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**Globalization, Skilled Migration and Poverty Alleviation:
Brain Drains in Context**

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ABSTRACT

The debate on the 'brain drain', or the emigration of skilled workers, is not new but it has taken on greater urgency in the context of a globalizing economy and ageing societies. Today, the developed world is perceived as poaching the best and the brightest from the developing world, thus prejudicing those countries of their chance of development. This paper starts with two guarded caveats: first, that any brain drain is as much internal within any country as it is among countries and, second, that the skilled migration system should not be seen in isolation from other types of migration. The paper reviews the data available for the analysis of skilled migration and identifies the main global trends. It goes on to examine the globalization of education and of health as reflected in the movement of students and health personnel. Large numbers of people from developing countries are being trained overseas and, of those trained at home, many cannot be absorbed productively into their economies of origin. The paper examines the case for a two-tiered health training system, one for global markets and the other for local markets. Retention and return of the skilled are examined through the potential for outsourcing in both education and health care. However, the association between the presence or absence of health personnel and the health status of a population is seen as simplistic. The paper concludes with an examination of policy contradictions within the global system towards skilled migration and offers pointers towards a more integrated approach.

Background

The increase in the numbers of international migrants over recent decades has been more than matched by the growth in research into issues surrounding these international population movements. Amidst the torrent of writing, two major issues appear to have emerged in the more applied or policy-relevant side of the debate: remittances (Maimbo and Ratha 2005) and the migration of the skilled (Commander, Kangasniemi and Winters 2002; Cornelius, Espenshade and Salehyan 2001; Findlay 2002; and Lowell, Findlay and Stewart 2004). This paper will focus on the second of the issues, skilled international migration. Human capital formation is considered to be of central importance to development and the ultimate reduction, even eradication, of poverty. Thus, any loss of the skilled through migration may be prejudicial to the achievement of development goals and any discussion of the movement of the skilled is inextricably bound up with what is generally referred to as the 'brain drain', a debate that has been ongoing for over four decades.

Originally, the discussion of a brain drain was framed in the United Kingdom in the context of the loss of British scientists and doctors across the Atlantic to the United States. However, it quickly came to be applied to the replacement migration of the skilled from former colonies to Britain and its impact on the developing countries of origin. This migration was usually seen in negative terms: that the exodus of the skilled deprived countries of origin of the human capital they needed in order to develop. Today, the debate has moved on and, generally, more guarded interpretations are put forward that the emigration of the skilled need not necessarily be negative for development. Nevertheless, despite suggestions that the impact of the outmigration of the skilled is more complex than might at first appear, a tendency still remains to view the exodus of the skilled from developing countries as negative, and stopping that migration, and the retention and return of the skilled, as positive (see, for example, Dia 2004 and Kupfer et al 2004). A research project funded by the United Kingdom government and the Trade Union Congress is mooted to recommend that academics in higher education in Africa should not be recruited into British universities (*The Guardian*, 28 May 2005). Such a strategy would extend an existing ethical code of practice of recruitment for health professionals to the education sector. At present, the British National Health Service has decided not to recruit actively from 154 countries and territories in the developing world

and seeks to ensure that the recruitment agencies used to bring nurses and doctors to the United Kingdom adhere to established ethical guidelines (OECD 2004). Such programmes might appear to be morally impeccable to the extent that they attempt to protect the interests of origin states against those of destination states but they are difficult to implement (see, for example, Willetts and Martineau 2004). They also exclude certain individuals from opportunities which, if implemented, could be seen to be discriminatory or even racist. The tension between individual rights and state interests is writ large.

The whole issue of the brain drain has taken on a greater significance in recent years in the context of the sustained and rapid decline in fertility in the countries of the developed world, including those in eastern Asia. Rapid rates of economic development based on high technology industrialization but declining rates of growth in the indigenous labour force fuel a demand for imported skilled labour. Thus, on the one hand, concern exists to limit the perceived damage of the exodus of the skilled on developing countries of origin, but on the other, the rising demand for skilled migrants in potential countries of destination creates policy dilemmas and contradictions. Thus, despite good intentions towards ethical recruitment from developing countries, virtually all potential destination countries either pursue, or take a positive view towards, the immigration, on a permanent or temporary basis, of the skilled. Such an approach by developed countries is usually in stark contrast with their policies towards unskilled labour that is generally much more restrictive.

Within the debate on the brain drain three separate strands of research into the migration of the skilled can perhaps be identified: of scientific workers and particularly those in information technology (IT); of health workers; and a growing body of literature on the movement of students. This paper will attempt to cover these three sectors in an integrated way. The health sector in particular is often seen as 'exceptional' to the extent that the tensions between origin and destination are here arguably writ largest. The loss of key medical personnel is seen to deprive origin countries of access to a basic human right, that of adequate health care, while that care cannot be provided in destination countries without importing health personnel to meet the growing demand in ageing societies. Clearly, however, the education sector is also being drawn into this critical category and it is perhaps apposite now to attempt a reappraisal of a complex issue by

examining possible common patterns among the movements of the skilled and linkages to other forms of mobility.

At the outset, it must be emphasized that virtually absent from the brain drain debate is any assessment of linkages to, or even the impact of, any internal brain drain, or of the impact of domestic migration, particularly rural-to-urban migration, on the development potential of the rural sector. As it is in the rural sector that the majority of the world's poor are still to be found, any examination of linkages between the movement of skilled people and poverty alleviation must ultimately focus on that sector. The loss of the most educated members of any village may undermine community-based organizations and erode that population's capacity to respond to development programmes implemented at the local level. Hence, in dealing with poverty alleviation, it is the internal brain drain that is likely to be of more importance than the international movement of the skilled from the larger urban centres of a country. This statement must immediately be qualified by stressing that any consideration of internal movements will dilute the discussion of the movement of the 'highly skilled' simply because relatively few highly skilled migrants either come from, or go to, the rural sector. Nevertheless, any development goal to create, retain or attract the skills necessary for the development of the rural sector remains one of the most intractable issues in developing countries today. Any discussion of migration and the highly skilled as it relates to poverty needs to consider impacts of domestic movements alongside the more commonly examined international movements of the skilled.

A second and related dimension of the current debate that is problematic is that the movement of the skilled in itself tends to be seen as virtually making up a separate migration system. Linkages to unskilled groups are rarely considered. This paper argues that skilled migration cannot be seen in isolation and the movement of skilled people generates less-skilled jobs that may imply labour importation schemes. As suggested above, policies towards the more lowly skilled tend to be more restrictive than those aimed at the highly skilled. Thus, policies designed specifically to deal with the skilled may actually conflict with those designed to deal with other categories of migrants and a need for a more integrated approach clearly exists. Also, it can be questioned how skilled some of those classified as 'skilled' really are and many of those considered as 'less skilled' may actually be highly skilled, paradoxical though this might seem. Highly skilled tradesmen such as plumbers,

carpenters or bricklayers, for example, would not fall into the category of the highly skilled, while university graduates with an Arts degree may have few marketable skills.

Measuring Skilled Migration: Fuzzy Definitions, Spongy Data and Global Patterns

The question of who are the highly skilled is problematic. The level of education is central to any classification and the OECD identifies as highly skilled those human resources in science and technology who are either in, or have completed, tertiary education (Auriol and Sexton 2002). While this definition clearly includes those in medical sciences, any discussion of brain drain and health personnel usually incorporates nurses who might, under a strict interpretation of education level, be excluded from the highly skilled category. Again, some highly successful entrepreneurs or businessmen or women might be excluded on the basis that they do not have any tertiary education, even though they clearly possess specific skills of a high level. This paper takes a fairly catholic approach to the question as to who the skilled happen to be and the various categories included should be clear from the context of the discussion.

