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RAIN DRAIN, WASTE OR GAIN? WHAT WE KNOW ABOUT THE KENYAN CASE

Ruth Uwaifo Oyelere

Abstract

Over the last three decades, Kenya and many other countries in Sub Saharan Africa (SSA) have experienced rapid emigration to the developed world. The general view is that emigration from developing countries especially Africa has led to brain drain and brain waste. However, recent research on emigration from Mexico provides evidence of significant gains from emigration. This recent finding highlights the importance of looking at individual countries' diasporas. In this review paper, I focus on trends in the Kenyan diaspora. More importantly, I summarize what we know from the literature and data on Kenya with respect to issues of brain drain and waste. Based on present evidence, I find that Kenya has experienced significant brain drain and waste. However, the rates of both brain drain and brain waste are on the decline for Kenya. According to a report by the World Health Organization (WHO), more than 4 million additional health professionals are urgently needed in 57 countries, 36 of which are in Sub-Saharan Africa (SSA) (World Health Organization, 2006). This report states that not enough health workers are being trained or recruited where they are most needed. Moreover, an increasing number are joining a brain drain of qualified professionals who are migrating to better-paid jobs in richer countries.

It is a hard reality that African trained human capital is leaving the continent. A comprehensive study by the International Organization for Migration (IOM) and the United Nations' Economic Commission for Africa (ECA) noted that
Africa lost 60,000 professionals between 1985 and 1990 (see Aredo and Zelalem, 1998). In addition, this study found that Africa had already lost one third of its human capital and was continuing to lose its skilled personnel at an increasing rate. According to a recent United Nations Educational, Scientific, and Cultural Organization (UNESCO) report, there are currently over 300,000 highly qualified Africans in the diaspora, 30,000 of whom have PhDs. These numbers are substantial and are used to support the argument that the scattering of Africans from the continent has led to a brain drain. The brain drain from Africa is a big concern because there is evidence of its significant negative effect on human capital growth and Africa's economic development.

The issue, however, is that Africa is very diverse and the makeup of different African countries abroad is very different because of the channels of emigration and other historical pull and push factors like language. Hence, it is very likely that though the impacts across countries in Africa may be correlated to some extent, impact differentials of each country's diaspora on the country's development could be substantial. For example, the argument that brain drain deals a double blow to weak economies in Africa is not true for some countries. Some African countries do not offer free tertiary education, and others like Nigeria have enough skilled labor still resident that they do not need to hire expatriates for many positions. Also, there is anecdotal evidence that brain drain induces positive effects in some sending countries through various channels such as remittances, return migration, and diaspora externalities. A specific example is cited in Docquier (2006) who provides evidence that positive skilled emigration rates (between 5 and 10%) can be good for development in some countries. Hence, a generalization that emigration from every African country has negative consequences might be misleading.

Given the highlighted issues above, the best approach is to consider the diaspora of each country separately. In addition, studying different groups or cohorts from a country's diaspora and highlighting the specific effects of the diaspora on the development of this country are useful. Country- or group-specific studies are likely to be more useful and informative, especially in designing policies to reverse the negative effect of brain drain and accelerate positive outcomes. This is the motivation for this country-specific analysis of the Kenyan situation within Africa.

There are several reasons for looking at the Kenyan diaspora. First, the Kenyan population abroad is one of the top 10 among African countries and is therefore a significant population to consider. Second, there is anecdotal evidence that most Kenyan immigrants experience brain waste in developed countries. This claim is disturbing and creates an extra interest in looking at Kenya specifically. Kenya is also a good country to focus on because of the interest of its government in its diaspora
and the expressed interest of the network of Kenyans abroad in development efforts in Kenya. Furthermore, Kenya is the regional hub for trade and finance in East Africa. In addition, it has high literacy and has been relatively stable and hence would be one of the natural preferences for countries to consider in SSA.

In this short review, we try to answer three questions. First, what are the findings on brain drain and labor market outcomes of Kenyan immigrants? Second, what does the literature tell us about the Kenyan diaspora in terms of costs and benefits of brain drain to Kenya? Third, what can we learn from the literature about Kenyan immigrants and brain waste? This paper provides a literature review of the Kenyan diaspora with respect to brain drain, brain waste, labor market outcomes, and the cost of brain drain to Kenya. This kind of comprehensive review paper has not been done for any African country in the past and is necessary.

