home to Poland are 'Closer to work, closer to Poland' and 'Become your own boss – stay in Poland',[7] both sponsored by the Polish Ministry of Foreign Affairs.

11.5.3 The Americas

Mexico's Council for Science and Technology, CONACYT, has a model repatriation program to incentivize scientific talent in the diaspora to return to Mexican universities and research institutes, including salary top-offs, moving expenses, and rewards for published research. Between 1991 and 2000, CONACYT funded the repatriation of nearly 3,000 researchers at a total cost of USD 57 million, a relatively small sum compared to the potential output of this community together with their international networks (Angel-Urdinola et al. 2008). In Colombia, Angel-Urdinola et al. (2008) profile CALDAS, a government program to engage expatriates worldwide to participate in academic exchanges and joint research projects as a cost-effective means to increase the country's competitiveness following a long period of political instability and high-skilled emigration.[8]

11.5.4 Sub-Saharan Africa

In Africa, as with many regions, success with return migration and fostering brain circulation are closely related to source country political stability, business conditions, and policies and programs to attract talent from diaspora communities. Marsh et al. (2016a, b) show data with a decreasing return rate of African alumni of US and Canadian universities over time from the 1970s through 2000, leveling off at about 40 percent after 2000. Return rates declined when opportunities on the continent were severely curtailed in the 1980s and 1990s, with some opening up and increasing dynamism since 2000. The Social Science Research Council study (Pires et al. 1999) on return rates of African PhDs trained in North America between 1986 and 1999 had similar findings.

Research has shown that students from Africa and other developing regions are significantly more likely to return home after study abroad if their education is sponsored by foreign aid or private foundation scholarships—as opposed to self-funding—with the expectation that knowledge gained will be used to advance development of their home countries (Pires et al. 1999; Marsh et al. 2016a, b; Angel-Urdinola et al. 2008). Nevertheless, the knowledge and skills of internationally trained scientists and professionals may be wasted if return obligations mean stagnation in poorly funded and managed institutions. Scholarship programs could incorporate more flexible return requirements to avoid these negative outcomes. Solimano (2008) found that international collaborations established while studying and working abroad, sometimes with expatriates settled in host countries, have been pivotal for enabling returning graduates to weather difficult periods and access resources and know-how during their careers.

In parts of Africa, local and multinational companies are actively recruiting African business and technology diaspora talent to return and be part of the dynamic growth of digital and mobile technology industries, with South Africa, Nigeria, Kenya, and Ghana leading the way. International companies doing business in Africa have the economic incentive to replace high cost expatriates with talented foreign-educated Africans, while Africans with return aspirations gain from the 'soft landing' into a secure job (Jobson 2014). *Homecoming Revolution: The Brain Gain Company for Africa* is a pan-African recruitment company based in South Africa dedicated to "getting African skills back on African soil". Founder Angel Jones finds that Africans will return home if they are motivated by more than a paycheck: "it has to be about long-term commitment and embracing new opportunities" (Jobson 2014).

A seriously under-tapped resource are the many foreign-born academics in the USA, Canada, and Europe who would welcome well-planned opportunities to contribute to higher education systems in their home countries. Since 2014, the Carnegie Foundation has partnered with the Council for the Development of Social Science Research (CODESRIA) to mobilize the African-born academic diaspora in the USA and Canada in revitalization of social science and humanity faculties of African universities and to further internationalization of education on both sides of the Atlantic. Reports by Zeleza (2013) for the Carnegie Foundation laid the groundwork for this program, recommending a transformation of historic brain drain into pathways for international collaboration:

> *Lest we forget, much of the academic diaspora was produced in Africa, and will always be an integral part of the institutional histories of these universities. The challenge is to turn the diaspora into the future of these universities as well as networks of intellectual resources and capacities that can help them utilize the human capital they built or nurtured at great expense and reposition the universities at home and globally.* (Zeleza 2013, p. 27)

11.5.5 Western Europe

While most efforts to encourage return are initiated in the sending country, some host country governments have established joint programs with the aim of fostering return migration. An example of a successful program based in Germany is the 'Returning Experts Program' initiated by the Center for Immigration and Development (CIM). Financed by the German Federal Ministry for Economic Cooperation and Development (BMZ), this program facilitates return migration for individuals who completed studies or professional work in Germany and show interest in returning to their home country, primarily to developing and transition economies. The program helps to reintegrate experts into development cooperation activities of their home country. According to CIM's website, the Returning Experts Program has assisted more than 10,000 persons in planning their return to their home country (CIM 2016).