If the definitions of the skilled can be imprecise, the data to relate skills with international migration are yet more problematic. Origin countries of international migration rarely keep records of those who leave in a systematic way and data usually have to be compiled from countries of destination, and mostly from population censuses, to provide stock estimates. Flow data from immigration statistics are rarely easily available by education and skill level and, even if they were, the flows of non-immigrants would also have to be added in order to give total movement from specific origins over the previous year. These data by skill level are generally not available. From the population census, the question on place of birth is the most common, but certainly not universal, source from which stocks of migration can be generated. 'Lifetime migration', as the resulting measure is known in studies of internal migration, is not the most satisfactory measure of migration as that migration cannot be related to any specific period of time. Distortions occur because of what might be termed 'episodic' migrations or single waves of migration that happened many years ago and no longer occur in the global migration system. The movements between India and Pakistan following partition in 1947, when millions moved across borders that have been essentially sealed since those migrations, is an example of this. The stock of foreign-born in the latest estimates for India

and Pakistan in the year 2000, at 6.3 and 4.2 million respectively, are still heavily influenced by these old movements (see United Nations 2003). These same United Nations estimates still record Hong Kong with 2.7 million foreign-born, even though the overwhelming majority of these were born in China and would be more accurately conceptualized as internal movers within China than international migrants.

These two examples alone account for over 7 per cent of the 'gold standard' estimate of 175 million people outside their country of birth at the beginning of the twenty-first century, perhaps the most widely cited estimate of the magnitude of international migration today (United Nations 2003). A further 27 million persons, some 15 per cent of the total, became international migrants on the break-up of the Soviet Union whereas previously they had been internal migrants. Hence, the birthplace data do have to be used with some caution. The other standard migration questions that are employed in censuses, usual place of residence 'n' years ago (usually five years) or last place of previous residence classified against number of years at present place of residence are rarely employed in studies of international migration. It is likely that, for many countries, the information collected through these questions is just not coded to a level of detail that is useful: a few specific origin countries might be given, but simply 'overseas' is more common.

Hence, the basic instrument to measure the volume of international migration is flawed. Be that as it may, that instrument does represent a uniform approach to measurement, is the best currently available, and must remain the 'gold standard', weaknesses notwithstanding. Birthplace data, calibrated to the United Nations estimates, also form the base of an attempt to create a global matrix of bilateral flows that provide the spatial dimension to the previous gross stock data (see Walmsley et al 2005). In attempting to gauge the importance of skilled flows, skill categories have to be cross-classified by place of birth. Education level, separating those 25 years and over with tertiary level from those without, or by general occupation category for those 15 years and over, are the two most common methods to try to create 'birthplace-skill' profiles. Birthplace data lie at the root of the two most detailed databases on skilled migration to date: by the OECD (2005) and by the World Bank (Docquier and Marfouk 2005). Where data exist, these birthplace profiles can be further disaggregated by period of arrival in destination country to give an idea of changing skill composition over time, always bearing in mind that the numbers represent survivors of previous

arrival cohorts. Both the Canadian and the United States censuses provide information on period of arrival of birthplace groups on their respective websites (for example Canada 2005, United States 2005). However, information on return migration to country of origin, or on onward migration to a third destination, that will profoundly affect the number of survivors recorded in a census, is normally just not available.

Other important sources exist to supplement the 'gold standard'. UNESCO, in its *Yearbook*, provides a global database of the stock of students by country of origin by country of study. The United States has its own database on foreign students published through the Institute of International Education, as do Canada and Australia, but, most importantly, the only source that provides detailed information on the highly skilled by country of birth is the Scientists and Engineers Statistical Data System (SESTAT) compiled by the National Science Foundation for the United States (see Johnson 2003). The European Union through Eurostat can provide some information but, unlike the data from SESTAT, the EU data are classified by nationality, thus omitting the foreign-born who may have changed nationality (see Barré et al 2003). Many other databases on specific skills exist for particular countries, for example, the United Kingdom register of nurses (see Buchan 2002) and its equivalent in several other developed countries (see WHO 2005).

The migration of the skilled reflects, in a more focused way, global patterns of migration. The global stock of migrants is concentrated in a relatively small number of countries of destination. Over three-quarters of the stock in 2000 was found in just 28 countries that represented 12 per cent of all countries in that year (Zlotnik 2005). The share of the global stock of migrants found in the United States increased from 14 per cent in 1980 to 20 per cent in 2000. In the OECD countries only, in 2000, it was estimated that there was a stock of 59 million migrants, of which some 34.6 per cent were skilled migrants, or 20.4 million people. More than 85 per cent of that total were to be found in just six countries, the United States (circa 50 per cent), Canada (13.5), Australia (7.5), the United Kingdom (6.2), Germany (4.9) and France (3.0) (Docquier and Marfouk 2005: 16).

In terms of brain drain, it is the emigrant stock rather than immigrant stock, or which countries of origin contribute most to the global international migration, that is of most interest. Again Docquier

and Marfouk (2005: 22) provide a series of estimates. In terms of the absolute number of skilled migrants, the flows are dominated by developed countries such as the United Kingdom, Germany, Canada and the United States, together with a number of middle-income developing countries such as the Philippines, India, Mexico and China (Table 1, columns 1 and 2). However, if we examine the number of skilled emigrants as a proportion of the educated labour force of the country of origin concerned, a very different picture emerges (Table 1, columns 3 and 4). The countries with over half of their skilled labour force overseas are overwhelmingly the small island countries of the Caribbean and the Pacific. Excluding those countries with populations of less than 5 million, the data provided by Docquier and Marfouk show that of the 16 countries with more than one quarter of their educated population outside their borders, seven fall within the United Nations category of 'low human development' (Table 1, columns 5 and 6). Excluding Haiti, six of these seven are in sub-Saharan Africa: Mozambique, Kenya, Uganda, Angola, and Rwanda, plus Somalia which, although not officially in the category of low human development, would certainly be there if the necessary data were available.

Table 1: Patterns of Skilled Emigration from Source Countries 2000

All countries (1)	Stock of skilled migrants overseas (2)	All countries (3)	Proportion of educated labour force of col. 3 that is overseas (4)	Countries with populations above 5 million (5)	Proportion of educated labour force of col. 5 that is overseas (6)	All countries (7)	Proportion of emigrant stock that is skilled (8)
United Kingdom	1,441,307	Guyana	89.0	Haiti	83.6	Taiwan	78.0
Philippines	1,126,260	Grenada	85.1	Ghana	46.9	Qatar	69.6
India	1,037,626	Jamaica	85.1	Mozambique	45.1	Kuwait	67.8
Mexico	922,964	St Vincent and Grenadines	84.5	Kenya	38.4	United Arab Emirates	67.3
Germany	848,414	Haiti	83.6	Laos	37.4	Philippines	67.1
China	816,824	Trinidad and Tobago	79.3	Uganda	35.6	Nigeria	65.0