**Historical Trends**

What exactly is brain drain? Brain drain is said to occur when a country becomes short of skills as people with such expertise emigrate. Alternatively, it can be described as the loss by countries of essential and needed professionals via emigration to other countries. Skilled workers included in this class are scientists, doctors, engineers, academics, nurses, managers, and other professionals who have received a tertiary education. Brain drain as a concept emerged in the 1960s triggered by the massive migration of British scholars to the United States. The early emigration of Kenyans as with most Africans was a product of colonialism. Before 1960, most Kenyan immigrants went to the United Kingdom (UK), but with time, the outflow of skilled manpower tended more to the United States. This change was triggered by the tightening of immigration policy in Britain and the need for skilled human capital in the United States. Between 1960 and 1975, higher-educated Africans migrated at the rate of about 1,800 a year. At this time, Kenya was among the top five sending countries from SSA to the United States. Other main sources included Ghana and Nigeria.

Figure 1 shows trends in Kenya’s share of African immigrants to the United Staets from 1973 through 1993. Despite hikes in certain years, Kenya’s share of Africa’s immigrants was on average between 4% and 5% between 1973 and 1993. Indeed, Kenya ranks seventh in terms of population size in Africa, but is among the top five sending countries from Africa to the developed world.

Presently, the largest number of Kenyans abroad can be found in the United States despite the pull factors like distance and colonial link that should attract Kenyans to the UK. In 2002, it was estimated that 47,000 Kenyans lived in the United States. Canada has the second largest concentration of Kenyans
in the developed world (about 20,600). The third highest is in the UK with 15,000; next is Australia with 6,900 and then Germany with 5,200. Figure 2 captures Kenyan immigration to the UK and the United States in the 1990s. Unlike the UK which had a relatively steady flow of emigrants from Kenya over the 1990s, immigration to the United States from Kenya continued to accelerate. The inception of the diversity visa lottery (DV) in the mid 1990s explains this trend. Also, over the 1990s, there was a significant increase in Kenyan immigration to Germany and Australia despite language and distance barriers respectively for these countries. The increase in Kenyan immigration to Australia is linked in part with easier transfer of skills to Australia of certain professionals like doctors. However, the increase in Germany has not been linked with any specific factor yet.

*Figure 1. Kenyans as a Percentage of African Immigrants to the United States.*
Literature Review

Though there are a number of studies discussing brain drain and its impacts theoretically, there are many fewer studies that actually try to estimate the impact of skilled migration on the home or receiving country. Within this limited literature, there are even fewer studies that look at specific African countries. Nonetheless, significant emigration of skilled capital from Africa over the last three decades has sparked researchers’ interest in the labor market experiences of these immigrants. Presently, the increased media attention on Africa’s lack of growth and the potential role of brain drain has also led to economic research on the phenomenon.

Researchers have looked at Kenya directly with regard to emigration experiences and outcomes. First, Nwachukwu (1997) examined the phenomenon of brain drain from Kenya, Ghana, and Nigeria to the United States, using a social opportunity cost model and a policy intervention model. Her results provided evidence that Kenya experienced a reduction in its national income due to the migration of its professionals. Ironically, she noted that in contrast to recent findings in Mexico, remittances did not make any meaningful reduction in the social opportunity cost of brain drain. Another interesting finding by the author was that income earnings, which were expected to affect brain drain, turned out to be relatively ineffective in
checking the outflow of professionals from Kenya. An important conclusion based on her policy analysis is that both monetary and fiscal policies are not effective government policy instruments with which to check the outflow of professionals from Kenya as well as the other countries examined. Therefore, other measures directed at altering attitudes and the choice selection process of individuals from this region should be critically looked at and pursued.

Second, Logan (1987) conducted an empirical investigation into the reverse transfer of technology (RTT) from Kenya and 16 other SSA countries to the United States between 1974 and 1985. RTT is another way of denoting the process of brain drain. He concluded based on his analysis that Kenya and Nigeria were the major contributors to RTT from Africa. He attributed this mainly to their large population sizes.

Third, Okoth (2003) examined the role of the Kenyan diaspora for development. He highlighted trends in the diaspora over different decades and the hope for change and involvement of the diaspora in nation building in the then new government of Kibaki. The fourth paper that looked specifically at migration from Kenya was Macharia (2003). This paper considered migration in Kenya and its impact on the labor market. The author highlighted causes and consequences of migration in Kenya. He argued that such causes and consequences have had an impact on labor markets at both the place of destination (mostly urban areas) and to some extent rural agricultural settlements, especially during the colonial days in Kenya. This paper, unlike the other three, provides descriptive and theoretical, rather than empirical, arguments with regard to migration from Kenya.