11.6 Who Are the Winners and Losers from Talent-Based Immigration Policies?

11.6.1 Host Countries

Based on current evidence in the literature, it is reasonable to assume talent-based immigration is on average an economic winner for developed countries like the USA and Canada. Universities benefit significantly from international students and scholars, including the infusion of financial support. Data from IIE's Open Doors reports show that in 2015/2016, 83 percent of all international students studying in the USA were funded from non-US sources: in order of importance, personal and family funds, foreign governments, and current employers (IIE 2016b). Other benefits are associated with the high-quality scholarship of international students and their contribution in securing research grants for host country universities, in addition to the noneconomic enhancement of campus cultural

and geographic diversity. Another clear winner are the companies in host countries that depend on skilled immigrant labor, often at lower compensation for equally qualified native-born talent. Borjas (2013) estimates that immigrants increase profits of corporations in North America by an estimated USD 437 billion per year. International students who remain in host countries to pursue their careers benefit from higher salaries than in source countries, on average, although individual outcomes are heterogeneous and there are significant noneconomic costs to emigration.

In addition to the clear winners, some constituencies in host countries are losing out from immigration and may, therefore, be likely to support narrowing or closing the borders. For example, for the USA, Borjas (2013) estimates that immigrants make the US economy about 11 percent larger each year (USD 1.6 trillion) but that 97.8 percent of the increase goes to immigrants themselves in the form of wages and benefits, so the net benefit to the native-born population is trivial. This finding is a reminder that even when immigration may produce a net benefit for a country, discussions on the heterogeneity of impacts within the population are important. Recent pushback against expansion of the H-IB visa program in the USA is linked primarily with anecdotal evidence that the program may be displacing skilled Americans who have higher reservation wages. Another group that may lose out is educated minorities. Past research has provided clear evidence of discrimination against African-descendent skilled and unskilled labor in many developed countries. Borjas et al. (2010) and Kposowa (1995) have suggested negative employment effects of immigrants on black employment. While in this chapter we are focused on the impact of talent or skilled labor migration versus migration in general, it is noteworthy to mention that individuals who lack high school diplomas suffer the largest negative wage impact from immigration (Borjas 2013).

11.6.2 Source Countries

There is considerable heterogeneity in net impacts from skilled labor and student emigration on source countries. The loss of talented youth and skilled labor is particularly burdensome when home governments have subsidized their education and training without reaping the infusion of this talent into the local economy. Institutions of higher learning that forfeit scientists and researchers to the developed world lose out, as do the students who attend these universities. The special case of medical brain drain from particular regions and countries exacerbates the lack of skilled medical

personnel and health care availability, especially for poor communities. We have also noted the negative impact of high rates of skilled emigration on innovation, economic growth, and transformation of the public and social sectors.

Students seeking international study opportunities are on the rise, and it is pivotal that source countries turn these ambitions into win-win situations for scholars and their societies alike. Scholarship programs have an important role to play to ensure inclusion of non-elites and potential social change leaders as recipients. Combined with successful 'bridging back' support, these programs counter brain drain and enable source countries to benefit from knowledge transfer. The section on specific mitigating policies and programs highlighted ways that losses to home country development can be reduced through incentivizing return migration and engaging diaspora communities in transnational knowledge networks, a topic to which we return in the final section below.

11.7 Conclusions and Policy Suggestions

This chapter has affirmed assertions that brain drain, defined as emigration of tertiary educated skilled labor, is a continuing and accelerating process for developing countries across the world, particularly for small low-income countries, accentuating the lack of human capital for social and economic development (Beine et al. 2001; Solimano 2008). Hence, there is a strong rationale for source countries to encourage return of highly skilled members of the diaspora, generally, and international students, in particular, through a combination of control and incentive policies. At the same time, low- and middle-income countries often lack the resources to succeed in the global competition for talent, at least in purely economic terms, which is where encouragement of brain circulation and broad-ranged diaspora contributions can be effective strategies for engaging citizens abroad (and potentially their offspring) without requiring repatriation.

The evidence suggests that restricting emigration and student mobility through control mechanisms is less effective than incentivizing return with well-designed scholarship programs and competitive postgraduation employment environments (Angel-Urdinola et al. 2008). Furthermore, curtailing student mobility is likely to be counterproductive for source countries' short- to medium-term human capital formation.[9] Students

sponsored by foreign aid, private foundations, or national government scholarships to pursue degrees abroad are far more likely to return upon graduation than those who are self-funded or funded by host country universities (Pires et al. 1999; Marsh et al. 2016a, b). However, the real gain from return is captured when source countries have sufficient economic dynamism to absorb and utilize talent, including social mobility that opens up opportunities for management and leadership. Faced with difficult home environments, talented individuals will continue to seek opportunities to emigrate and respond positively to recruitment from other countries.

Below we list specific policy suggestions both to address some of the negative consequences for countries and constituencies left behind by the global competition for talent and to capitalize on expanding opportunities for transnational knowledge sharing. We leave for another chapter a thorough discussion of the issues and potential policy remedies for host country constituencies losing out from the influx of global talent.