All countries (1)	Stock of skilled migrants overseas (2)	All countries (3)	Proportion of educated labour force of col. 3 that is overseas (4)	Countries with populations above 5 million (5)	Proportion of educated labour force of col. 5 that is overseas (6)	All countries (7)	Proportion of emigrant stock that is skilled (8)
Korea	652,894	St Kitts and Nevis	78.5	Angola	33.0	Saudia Arabia	64.6
Canada	516,471	Samoa	76.4	Somalia	32.7	Japan	63.8
Vietnam	506,449	Tonga	75.2	El Salvador	31.0	Oman	62.7
Poland	449,059	St Lucia	71.1	Sri Lanka	29.7	South Africa	62.6
United States	431,330	Cape Verde	67.5	Nicaragua	29.6	Hong Kong SAR	61.9
Italy	408,287	Antigua and Barbuda	66.8	Hong Kong SAR	28.8	Mongolia	61.1
Cuba	332,673	Belize	65.5	Cuba	28.7	India	60.5
France	312,494,	Dominica	64.2	Papua New Guinea	28.5	Canada	60.1
Iran	308,754	Barbados	63.5	Vietnam	27.1	Venezuela	60.1
Jamaica	291,166	Gambia	63.3	Ruanda	26.0	Uzbekistan	59.5
Hong Kong SAR	290,482	Fiji	62.2	Honduras	24.4	Brunei	59.3
Russia	289,090	Bahamas	61.3	Guatemala	24.2	Malaysia	59.2
Taiwan	275,251	Malta	57.6	Afghanistan	23.3	Egypt	58.9
Japan	268,925	Mauritius	56.2	Dominican Republic	21.6	Iran	58.5
Netherlands	256,762	Seychelles	55.9	Portugal	19.5	Liberia	58.5
Ukraine	246,218	Sierra Leone	52.5	Malawi	18.7	Panama	57.7
Colombia	233,536	Suriname	47.9	Cambodia	18.3	Israel	57.6
Pakistan	222,372	Ghana	46.9	Senegal	17.7	Singapore	57.1
Ireland	209,156	Mozambique	45.1	Cameroun	17.2	Burma	56.1
Romania	176,393	Liberia	45.0	Morocco	17.0	Swaziland	56.1
Turkey	174,043	Marshall Islands	39.4	Zambia	16.8	Jordan	55.6
Brazil	168,308	Lebanon	38.6	Slovakia	16.7	United States	55.4
South Africa	168,083	Kenya	38.4	United Kingdom	16.7	Macao SAR	55.2
Peru	163,750	Micronesia	37.8	Mexico	15.3	Palestine	55.0

Source: Extracted from F. Docquier and A. Marfouk, *International Migration by Educational Attainment (1990-2000)* - Release 1.1, Washington, The World Bank, 2005: 22, Table 4.

The biases inherent in the use of birthplace data are particularly clear in the above discussion. The skilled flows from Kenya and Uganda are largely the result of the expulsions of Asians in 1972 (Van Hear 1998), and the flows from Mozambique and Angola reflect the repatriation of Portuguese citizens in 1974 many of whom had been born in Africa (Rocha-Trinidad 1995). While it can be argued that the loss of these skilled migrants was a significant factor contributing to the economic decline of these states, the migrants were expelled or otherwise encouraged to leave. While conflict has clearly been a factor in causing a movement of the skilled in the poorest part of the developed world, development itself has been a major factor in accounting for the largest flows of skilled migrants. The majority of the flows with the highest proportion of skilled migrants (Table 1, columns 7 and 8) are middle-income countries, for example. Of the other larger countries with high proportions of their labour force overseas, Ghana is second after Haiti, with 46.9 per cent of its skilled labour force outside its borders at the beginning of the twenty-first century. Ghana, one of the wealthier economies at the time of Independence in 1957 subsequently experienced fluctuating fortunes but had regained its position as one of the sub-Saharan countries with the highest human development indicators by 2000 (United Nations 2004). The data certainly do not suggest that development is necessarily prejudiced by the loss of the highly skilled. Quite the reverse: increasing development leads to the increased migration of the skilled.

Although the above data on the number of skilled migrants are based on some perhaps heroic assumptions, they are the best currently available. They do show that there is a flow of the skilled towards the developed world and that the flow has increased over recent years, affecting some countries more than others. However, although the empirical base is important and without reasonable numbers there is no substance upon which to base any analysis, the issue must be more the developmental implications of the figures themselves and what they imply for the countries of origin. Also, the gross figures by country seldom tell us much about specific impacts as migration from any country tends to have very specific origins. That is, although the overall migration rate from a country such as India or China might be small, the rate from particular districts, towns or villages in these vast countries might be as high as that from a small country in the Caribbean, for example. Thus, attempting to assess the developmental impacts of the outmigration from gross national figures alone is unlikely to prove fruitful. To try to come to a more

measured interpretation of the impact of the outflows of the skilled on countries of origin, a more focused discussion of the causes and consequences of that migration is required, starting with education, the basis of skill development itself.

The Globalization of Education

The stocks of skilled immigrants and emigrants discussed above were generated by cross-classifying those in higher levels of education with place of birth. What is largely unknown is where the birthplace groups received their higher education: in country of origin or in country of destination. In terms of a brain drain, place of education is significant. If outside the country of birth, it could be argued that the brains were, if not created, at least refined in the country of destination. If this is the case, one could legitimately ask whether there had truly been a brain drain as the brains were trained in a second country, not in the country of origin. However, the situation is not quite as simple as this statement seems. Birthplace and citizenship become intertwined so that the migrant owes a set of obligations and responsibilities to his or her country of birth just as that state has obligations and responsibilities to the migrant as citizen. That state may provide him or her access to both education and adequate health care and the individual, in return, has a responsibility to pay tax. Thus, any discussion of the loss of the educated raises possible compensation for loss of brains to the country of origin in terms of both costs of education and potential future tax loss. It also becomes important to establish who pays for the advanced training: country of origin, country of destination, the particular family involved or some other institution such as a private foundation.

Education is at the heart of human capital formation. While the achievement of universal primary education by 2015 is one of the Millennium Development Goals, more advanced levels of education are required for a country to move beyond development based upon labour-intensive industrialization towards more capital-intensive activities. The models of education that are adopted by developing countries tend to follow those of the developed countries of the west. The curricula used may perhaps not be those most appropriate for rural societies, even at basic primary levels of schooling, and those pursuing education beyond those levels can most profitably use the fruits of their learning in the urban sector. A virtual universal finding of studies of internal migration in

developing countries is that rural migrants to urban areas have higher levels of education compared with those in the areas from which they come (Skeldon 1990).

An issue quite separate from the types of curricula introduced is the perceived quality of teaching. Concerns about quality of teaching exist not just in rural areas but throughout much of the developing world in general and this perception can be conceptualized in a hierarchical manner. Rural parents feel that the quality of teaching is better in the town rather than the village, those in provincial towns see schools in capital cities as of a higher standard, and those in capital cities look to institutions overseas to prepare their children for life in a globalizing economy. Irrespective of whether this perception of educational standard is correct, two critical factors enter into the equation: availability of the service and cost. Good secondary schools are rarely available in isolated, rural parts of developing countries and the tertiary institutions that are best endowed tend to be located overseas. That some modification to this statement is required will become evident in the section on outsourcing below. Even where education is nominally provided by the state or through scholarships, costs are involved where a movement to a school or university away from the home area is involved. As in the case of accessibility, these costs rise in a hierarchical manner through the levels of education, and children leaving their communities to pursue their education tend to come from the relatively more advantaged groups at each level. Education has become a multi-million dollar migrant industry, particularly at the global level.