Kirigia, Gbary, Muthur, Nyoni, and Seddoh (2006) was the first paper attempting to estimate the costs and benefits of the brain drain of health care professionals from Kenya. The objectives of this study were to estimate the financial cost of the emigration of Kenyan doctors to the UK and the United States and also to compute the financial cost of the emigration of nurses to seven Organization for Economic Cooperation and Development (OECD) countries. The results from this paper are highlighted in the section on the social cost of brain drain.

There are no Kenyan-specific studies with estimates of brain drain and labor market experiences of Kenyans abroad. However, there is a series of studies with information on these issues for a sample of countries. The results for Kenya from these studies are highlighted in the next two sections of this paper. Information on Kenyan immigrants was also obtained from several sources including the U.S. Census Bureau, U.S. Immigration Statistics Yearbook, U.S. Citizenship and Immigration Service DV lottery results, and International Integrated Public Use Microdata Series (IPUMS). These data sources and the papers highlighted above are the basis of the conclusions presented in the rest of this paper.
Evidence of Brain Drain

Before presenting evidence of brain drain, it is important to highlight how brain drain is measured. A standard way of categorizing immigrants is as skilled or not skilled. A skilled immigrant is broadly defined as one with tertiary education. The standard measure of brain drain intensity is the skilled emigration rate. It measures the proportion of skilled immigrants to skilled workers for a country. Skilled workers include those resident and those abroad.

Another related measure is the selection rate. If immigrants are not randomly selected, then they are biased toward being skilled or unskilled depending on the country. An indicator of selection toward skilled immigrants is given by the proportion of skilled emigrants in the total emigration stock. Some countries have high selection rate but low brain drain. However, many countries have both high emigration rates and high selectivity.

There is concrete evidence of brain drain from Africa. Docquier and Marfouk (2006) noted that though SSA was only 3.7% of OECD immigrant stock, it was 4.7% of OECD skilled immigrant stock (a skilled immigrant is defined here as one with at least a college education). This means that immigrants from Africa to OECD countries are more likely to be skilled. Specifically, it’s been estimated that the share of skilled workers in all migrants from SSA is 42.6% (the highest share among developing countries). This ratio is in sharp contrast to the share of skilled workers within the population. Out of every 100 workers in Africa, only 2.8 are skilled. This share is low and could decrease further given the continued large-scale emigration of skilled capital from Africa. The lack of human capital within SSA is one major reason why emigration of skilled capital has significant consequences. Though brain drain is an issue in general in Africa, the question in this paper is whether there is evidence of significant brain drain from Kenya.

The historical trends highlighted above show that Kenya has experienced immigration to the developed world over the last 50 years. Who are these Kenyan immigrants? Does the immigration of these Kenyans constitute brain drain? According to data from Carrington and Detragiache (1998), the emigration rates of the tertiary educated population from Kenya to the United States in 1990 ranged from 9.9 to 11%, which is in sharp contrast to 0.2 to 0.3% for the secondary educated and 0.1% for the primary educated. Hence, Kenyan immigrants are more likely to be skilled. Docquier and Marfouk (2006) generalized an international data set on migration rates by education put together by Carrington and Detragiache (1998). They created a comprehensive data set on international skilled emigration to different OECD countries in 1990 and 2000. Based on this data set, they computed emigration rates to OECD countries by 2000 and presented the top 30 countries. Surprisingly, Kenya was among these 30 countries, ranking 29th.
with a skilled emigration rate of 38.4%. Kenya's high emigration rate indicates high brain drain intensity. Interestingly, if the sample was restricted to countries with population of over 5 million, Kenya ranked fourth and if among countries solely in Africa, Kenya ranked third. Similar results were found by Docquier, Lohest, and Marfouk (2006). They estimated that Kenya's skilled emigration rate to OECD countries is at 35% and 40%. This result suggests that not only is brain drain a reality for Kenya but in comparison to other African countries, Kenya has experienced one of the highest intensities of brain drain.