11.7.1 Investment in Education and Innovation

> *Poor countries – and the development community – need to place much greater attention on reforms in tertiary education, not least because weak institutions themselves drive out the talented educators on whom successful domestic skill creation depends.* (Kapur and McHale 2005, p. 6)

The most sustainable way to compensate for loss of talent and stem further out-migration is to create or strengthen higher education and employment opportunities that utilize talent in home countries, a task made more difficult when developed countries are vying for the same talent. This chapter has shown that some emerging powers, notably China, are moving far ahead with this strategy. At the same time, the USA, Canada, and other host countries that have neglected their education and health sectors, resulting in insufficient supply of scientists, engineers, nurses, and doctors, have shared responsibility to make the necessary investments to address the shortages locally, with the accompanying benefits for their societies.

11.7.2 Incentivize Return Migration

With specific reference to encouraging the return of academics and scientists, there are clear lessons to be learned from successful incentive programs

that could be adopted more widely (Thorn and Holm-Nielsen 2008). For instance:

1. Design combined grant/loan scholarship programs that reward graduates for returning home by forgiving loans, with special incentives for joining universities outside of the capital cities (e.g. COLFUTURO, Colombia and CONACYT, Mexico)
2. Create employment for returning young scientists in science-based industrial parks (e.g. China, Taiwan, South Korea, Singapore)
3. Fund multiyear competitive grants for transnational peer-reviewed research proposals (e.g. the Millennium Science Initiative, pioneered by Chile in 1998, and expanded to Brazil, Mexico, Venezuela, Vietnam, and six countries in sub-Saharan Africa, with World Bank support: https://sig.ias.edu/msi)
4. Promote strong academic-industry linkages that foster innovation and entrepreneurship opportunities for return migrants (e.g. science clusters and production centers in Sao Paulo, Brazil)

11.7.3 Diaspora Engagement

Collaborations with increasing promise are networks of engaged diaspora communities with counterpart institutions and colleagues in their home countries. These socio-professional networks tap into the large number of skilled emigrants who remain deeply connected with their countries of origin and seek opportunities to contribute their expertise to processes of social change beyond remittances. When source country governments recognize this potential and develop supportive mechanisms, as shown in the country examples above, the networks are more likely to be fruitful and sustained. For the poorer countries, there is a strong justification for host country institutions to share in the costs of transnational scientific and social change collaboration.

Finally, increasing talent mobility, coupled with huge advances in global communications, leads to more individuals who self-identify as transnational or global citizens, and who live and work on two or more continents. Examples are the 'transnational entrepreneurs' commuting back and forth between the USA and India, Taiwan, Mexico, and South Africa; Chinese-born scientists and their laboratories in the UK availing themselves of the

Chinese government supported 'Two Bases' program, and African academics in North America joining African-based universities as Carnegie—CODESTRIA (Council for the Development of Social Science Research in Africa) Diaspora Fellows. For the smaller, low-income countries that suffer most from brain drain, it is especially important that host country institutions and international organizations actively support these transnational collaborations as well as voluntary return migration.

Notes

1. There are also important source or sending countries in the OECD such as Mexico, Poland, and Turkey.
2. There are many empirical papers on migrant remittances, skilled and unskilled, although data on the uses of remittances in sending countries is more anecdotal. See, for instance, Rapoport and Docquier (2006), Docquier and Rapoport (2012), Yang (2008), Gibson and McKenzie (2011), and Easterly and Nyarko (2009).
3. Summarized in Collier (2013, p. 221): "Lifelines keep people going (remittances), but they do not transform lives".
4. There are inadequate data on the socioeconomic background of skilled emigrants, and international students as a subset, which points to another area for future research. Collection of such data will permit more systematic analysis of the impact of socioeconomic background on return rates and remittances. Some scholarship programs (e.g. The MasterCard Foundation Scholars Program) are beginning to collect this information for their scholarship recipients.
5. "By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries" (United Nations 2015).
6. The case study that follows this chapter by Qiang Zha and Dongfang Wang provides a detailed exposition on the Chinese Government Scholarship Program.
7. For more on these programs and others, see Kaczmarczyk and Lesińska (2012).
8. Other professional diaspora networks include the South African Network of Skills Abroad (SANSA), Chinese Scholars Abroad (CHISA), the Arab Scientists and Technologists Abroad (ASTA), African Diaspora Network, and the Silicon Valley Indian Professionals Association (SIPA) (Thorn and Holm-Nielsen 2008).

9. "Preventing outflows of workers and students is not easy. It also prevents the acquisition by these individuals and to some extent by the source country of knowledge available abroad. In fact, from a policy point of view and at least in the short run, promoting emigration by workers and students (the latter probably more than the former) in order to acquire high levels of education and skills may very well be a cost efficient way to improve the quality of domestic human capital, as opposed to establishing say, universities or research institutes in the source country" (Solimano 2008, p. 186).

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