The UNESCO (2005) database provides information on the bilateral stocks of students in higher levels of tertiary education at most destinations and allows some insight into the principal sources of students in the global system. Five countries dominate as destinations for students to pursue tertiary education: the United States, the United Kingdom, Germany, Australia and France. Together, these countries hosted some 1.3 million foreign students in 2001/02. With the exception of the United Kingdom, the other four countries registered marked increases in number of students over the three years 1998/99 to 2001/02 (1999/00 to 2002/03, in the case of Australia). Australia registered a 53 per cent increase, the United States 29 per cent, France 26 per cent and Germany 23 per cent. The rapid rise in the numbers of students in Australia in the most recent years for which data are available surely cannot be disassociated from that country's policy of offering graduates permanent residence status upon graduation (see Hugo 2005). The United Kingdom

registered a marginal decrease in numbers of students over the same period, raising some question about its global competitiveness in this dynamic field. Apart from the United States, which has a truly global market access, the other four countries each have their particular niches. About half of the students to France come from francophone Africa, with 58 per cent of these coming from Morocco, Algeria and Tunisia. Just over two-thirds of students to Australia come from Asia, primarily from the countries of Southeast Asia as well as China. Germany's niche is made up mainly of European countries, primarily in the Mediterranean, including Turkey, and Eastern Europe, while students to the United Kingdom come mainly from Western and Mediterranean Europe as well as India. Australia, the United Kingdom and the United States have the advantage that they are all countries where the one truly global language, English, is the official language, although English language training is increasingly being introduced in countries where English is neither the dominant nor the native language. For example, the training of overseas students in English can be found in other countries of Europe, particularly in Scandinavia and the Netherlands, as also in countries such as India, Malaysia and China.

Japan, oriented towards Asia, and the Russian Federation, oriented towards Eastern Europe and Central Asia, were also significant destinations for the training of students, as to some extent was Spain. In the developing world, Malaysia and Cuba, and also South Africa, appeared to be emerging as centres of training and attraction for foreign academics. The number of foreign students in South Africa rose to more than 35,000 in 2001, up from 12,600 in 1994 (Kahn et al 2004: 30). The dynamic economies of Asia were among the most significant countries sending students abroad, particularly China, India, Hong Kong, Malaysia and Singapore, defying any simple assumption that the exodus of students might thwart economic growth in economies of origin. Economic dynamism is likely to stimulate an exodus as some families accumulate the capital to allow their children to pursue their studies overseas and the countries themselves promote migration to train the manpower they need in the hope that the students will return. The return of students to country of origin is an important issue but one on which few data exist. Where data do exist, the evidence from China and Taiwan indicates that return migration accelerates over time. In China, the incidence of return accelerated through the 1990s (Zweig, Chen and Rosen 2004) and Taiwan from the 1970s (Tsai 1988). China, currently one of the fastest growing economies in the world, also experiences the largest outflow of students in the world, with some 500,000 students

overseas in 2002 with rates of return estimated at around 30 per cent (Zhang 2003: 74). Nevertheless, the available data suggest that the incidence of return is highly variable across both origin groups and places of training. Students from anglophone Africa in Canada and the United States seem to have a higher incidence of return than those from francophone Africa in France, for example (Barré et al 2003: 127). The report of a panel of experts on the movement of professionals from the developing to the developed world begins with the sentence, '(i)t is time to stop deploring the "brain drain" from Southern countries to the industrialised world, to stop regarding the departure of researchers and engineers to Northern countries as a pure loss for developing countries' (Barré et al 2003: 115). It is also worth pointing out that, in the analysis of the brain drain from the United Kingdom to North America from the 1960s, no negative impacts on the economy could be found (see Zimmermann 2005).

However, it is destination countries that clearly benefit from the movement of students. In the United States in 1999, the foreign-born, although US-trained, represented 26 per cent of the resident doctoral-degree holders in science and engineering, 15 per cent of the Master's degree-holders and nearly 11 per cent of bachelor's degree-holders (Johnson 2003: 6). The same database showed that some 68 per cent of the foreign-born scientists conducting research in that country in 1993, were also trained in the United States. The United States and other developed countries are importing the raw material to train some of the human capital that they need. Foreign-born, the migrants are trained to the standards of the developed country and there is no resultant problem of accreditation and the recognition, or otherwise, of foreign qualifications. In effect, the developed country is generating 'designer immigrants' (Simmons 1999).

Although the developed countries clearly benefit from the movement of the skilled, it would be difficult to argue that the reason for their continuing economic success is predicated upon the importation of skilled migrants from overseas. Equally, it is difficult to conclude that the migration of students necessarily prejudices the development of the countries of origin. The East Asian economies where large numbers of students to North America, Australasia and Europe originate have hardly experienced a downturn that could be attributed to the exodus of these students. Quite the reverse, the return of a proportion of those students as skilled returnees has surely contributed to the sustained economic growth in that region. In general, migrants, whether internal or

international, are blamed for any conceivable ill in a society: from undercutting wages to exploiting local security benefits, and from causing rising levels of crime to undermining traditional national identities. It is hardly surprising that migrants who leave a country are blamed for contributing to low economic growth in home areas. It is all too easy to have the migration tail wag the development dog. More important are the types of development policies being implemented. When there is something for migrants to return to, as in the case of several eastern Asian economies, then migrants will return in increasing numbers. Migration is essentially a response to, rather than a driver of, economic development, although clearly these are interactive processes. Thus, it will be virtually impossible to conclude that a decline in x or a rise in y is due simply to the departure or arrival of skilled migrants.

The outflow of skilled migrants may benefit countries of origin in ways other than through the later return of some of those migrants with enhanced skills. Stark (2003), in an elegant model, argues that in a closed economy, or a small open economy with no migration, there is a tendency to underinvest in human capital. This tendency is reduced when emigration becomes an option and, despite some losses through migration, the overall average level of human capital in the economy rises. People respond to the possibility of migration by raising their investment in human capital creation. However, not all who have increased their capital will either want to migrate or be accepted for migration, leaving the economy with a higher level of human capital than before. Thus, one can hypothesize that people opt for certain types of training specifically to increase their probabilities of migration: in the mirror image of the 'designer immigrants' created by developed countries discussed above, developing countries are creating 'designer emigrants' for foreign destinations. However, the production of designer emigrants should also contribute to the creation of more trained people for the domestic market as well. The policy considerations about who should pay for the designer emigrants will be discussed in a later section below.

Irrespective of the theoretical elegance of the model, important questions remain about its applicability to real cases and whether it might apply in some situations but not in others. That is, the model needs to be tested against migration and data on human capital in specific economies. Finding data to test this hypothesis is problematic. Longitudinal data on both the pool of specific occupations in origin countries against the annual exodus in these same occupations will be

required before the validity of the hypothesis can be postulated. What does appear clear, however, is that investments are made in human capital before the option of international migration becomes available and unemployment among the educated is an issue in some economies. India is a case in point. That is, economies in developing countries may have difficulty absorbing the human capital made available to it. Migration, in this case, becomes an economic safety valve. Were the trained manpower not to migrate, the investment made in their training would be lost to the economy anyway, but the migration at least brings benefit to the individual migrants and their families. However, the economy, too, can gain if the skilled migrants send back remittances or return at a later stage. This is a theme to which we shall return in the following section but what appears clear is that, although the developed countries gain through the accumulation of human capital, the transaction cannot be measured simply in terms of developed country gain against developing country loss.

Health For All: Single or Two-Tiered Systems

The loss of skilled scientific personnel from developing countries of origin to developed countries of destination might be conceptualized in terms of the misallocation of scarce resources to provide training for inappropriate skills for the economies of origin that can only be adequately utilized through migration to an advanced economy. However, skills for the health sector are seen as essential for the improvement of the basic welfare of any population, and the loss of medical personnel from a developing country is seen as prejudicial to the achievement of primary development goals. From this point of view, the migration of skilled health professionals is often seen as different from other types of skilled migration. That is, it is in some way 'exceptional' and considerable research and policy attention has been directed towards it. Health systems in parts of the developing world, and particularly in sub-Saharan Africa, are seen to be in crisis as their doctors and nurses opt to move to greater security and higher paid jobs in Europe, North America and Australasia. However, as with the previous discussion of other sectors, the situation in the health sector, too, will be shown to be more complex than might first appear.