It is important to mention that the methodology used in the previously mentioned papers is prone to overestimation of the intensity of the brain drain and spurious cross-country variations in skilled emigration rates (Rosenzweig, 2005). This is so because in compiling the data, Docquier and Marfouk (2006) treated all foreign-born individuals as immigrants independently of their age at arrival. Hence they did not account for whether education had been acquired in the home or in the host country. Beine, Docquier, and Rapoport (2006) made correction for this possible overestimation by calculating corrected skilled emigration rates, which can be seen as intermediate bounds to the brain drain estimates highlighted earlier. Their findings on brain drain intensity were similar to the earlier results for some countries, but significantly different for others. Once again, the top 30 countries in terms of brain drain intensity were presented using corrected estimates of skilled emigration rates. In contrast to earlier results, they found that Kenya was the 17th highest worldwide with respect to the rate of brain drain to OECD countries. If the sample was restricted to countries with populations over 4 million, Kenya was the fifth highest and in Africa alone, Kenya was the 8th highest. Depending on the bound used, the skilled emigration rate for Kenya in this analysis ranged between 33.4% and 37%. Dumont and Lemaitre (2004) also tried to estimate brain drain. Their skilled emigration rate estimates for Kenya were similar to the Beine et al. (2006) results when they used Cohen and Soto (2001) data on non-OECD education attainment. They estimate skilled emigration from Kenya at 35.9% using these data. In addition, they found that among non-OECD countries, Kenya ranked the 13th highest in brain drain intensity. An explanation for this similarity is the restriction of their sample to highly skilled aged 15 and above. However, these same authors got more conservative estimates of brain drain when they used Barro (2000) education attainment data. Here the emigration rate of skilled workers for Kenya was 27% with Kenya ranking 14th highest among non-OECD countries in brain drain. Despite the differences in these papers and the ranking of Kenya with respect to brain drain, these results all indicate that brain drain is a significant issue for Kenya. The good news is that despite the high brain drain intensity in Kenya, it, in its proportion of skilled emigrants within its migrant population to
OECD countries, is not among the top 30 countries worldwide. This means that a significant number of less educated laborers from Kenya are able to temporarily migrate, which may yield positive social benefits for Kenya over time.

The next question is whether the brain drain problem of Kenya is characteristic of immigration to all the principal receiving countries or to only a select few like the United States or UK. As mentioned earlier, the largest stock of immigrants from Kenya are in the United States. Thus, it is logical to assume that the brain drain from Kenya would be significantly more to the United States. Interestingly, the studies available now present different data results. Docquier and Marfouk (2005) found that the share of emigrants with tertiary education to the EU15 from Kenya was only 38% in 2000. This was in sharp contrast to the United States where this proportion was 82%. These results provide evidence in support of the view that most skilled immigrants from Kenya go to the United States. Hence, more of the brain drain from Kenya is to the United States. However, more recently, Docquier, Lohest, and Marfouk (2006) found that the EU15’s share in Kenya’s skilled emigration stock was a little less than 50% (45-50%). This result implies that the EU15’s share of Kenya’s human capital flight may be growing.

Apart from a lot of skilled migrants coming to the United States from Kenya, recent evidence from the Institute of International Education (IIE) shows that Kenya was the highest sender of college students from Africa to the US in 2002. Students from Kenya in tertiary institutions in the United States comprised 18.8% (7,097) of all African students and 47% of students from the 19 East African countries (see IIE report, 2002). These students, though they end up getting trained in the United States, still constitute brain drain for many reasons. First, students who usually school abroad are among the most qualified and would have likely acquired similar skills within the country without the opportunity to go abroad. Second, these students already have acquired at least 12 years of education, and hence a huge amount of human capital had already been invested in them. Besides, some of these students are sponsored by the Kenyan government for further education in the United States, and if they do not return to Kenya, they constitute a brain drain with a significant social cost/loss.

There is ample evidence above that Kenya has experienced brain drain. The next relevant question is whether this brain drain is increasing or decreasing. According to the United States Census Bureau, in 1990 there were 8,372 immigrants from Kenya in the United States and by 2000 this number had increased to 40,680. Therefore, we know the Kenyan population in the United States has increased significantly, but what we do not know is whether the share of skilled immigrants and the emigration rate of skilled workers from Kenya have increased. There are differences in opinion about this question but little empirical evidence. The limited statistical evidence in Carrington and Detragiache (1999) and Docquier
and Marfouk (2006) shows the share of immigrants with tertiary education from Kenya decreased from 82.6% in 1990 to 82.2% in 2000 and skilled emigration rates fell from 26.9% to 26.3%. This implies that the intensity of brain drain from Kenya to the United States has slightly dropped. Also, the emigration of tertiary educated Kenyans has dropped a little over the 10-year period. This is not a general finding for all African countries. For example, the emigration of skilled professionals has increased significantly since 1990 in South Africa. From the present evidence, the rate of brain drain from Kenya is either decreasing or constant.