The one area in which there is no disagreement is the increasing demand for health personnel in developed and ageing societies. Studies have shown that the proportion of foreign medical

graduates practising in the United States rose from around 18 per cent in 1970s to 25 per cent in 2000 and that there could be a shortfall of 800,000 nurses by 2020 (cited in Bach 2003: 6). Data for the United Kingdom show that, in 2001-02, virtually half of the new entrants to the register of nurses were from overseas (Buchan 2002) and over half of the doctors holding full registration had been trained in other countries (Bach 2003). However, as in the case of the highly educated discussed above, in terms of the absolute numbers of health workers, the major countries of origin are other developed countries or middle-income developing economies. The World Health Organization (2005) has compiled data that show that India is the major source of supply of foreign doctors in the United States and the United Kingdom, the second source for Australia and the third most important source for Canada. However, the United Kingdom emerges as a major source of doctors for both Australia and Canada, and South Africa is a major source for the United Kingdom and Canada. Thus, considerable circulation of skilled medical personnel takes place. Language is clearly a major factor in accounting for the flows of doctors as those to Germany are dominated by non-English-speaking origins in Russia, Iran and Europe. The Philippines and India are emerging as two of the principal sources of nurses to the developed countries in the English-speaking world. For a review of the movement of nurses at the global level, see Buchan, Parkin and Sochalski (2003); for a specific examination of the situation in the United Kingdom, see Buchan (2002); and for a series of articles summarizing the main issues of migration and health workers from a fairly balanced point of view, see WHO (2004).

The data used to assess the flows have to be used with some caution as they usually only account for those doctors or nurses who are registered with the official professional bodies in the respective countries. Other doctors or nurses may enter countries under different categories and pursue non-medical occupations, an issue that is currently being examined by OECD. Of much greater importance, however, is the impact that the exodus of medical personnel might have on countries of origin. As seen above, South Africa figures prominently in the flows of both doctors and nurses to the developed countries of Europe, North America and Australasia. Yet, the pool of all health professionals except nurses continued to expand between 1996 and 2001 despite the outflow. Although the number of nurses in South Africa was virtually stagnant over the same period and some 32,000 vacancies existed in the public sector, it was also estimated that there were within the country another 35,000 registered nurses who were inactive or unemployed (OECD 2004). These

data suggest that migration is but one factor in accounting for losses of personnel in the health sector. Supportive evidence exists for the loss of the skilled in science and technology from the same country. During the late 1990s and early years of the twenty-first century, about 2,000 highly skilled workers in science and technology left South Africa each year. This figure represented less than 1 per cent of the workforce in that category and annual losses due to mortality ranged from five to eight times more than those due to emigration. The pool of the skilled workforce in science and technology increased from 1.64 to 2.51 million between 1996 and 2002. Unemployment for highly skilled workers, although only a fraction of that for all workers, rose from about 9 to 16.5 per cent over the same period (all data from Kahn et al 2004). While questions remain concerning the relative experience level of those who left compared with those who stayed, it seems clear that for South Africa, like the economies in East Asia from the 1970s and the United Kingdom in the 1960s, the brain drain is more perceived than real.

South Africa is one of the most developed countries in Africa, and perhaps more important for assessing the impact of a brain drain on health services are those cases where relatively small numbers of medical personnel leave from countries with a very limited skill base in health personnel. This situation applies particularly for other sub-Saharan countries and for small island economies. For example, it has been estimated that the numbers of doctors leaving Guinea-Bissau, Zimbabwe and Uganda represent more than 30 per cent of the resident stock of doctors (WHO 2005: 31). Although Ghana is another of the more developed African countries, Ghanaian-born doctors overseas are equivalent to half of the domestic pool. These kinds of figures are at the root of the impression that African health services are in crisis and that the countries are on the verge of a public health disaster. Before acquiescing to such an interpretation, we need to examine four critical areas:

- Place of training: as discussed in the section above on scientific personnel, many of the foreign-born doctors in developed countries may have received their advanced training overseas.
- Specific places of origin of the doctors: the internal distribution of health personnel needs to be taken into consideration.

- The health sector and the state of health of origin populations may be more tenuously related than is often assumed.
- The immigration of doctors from other countries and return, temporary or otherwise, of trained nationals.

Any simple association between birthplace data and medical occupation can be misleading but data to show the place of training are difficult to find. Ideally, information is required on place of birth, place of training, year of arrival in present country, as well as current occupation. This information is generally elusive. Large numbers of doctors practising in France were indeed trained in developing countries, although the majority of these doctors become naturalized and 'disappear' from the foreign population, further complicating any analysis (WHO, personal communication). The issue of accreditation looms large in the medical field, and doctors and nurses may have to complete 'bridging' courses that local medical authorities require to bring them up to acceptable local standards. Opting to train in a medical school in a developed country clearly obviates this particular problem and, with most doctors still coming largely from elite families in developing countries, appears to be the ideal strategy for that particular group. Doctors seem increasingly to belong to the transnational class, identified later in the paper, with more in common with their colleagues overseas than with their potential patients in poor urban or rural parts of their home countries. However, definitive conclusions on this important issue must await a more solid empirical foundation on which to base the analysis.

The origins of health professionals in developing countries are rarely to be found in the places of greatest deprivation, the rural areas. They come, hardly surprisingly, from the urban areas, and are likely to be from elite or at least wealthy families. It is often difficult to encourage medical personnel to serve in rural areas even in countries such as South Africa that resort to importing doctors from countries like Cuba to fill the void. Hence, the emigration of doctors is unlikely to be responsible for any reduction in services in those areas of greatest need and again the migration as a perceived 'brain drain' is blamed for a wider failure of policy. It is all too easy to use emigration as a scapegoat for a lack of development. This discussion immediately raises the question of the extent to which highly trained medical personnel can truly make a difference in areas where basic facilities are lacking. In that case, should countries be opting for training systems more appropriate to the

needs of the majority of poor rural people, in effect producing medical personnel who are not marketable internationally but who are needed locally? Any such approach would have parallels with the Chinese approach to primary health care in the 1960s where non-professional health personnel, 'barefoot doctors', were involved in extending health care into isolated areas or where needed.

However, such radical approaches need not necessarily form the ideal model, and countries might opt for systems of community-based training of individuals to bring basic health care to places where it is most needed. Equally clearly, countries will not wish to introduce what might be perceived as a 'second-rate' system of medical training. Hence, some variant of a 'two-tier' system of training might be considered in which doctors and nurses are trained to international standards and it is accepted that losses will occur, but many others are trained to more basic levels of health care. These levels are appropriate to areas of high infant and child mortality and areas where expectation of life is low and where the patterns of morbidity and mortality are different from those in urban and international areas. Attendants are required for those suffering from HIV, rather than doctors with advanced medical training. Even in advanced areas and economies, however, paramedics and emergency medical technicians (EMTs) have, since the 1970s, provided a vital service in offering basic medical treatment through the emergency services and in hospitals. While no universal training curriculum yet exists, and paramedics and EMTs are trained to various levels, that training is neither as long nor as expensive as that of a doctor.

The above discussion raises the almost sacrilegious question of the relevance of the advanced medical sector to the health of the populations in the developing world. 'The medical establishment has become a major threat to health' (Illich 2002). Even if one does not entirely sympathize with these words with which the Austrian-Mexican intellectual Ivan Illich opens his scholarly exegesis of medicine, it is not difficult to accept that the state of health of any population does not depend on its medical personnel. In terms of skilled workers, the agronomists who work to increase agricultural yields to improve the nutrition that will combat disease, the water engineers who work to supply safe drinking water, the sanitary engineers who build the sewerage systems, the transport engineers who improve communication that allow food to be taken from point of supply to where it is needed, and so on, are as critical as any skilled doctor in improving the health status of a

population. To relate the state of a nation's health to the increasing emigration of medical professionals, or conversely, to their presence, is to take too narrow a view of how health is delivered to a population. It is not for one moment being suggested here that a country does not need doctors and nurses, simply that any crisis in the state of health in a country is unlikely to be the result of an exodus of skilled medical personnel. Many more professionals are at the root of developments in the health of a population. It is suggested here that countries need to introduce systems of much more basic training in order to have the most appropriate personnel for poor rural areas.

Lastly, there is the issue of the immigration of doctors from other countries and the return on a temporary or longer-term basis of trained nationals. Movement of doctors from developed countries and other parts of the developing world to many poor countries also occurs. Since 1971, Doctors Without Borders (Médecins Sans Frontières) has sent doctors, nurses and other medical and non-medical personnel to areas where there are humanitarian emergencies, as well as to areas where people are judged as being excluded from health services. Currently, voluntary personnel are working in almost 70 countries and each year personnel are involved in more than 3,400 missions. Cuba is a source for 'medical brigades', primarily to Venezuela and other countries in the Caribbean and Central American region but also to Ghana and Zimbabwe. Some 450 Cuban health professionals were in South Africa around the year 2000 (OECD 2004: 128). These doctors often operate in the rural areas where local doctors are reluctant to take up positions. For example, the 535 Cuban medical volunteers in Haiti were sent to compensate for the 90 per cent of local doctors who were estimated to be concentrated in the capital Port-au-Prince. There are also the philanthropic motives of professionals in the diaspora. For example, in the United States, some 35,000 practitioners and 10,000 students are members of the American Association of Physicians of Indian Origin that is a constant source of volunteers for service back home (Barré et al, 2003: 151). Hence, a significant but indeterminate number of short-term skilled health migrants to the poorer countries appears to exist that can bring health care to places where it is most needed and compensates, at least partially, for the outmigration of national health personnel. The critical question now to be considered is whether return and the immigration of the skilled can be placed on a more sustained and long-term basis.

Outsourcing and the Highly Skilled

As was seen in the earlier discussion of scientific personnel, a critical dimension of the migration of the skilled is their return to their countries of origin. This return can either be of previous brains lost in the migration or of brains enhanced through training overseas in a 'brain gain'. The evidence for East Asian economies was that the return of students, in particular, increased over time. Central to this return, however, is the fact that there must be something to return to, essentially a stable environment in which the returnee can make a living. However, a downturn in the destination economy might also engender return such as in the case of the large number of lay-offs among IT specialists in Silicon Valley, California, in 2001-02 that may have encouraged Indian professionals to return to their own country (Khadria 2003: 15). Once the process of return is under way, however, these return migrants contribute to the development of their economies of origin in a number of ways. Clearly, they are bringing skills but they can also bring capital and entrepreneurial and political ideas. They are unlikely to be *the* key factor in the development of their homeland, but they can play significant roles nevertheless.

Ageing populations and declining rates of labour force growth in developing countries have played a central part in shifting labour-intensive production overseas but migrants, too, have been part of the process. In Asia, the key groups are perhaps the Overseas Chinese, non-resident Indians and groups such as the Viet Kieu, and these immediately raise large the idea of the role of the diaspora, or the overseas communities of migrants in the development of origin economies. It is estimated that half of the \$US48 billion in foreign direct investment to China in 2002 came from Overseas Chinese, although the overseas Indians have invested proportionally much less, \$US4 billion (data cited in Newland and Patrick 2004: 6). The reason given for the smaller figure for Indians is the disinterest of the Indian government and the lack of an 'investor-friendly' environment (Newland and Patrick 2004: 7). In the case of Vietnam, investment in the country during the early 1990s from the Viet Kieu was initially low, only some \$US127 million over eight years (Woods 2002: 182), but this figure had increased dramatically to over \$US3 billion in 2004 alone (*International Herald Tribune*, 18 March 2005), a reflection of changing government attitudes and the introduction of a more open economy.

While some problem of comparability exists with these figures, the point seems clear: origin-state attitudes are critical in encouraging overseas migrants to invest in their home country and in their decision whether they return temporarily or permanently. Some of the migrants only invest from overseas, others return periodically to oversee their investments as part of wider global concerns, but some will see return as part of the investment. Where opportunities exist, migrants are likely to return to participate in private-sector initiatives, which can range from industrial activities as shown by the linkages in India's IT sector with American-based companies, to the health sector. Where there are rigid government controls or institutions that protect narrow local interests, neither multinational companies, nor investor immigrants, nor members of the diasporas are likely to come to the country in question.

While considerable work has been carried out on offshore processing and even on the IT sector and non-resident Indians (Heeks 1996, Khadria 2003), relatively little research has been done on the health sector. Like labour-intensive industrial production, basic services such as health can also be outsourced. Ageing populations with their patterns of recurrent and degenerative diseases, personnel shortages in the health sector, rising costs of medical care and increasing waiting times for non-emergency surgery are all factors favouring travel overseas for treatment. If people used to socialized medicine are forced to use the private sector, costs in developing countries are much lower. Not that there is anything particularly new about travel for health care. Mountain resorts and spa towns have long been established as health centres, and travel in search of a miracle cure has been part of the traditions of pilgrimage. However, today, a global market in health care appears to be emerging with India, South Africa, Cuba, Costa Rica, Malaysia and Thailand all promoting medical care for patients from overseas. The principal market in India for the proposed treatment of those living overseas is likely to be its expatriate community who can combine non-emergency medical care with trips back home. However, regional markets are emerging, with people from the Middle East going to South and Southeast Asia for treatment, and hospitals in Bangkok, for example, serving patients from Hong Kong, Bangladesh and as far away as Australia. What began as medical services for expanding expatriate populations based locally to oversee transnational economic activities or international development and diplomacy has evolved into supplying regional and even global medical care.

One example of the potential of this 'medical tourism' comes from Thailand and Bumrungrad Hospital, one of several such hospitals in Bangkok (Bumrungrad 2005). Initially founded in 1990, Bumrungrad became 'Asia's first internationally accredited hospital' on 25 April 2002. It is a private company listed on the Thai stock market, that treats 850,000 patients a year, 300,000 of whom are 'international', from 154 countries, an unspecified proportion of whom, however, will be resident in Thailand. Its turnover in 2003 was \$US114 million. Although the majority of its 600 health professionals have mainly been trained in Thailand, most of them have overseas training and certification, mainly in the United States, and Bumrungrad has an 'American-led' management team. Like other overseas hospitals, it has reached agreements with leading American and European insurance companies to cover the costs of its medical treatment. The hospital has representative offices in seven South or Southeast Asian countries plus the Netherlands in Europe. Lest such an operation be seen as diverting attention away from local health needs, the Bumrungrad Hospital Foundation is involved in a wide range of charitable activities to help poor Thais. These range from doctors providing free services in low-income areas to in-patient heart treatment for children, and the foundation estimates that it has provided benefits to over 100,000 needy Thais since its inception, a tiny fraction of total treatment but at least demonstrating linkages back into the local community.