Interestingly, emigration rates rose for Kenyans with only secondary education from 0.8% in 1999 to 0.9% in 2000 (Docquier and Marfouk 2006). There are several reasons for this rise in emigration among less skilled labor. One important factor is the inception of the DV lottery with its criteria of just a high school education or more to participate. The DV has created a platform for those with only high school education to emigrate and become a part of the American society legally. There is data evidence that the start of the DV program in the 1990s led to a significant increase in very skilled (bachelor's degree and above) and less skilled immigrants (high school diploma) to the United States. Figure 3 shows the rising trend in DV winning of Kenyans over time. The dip since 2004 can be attributed to the change in the application process from regular post to internet applications, which creates a disadvantage for most Africans who have limited internet access.

Figure 3. Trends in the number of USA DV Lottery Winners from Kenya. (Compiled by author from U.S. official DV results.)
Yet another question related to the brain drain issue for Kenya is what kind of brain drain. This is an important question because general skilled emigration rates may hide important occupational shortages. For example, is Kenya losing engineers at a greater intensity than physician, nurses, or professors? Presently, there is no paper that has direct answers to this question. However, the Docquier and Bhargava (2006) data set shows emigration rates of doctors from Kenya.\(^5\) For example, in 1991 the emigration rate was about 9\% (142 doctors), but by 2004 it had dropped to 5.8\% though the stock of these doctors had increased to 261. These rates look low and may be misleading in terms of the brain drain of doctors from Kenya given the way they are calculated. Besides, they only account for doctors practicing in the receiving countries. A more relevant measure was computed by Clemens and Pettersson (2006). They presented a more relevant though pessimistic result in terms of the brain drain of health professionals from African countries. They collected data and calculated for African countries the fraction of total doctors and nurses born in African countries who live abroad in nine principal destination countries.\(^6\) For Kenya, the results are sobering. Fifty-one percent of Kenya's physicians are abroad. Despite this staggering finding, Kenya is not among the worst cases of physician brain drain from Africa. Kenya is the 16th highest in physician brain drain from Africa. The results for nurses are very different. Brain drain of nurses from Kenya is at a much lower magnitude. About 8\% of Kenyan-born nurses are abroad. In terms of ranking among African countries, brain drain of nurses from Kenya ranked 36. This result is clear evidence that for the health sector in Kenya, brain drain of physicians is the bigger issue that needs government attention.

**Brain Waste or Gain?**

Brain waste and gain are two other words coined more recently. Brain waste occurs when the skilled and the educated leave their home country, but then make little use of their skills and education in the host country. Brain gain is like the flip side of brain drain. When highly educated foreigners enter the workforce of a country performing skilled jobs, that country is said to have experienced a brain gain.\(^7\) Brain drain, waste, and gain are related because brain drain is a necessary condition for brain gain, but it is not a sufficient condition because there could be brain waste. The classic case of brain waste is the skilled professional coming from a developing country and getting a job as a blue-collar worker in an OECD country. Brain waste is meant to capture the lack of utilization of the emigrant's skill in the destination country.

There are several ways of measuring brain waste. One method is to calculate the probability of an immigrant obtaining a skilled job in the receiving developed
country. Using data from the United States census, Ozden (2005) calculated the likelihood of obtaining skilled jobs for migrants from different countries who held bachelor's degrees. The data relating to the immigrants in the United States were from the 1% sample of the 2000 U.S. Census. Ozden restricted his sample to employed foreign-educated males with tertiary education. These men also had to be 1990s arrivals with an age range of 25 to 65 years. From his results, he noted large variations across countries of origin in labor market placement of immigrants even when individuals had identical age, experience, and nominal education. Even among African countries, this likelihood ratio differed significantly. For Kenya, the likelihood of obtaining a skilled job for this cohort of males was 52%. This probability is low and reflects a significant brain waste. The Kenyan case was, however, not the worst case of brain waste from high sending African countries. In the same study, the likelihood of obtaining a skilled job was only 41% for an Ethiopian male.