Much of the future potential for the development of this kind of outsourcing depends on the public confidence in developed countries in the kinds of treatment being offered. Longer-term aftercare is a problem, for example. Its future potential also presumably depends on the continued availability of relatively cheap international air travel, a future that is not guaranteed given rising costs of fuel and concerns about the environmental impact of air travel. Thus, reports that the medical treatment of overseas patients could be generating \$US2.1 billion for India by 2012 (*The Financial Times*, 2 July 2003) may be optimistic. The extent to which programmes to outsource medical care can encourage migrant national doctors to return from overseas or even to retain local talent remains not proven. Nevertheless, the cases to date suggest that regional markets are emerging for health care as middle-class or middle-income groups emerge in developing economies.

A second and critical dimension of the export in basic services in the context of the evolution of middle-income groups is the outsourcing of education, which relates to the discussion of the

globalization of education above. International schools have been a part of the movement of the skilled expatriate since colonial times. The expansion in the number of British boarding schools was partially a response to increasing numbers of highly mobile British parents based overseas who wished for some stability in the education of their children or who had no access to quality schools locally. It was a response, too, to an increasing demand for an English education for children of elite members of colonial societies. English schools were also established in the colonies themselves for the children of both expatriate but, more particularly, local families. With the growth in the number of middle-income groups and an acceptance that English is a key skill in a globalizing world, the number of international schools has greatly expanded, teaching to American, British or International Baccalaureate curricula. To serve their expatriate populations, French, Swiss-German, Japanese and increasingly, Chinese, international schools are also to be found around the world, although many tend to have English-language streams as an integral part of their programmes.

While some of these schools are government-supported, as some are in Hong Kong, for example, most are private, with independent boards of governors setting terms and conditions, including salaries and benefits such as housing and medical care. Increasingly, however, independent schools in developed countries are establishing branch schools in the developing world in order to access the expanding market. For example, both Harrow and Shrewsbury schools of England have established international schools in Bangkok that take children from the earliest years of primary through to the end of secondary. Both day students and boarders of varying duration (from 4 through 7 nights per week) are taken and fees are high. Whether profits are repatriated to help to subsidize the school in the home country remains unclear, but it would seem ironic if the new wealthy of Asia were subsidizing the middle classes of England. Teachers are recruited from English-speaking countries and all education is in English, although in the Bangkok cases Thai language training is compulsory. The immersion of the children of local middle-income groups in an English-style education, where before the systems were based on rote learning, and the impact that this will have on local cultures, identities and ways of thinking is not yet known.

The expansion of schools is mirrored in the expansion of western universities into the developing world and, again, particularly into Asia. In some cases, such expansion is highly focused on

specific degrees being accredited at existing institutions by overseas universities. In other cases, whole packages of courses developed in North America or Europe are introduced into new international universities. For example, the University of London supports 49 external programmes in about 200 independent institutions in 45 countries that affect some 20,000 students. The arrangements that the home institution has with the overseas institution are highly varied but the common denominator is that the former is expanding its market access transnationally and selling its reputation abroad. The role of alumni as returned migrants in promoting this type of expansion remains to be investigated, as does the impact that this expansion will have on the flows of students discussed earlier in the paper. If students can be trained locally, will they continue to move in such large numbers to developed countries for their education? In contrast with the health sector just discussed, the ultimate success of such programmes will depend on public confidence in the developing country rather than in the developed countries. However, again, government policy on liberalizing the education sector will be critical. The university sector, in particular, if successful, will provide opportunities for skilled teachers and researchers to return from diaspora communities.

What is clear in the above discussion is that not all countries will be able to adopt strategies of such medical or educational outsourcing to reverse a brain drain, retain skilled staff or simply generate revenue. Such alternatives are only possible where a number of conditions can be met:

- Where prior demand exists from an expatriate population.
- Where regional and, ideally, global networks of aviation transport are available.
- Where, in the case of the medical outsourcing, there is a local supply of high-quality health professionals and in educational outsourcing where teachers can readily be recruited on acceptable conditions.
- Where an acceptance by government exists of the significance of the private sector in promoting health and educational activities.

The combination of such factors is likely to be found only in the larger cities of middle-income developing countries: throughout Southeast Asia, coastal China, parts of India, Mexico, coastal Brazil and Argentina, South Africa, North African countries, and Nigeria and possibly Ghana in

West Africa. Geography matters and not all countries will be able to deal with the flows of the skilled in the same way. As is equally clearly from the discussions earlier in the paper, not all countries generate skills in equal numbers, not all countries have the same demand for skills and the impact of the movement of skills both in and out is variable. Location and size of labour market are critical in any assessment of the impact of the exodus of the highly skilled, and policy responses need to be adjusted accordingly. Policy development and implementation are thus made complex.

Policy Confusion or Policy Integration

The political response to the movement of skills from the developing to the developed world tends to see the migration primarily in negative terms. Countries of origin wish to retain the skilled that they have and to want the skilled they have lost to return. Countries of destination need the skills they import but are becoming increasingly conscious that this process may prejudice the development potential of the countries of origin. This tension has resulted in policies that are often contradictory and difficult to implement. Many policies attempt to restrict the movement of the skilled in the face of an underlying reality that favours the movement of the skilled. The major destination countries favour the recruitment of migrants with skills while at the same time seeking to restrict the importation of certain classes of skills through programmes of ethical recruitment. Origin countries wish to restrict the loss of the skilled in the face of growing global demand for the skilled, creating tensions between the possibilities that the individual skilled have to improve their situation and the demands of the state that produced them.

However, as should be clear from the arguments in this paper, the issue of the brain drain is much more complex than these types of policy responses directed towards the skilled imply. Policies that seek to restrict the migration of the highly skilled are likely to be counterproductive, no matter whether implemented by countries of origin or of destination. Rather, it is argued here that policies that seek to accommodate to the evolution of the systems of global migration of the skilled are likely to meet with greater success. The growing demand for the skilled in the core countries of the developed world is not likely to recede. The problem of the inability of many developing countries to be able to absorb optimally many of the skilled that they produce is unlikely to be resolved in the

short term. Attempts to restrict the movement of the skilled are more likely to result in the skilled resorting to irregular channels of migration than keeping them at home. The skilled in irregular positions in destination countries are less likely to be able to practise their skill than if they had been able to migrate legally in the first place. The issue of this potential skill loss is still poorly understood owing to obvious difficulties of collecting information from the irregular migrant population in any country.

Assuming that the skilled are allowed to migrate legally, one policy option is some kind of compensation paid by a skilled migrant living overseas back to the home economy to defray the costs of his or her education and to compensate for lost tax and productivity. Perhaps most associated with Jagdish Bhagwati, the idea of a migrant tax that would be collected in the destination country but returned to the country of origin was first mooted in the 1960s but appears to be in the process of resurrection at present (Bhagwati 1976; 2004). However, as seen earlier in this paper, migrant groups such as the Chinese Overseas and the non-resident Indians already send large amounts of capital back to their home economies either through remittances or through foreign direct investment. Should they then be expected to send more and through channels that they would not directly control? Difficulties also exist in identifying those who should contribute to the 'migrant tax'. Should those who have changed their citizenship to that of the country of destination be equally liable as those who maintain their original citizenship? Would only those on non-immigrant, temporary programmes be liable for the tax? Would permanent residents, new citizens and those benefiting from all the services in destination areas either pay lower tax to destination economies, and thus be subsidized by the indigenous non-migrant population, or would they be double taxed? These are difficult political and ethical issues that probably dwarf the sheer practical difficulties and costs that arise in actually collecting the tax from widely distributed and potentially highly mobile migrant populations. Finally, the principal destination countries would have to adopt similar policies towards each migrant group at more or less the same time or significant economic incentives might favour one destination over another.

If a Bhagwati-type graduate tax were to be implemented, legitimate questions could theoretically be raised as to whether all countries could be expected to compensate the countries which provided the basic and advanced training irrespective of whether these were developed or developing. In

some areas, such agreements already appear to exist as in the case of Cuba's oil-for-skills arrangement with Venezuela, for example. However, given the difficulties in implementing a separate tax on skilled migrants that were outlined above, the approach advocated in this paper is different and shifts the emphasis away from the individual skilled migrant towards the institutions of training themselves. It has been observed that much of the advanced training takes place overseas and that trained migrants return from overseas to the home countries, although the incidence is highly variable, and that professionals also move from more developed to developing economies. Nevertheless, given that the developed world so clearly benefits from importing people to be trained, a logical outcome of the argument presented in this paper is that much greater consideration needs to be given to where the training takes place and who should fund the training. The strategy suggested essentially reinforces the trends observed in the previous section on outsourcing and would thus seem well placed to combine public sources of aid with private sources of finance. In essence, the approach recommended is that developed countries seek to build, fund and monitor centres of advanced training at key centres in the developing world.

The proposed centres would train men and women to the standards required of the developed world thus avoiding the issues of accreditation. It would be accepted that many would migrate overseas but the costs of their training would be met from overseas sources. Clearly, there are political and ethical issues surrounding this transition from the production of 'designer immigrants' (foreign nationals trained in destination markets) to 'designer emigrants' (nationals trained at home to overseas standards) but the origin country would benefit. Not all the skilled migrants trained would choose to migrate, and if the schemes were successful, perhaps the numbers remaining could be expected to increase over time. The training centres would provide opportunities for those in the diaspora to return to participate in the training in their home countries. The construction and maintenance of the centres would have an impact on local employment for the less skilled and have significant multiplier effects in local housing markets and in retailing. Equally clearly, however, such a strategy could only be pursued at a regional, rather than a national level. Not all countries could support the establishment of such centres of excellence. Geography matters and many countries are unable or unwilling to take steps to liberalize their domestic markets in education or health. Despite the obvious difficulties in introducing such a policy of overseas-funded training, it might offer a compromise solution that could eliminate the tensions and contradictions in existing

policy and provide a pathway towards an integrated policy that would achieve the objectives of both origin and destination economies.

Conclusion

This paper has attempted to review the evidence for a brain drain. Its primary purpose has been to show how the idea of developing country loss and developed country gain is an oversimplification of a complex situation. In terms of absolute numbers, most of the skilled in the global migration system who move to developed countries come from other parts of the developed world or from large, middle-income developing countries, several of which actively train people with skills for the international market. At the same time, it must be recognized that the exodus of relatively small numbers of skilled from small, poor economies can cause a substantial loss from the total pool of the skilled in those economies. Thus, geographical scale is central to any understanding of the movement of the skilled. In larger economies the exodus of the skilled may create bottlenecks but, as seen in the cases from East Asia, any brain drain is likely to evolve into a circulation of brains to the benefit of both donor and recipient economies. In small economies, the central problem is the inability to create brains in the first place and the loss of the few with skills of whatever level are likely to have a far greater effect as there is little to attract those with skills back home.

In both large and small labour markets in the developing world the skilled are likely to come from urban areas rather than from the poor rural sector where they may be most needed. An internal brain drain exists in most developing countries that is often not considered together with the international movement of the skilled. More generally, the highly skilled in many developing countries may not be able to be productively employed locally, leaving emigration as the only rational alternative if their skills are to be fully utilized. Migration of the skilled from the developed world to the developing world also exists, perhaps not in equivalent numbers but playing a significant role in small economies. Finally, one can argue that an important part of the creation of the brains takes place in the developing countries themselves, with developing country nationals moving as students for overseas education or training at foreign universities and institutions.

Some developing countries have been able to absorb the skilled labour that they produce, to retain those skills and to attract back skilled nationals from their diaspora, particularly as seen from examples in East Asia. Outsourcing of health and education, in addition to other productive activities, is a viable strategy for some countries. However, again, these activities are concentrated in or near the largest cities. Circuits of skilled international migration, although technically consisting of transnational flows, are, in effect, circuits of mobility linking urban centres at specific levels of a global hierarchy: transnational metropolitan flows. These flows are an integral part of the whole process of globalization and support what Sklair (2001) has called the 'transnational capitalist class' that he sees as made up of elites who act together to accumulate wealth with as little state interference as possible. 'Consequently, capitalists in the USA or Japan or Brazil or Germany or India may have more interests in common with each other than their non-capitalist fellow citizens' (Sklair 2001: 12). The polarization of citizens into two clearly separate groups, capitalist and non-capitalist, appears problematic but how the elite groups are linked to settlements and groups further down the urban hierarchy and reaching into the poorer parts of states remains an open question. Clearly, there is a movement of temporary immigrant skills that reaches down the hierarchy but domestic skills, non-migrant and return, in health and education in particular, are concentrated in the largest cities. The jobs generated by these skills attract more lowly skilled from the rural sector who themselves are relatively highly educated for the populations from which they come. The links between skilled migration and less skilled migration and between international and internal migration are still poorly understood but for a preliminary assessment of the internal/international migration link (see Skeldon 2005).

Returning to Sklair's thesis, it seems clear that the international movements of the highly skilled underlie his idea of a transnational capitalist class. Much of the movement of the skilled from the developed world is through the networks of transnational corporations, for example. Also, the outsourcing of education and health extends the reproduction of this class outwards from core countries as well as servicing its needs. This paper, rightly or wrongly, has accepted the persistence of globalizing forces and suggested that the most effective way towards managing the flows of the highly skilled is not restriction or control but improvement in training that is likely to lead to increased movement of the skilled, but an increased movement that promotes increased circulation of brains that brings some skilled nationals back, as well as allowing other nationals with

skills in. Increased interaction, demographic as well as commercial, is more likely to enhance development and reduce poverty than any attempt to restrict or slow population movement. Although it can be argued with some justification that nationals may be more effective agents of development in their home countries than non-nationals, and thus should remain at home, that is beside the point. As in so many development issues, the needs of the individual and those of the state may not always be compatible. The clear distinction between the freedom of the individual to move and the collective developmental needs of the state must be maintained, although it is unlikely that by restricting the former the latter will be enhanced.

As the arguments in this paper should have made clear, the international migration of the highly skilled is primarily from and to large urban areas. The role of metropolitan governance in the management of migration, as distinct from national policy, has yet to be determined in the future global political architecture. Yet, much of that management must be directed towards domestic migration. It is all too easy to blame development failures on the exodus overseas of the highly skilled when few of those skilled were prepared to venture into rural hinterlands where the incidence of poverty remains greatest throughout most of the developing world. How the circulation and longer-term migration of the relatively well educated from villages to cities impacts on poverty and overall development remains one of the most intractable of issues. Must development be accompanied ultimately by rural depopulation as in Europe, Japan or Korea or can some kind of stasis in circulation between rural and urban be achieved? Internal brain drains and how these are linked, if at all, with the transnational flows that have dominated the concerns over the loss of skills must be an essential part of any real policy-relevant discussion of the 'brain drain'.

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