A more comprehensive analysis on brain waste was done by Mattoo, Neagu, and Ozden (2005). In this study, estimates were derived for both men and women from several countries. The probability that a foreign educated bachelor's degree holder entered a skilled job in the United States, the probability that a master's degree holder got a skilled job in the United States, and the probability that a foreign educated professional degree holder entered a skilled science or professional job were computed. In this analysis, the '70s, '80s and '90s migrant arrivals with a bachelor's degree were analyzed. Also, for the '90s migrant arrivals, those with a master's and those with professional degrees were also analyzed for brain waste. The results for Kenya are interesting yet saddening. For the 1970s Kenyan cohort with a bachelor's degree in the United States, the probability of obtaining a skilled job was 34%. For the 1980s cohort, the probability was 38%, and for the 1990s cohort, the probability was 59%. Recall that for the '90s cohort of men, this probability was only 52%. This implies that Kenyan women have a higher chance of obtaining a skilled job than their male counterparts. Though these results highlight severe brain waste among Kenyan immigrants, the good news is that brain waste among Kenyan immigrants with a bachelor's degree has fallen over time. For the 1990s cohort with a master's degree, the probability of getting a skilled job was 71%, and for those with professional degrees (like doctors and PhDs), the probability of getting a skilled job was 63%. From these findings, Kenyan migrants had a better chance of obtaining a skilled job if they held a professional degree. Hence, brain waste was less common among those who held advanced degrees. It is also important to mention that Kenyan immigrants with a master's degree had a higher probability than those with professional degrees of getting skilled jobs. Therefore, brain waste among Kenyan immigrants was lowest for this group. Interestingly, Kenya and South Africa were the only two
high sending SSA countries that had low brain waste for those with a master's degree. For Nigeria, the likelihood of a master's degree holder obtaining a skilled job was only 59% and for Ethiopia 42%. Interestingly, these two countries fared much better for professional degree holders than Kenya. The probability of a professional degree holder from Nigeria getting a skilled job was 72%, while for Ethiopia this likelihood was 78%. These findings are interesting and raise questions. First, why do Kenyans with professional degrees experience more brain waste than immigrants from other comparable African countries? Second, why do master's degree holders from Kenya and South Africa fare much better than those from comparable African countries? These are important questions that are beyond the scope of this paper, but would shed light on the labor market experiences of different African countries' diasporas in the United States.

It is important to mention that a reduction in brain waste is a positive outcome not only for the individual immigrants, but also for the global economy. For the individual, a reduction in brain waste means skilled immigrants have a better chance of obtaining a job using their expertise. This usually translates to a higher income and standard of living for immigrants. For the global economy, a reduction in brain waste curbs the global loss in human capital investment. Despite these obvious benefits of curbing brain waste, a reduction in brain waste could have a negative effect on the sending country. This is because a fall in brain waste among immigrants abroad can increase the pull effect that leads to migration of skilled labor. For example, in the Kenyan case, more Kenyans might want to migrate because they realize the chances of getting a skilled job have improved overtime.

**Do Kenyan Immigrants Create a Cost?**

One of the problems with emigration of skilled capital is the social cost. In many developing countries, education is free and provided by the government. Therefore, if an individual receives an education and then emigrates, the social benefits of his or her education are lost. Governments usually invest in education because of the externalities it produces to the society. These huge externalities are lost completely or in part, depending on whether an individual returns home or invests in the economy, when skilled workers emigrate. The question of interest is whether the literature says anything about the cost of emigration from Kenya.

Nwachukwu (1997) provided evidence using a social opportunity cost model and a policy intervention model that Kenya experienced a drop in its national income due to the migration of its professionals. Ironically, she noted that in contrast to recent findings in Mexico, remittances were not found to make any significant reduction in the social opportunity cost of brain drain. In 2006,
remittances from Kenyans abroad were about 500 million dollars (World Bank, 2006), and 2007 remittances to Kenya are estimated to be nearly twice this amount. These are significant amounts but pale in comparison to what researchers estimate as the losses from brain drain. For example, Kirigia, Gbary, Muther, Nyoni, and Seddoh (2006) estimated the social costs of medical professionals leaving Kenya. According to this study, the total cost of educating a single medical doctor from primary school to university in Kenya is $65,997; and for every doctor who emigrates, Kenya loses about $517,931 worth of returns from investment. Similarly, the total cost of educating one nurse from primary school to college of health sciences is $43,180; and for every nurse that migrates, Kenya loses about $338,868 worth of returns from investment. This is a huge amount to lose on a health professional. According to Clemens and Pettersson (2006), there are about 3,975 Kenyan-born doctors in nine OECD countries and 2,372 nurses. If these numbers are multiplied by the loss per doctor or nurse, a rough estimate can be derived of how much is lost from just Kenya's health professionals abroad (over 3 billion dollars). If we account for the lost benefit to those who would have been served in Kenya by these health professionals and add it to the estimate above, the 500 million dollar remittance from all Kenyans abroad, though a source of national revenue, is small in comparison to the estimated total loss.

Conclusion and Recommendations

Kenya has not experienced substantial growth and development in the last two decades. Based on the evidence presented in this paper, Kenya has experienced substantial brain drain, and this might have played a role in its slow growth.

In summary, yes, there is brain drain from Kenya. However, the good news is there is evidence of a slight decline. In addition, a good portion of Kenyan immigrants, and among them more men than women, experienced brain waste. However, this trend in brain waste has decreased over time. Moreover, Kenya is doing better than some other high sending countries with respect to brain waste for some education/professional grouping.

Also, though brain gain by the United States from Kenya has increased over the last few years with the reduction in brain drain, this situation is likely to change in the future. The 2002 election of President Kibaki is supposed to have spawned economic change. In addition, recent news and findings support the view that Kenya may be on the path to recovery. There is anecdotal evidence that a wave of Kenyan professionals abroad are returning home with the hope to rebuild a country that had nearly collapsed under the weight of 24 years of rule by former President Moi. Moreover, many networks have been set up by groups in the Kenyan diaspora to help in Kenya's development. The Kenya Diaspora Network
(KDN), with a primary objective to support the Kenyan government's economic recovery plan, is an example. Therefore, the return of Kenyans to Kenya to invest their human capital, improved conditions in Kenya, and the willingness of the Kenyan diaspora abroad to help in nation building can all cause a decline in the brain gain by the United States and increased benefits for Kenya in the future.

Finally, it is important to mention that the papers on which the conclusions in this review are drawn have limitations. First, there are not enough data on the African diaspora in general. There is anecdotal evidence that the U.S. census data and IPUMS underestimate the number of Africans in the labor market in the United States and other OECD countries. This problem is linked partly with the significant number of undocumented/illegal immigrants from Africa. Hence, more data not only on the Kenyan diaspora in OECD countries, but on other African countries' immigrant population are necessary. Second, there is need for more economic research estimating the social costs and benefits of brain drain to Kenya and other African countries. Third, more country-specific studies focusing on brain drain from particular sectors and the costs are needed. For example, the brain drain of chemists might not have a significant impact on Kenya if chemists are already oversupplied. However, the brain drain of doctors would have an impact since doctors are in short supply in Kenya. In addition, data on remittances by occupation would be very useful in properly estimating net costs of emigration. Lastly, more research into the brain waste phenomenon of Africans abroad would be useful.
References


Notes

By double blow I mean the loss of skilled Africans and the money spent training them in addition to the estimated $5.6 billion a year African countries use to employ expatriates.

According to M'dzonga (1980), emigration increased tremendously during the period from 1965 to 1969 due to increased labor demands for skilled workers by U.S. industries.

The figures above are the official projection of the US Census Bureau. Due to the high number of undocumented African immigrants, the population of Kenyans in the United States is likely to be much higher.

In this case, the skilled emigration rate is the average emigration rate multiplied by the schooling gap between emigrants and natives. The average emigration rate from a country is defined as the ratio of emigrants to natives. The schooling gap is the division of the proportion of the skilled among emigrants by the same proportion calculated among natives.

Docquier and Bhargava (2006) compute doctors' emigration rates by country using data on doctors with foreign qualification working in OECD countries from 1991 to 2004. These data are then aggregated yearly and divided by the total number of doctors who qualified in their country.

Eight of the nine principal destination countries are OECD countries. These eight countries account for 94.2% of all African-born, university-educated people residing in any OECD country in 2000. The last principal destination country is South Africa.

The term "brain gain" is also commonly used to describe the process through which skilled migrants to the West transfer human and physical capital back to their home countries.

Remittances from abroad can be found in IMF balance of payments yearbooks.

This statement is based on data from the World Development Indicators (WDI) from 1985-2005.