

**INTERNATIONAL MIGRATION
PAPERS**

44

**MIGRATION OF HIGHLY SKILLED
PERSONS FROM DEVELOPING
COUNTRIES: IMPACT AND POLICY
RESPONSES**

Synthesis Report

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Table of contents

Foreword	v
Executive Summary	1
1. Introduction	3
2. Demography of skilled emigration	3
3. Research on emigration and economic development	6
3.1. Direct “brain drain” effect: Reduced economic growth.....	6
3.2. Induced effect of skilled mobility: Stimulus to domestic education.....	7
3.3. Feedback effects: Return, remittances, diaspora and technology transfer.....	8
3.4. Linked processes: Globalisation, trade in services and skill mobility.....	10
3.5. Case studies show diverse issues and need for research.....	11
4. Trends in major classes of skill mobility	15
4.1. Supplying transnational corporations.....	15
4.2. Addressing domestic conditions of supply.....	16
4.3. Impact of skilled emigrants on specific occupations.....	16
5. Policy responses to high skilled mobility	17
6. Developed countries’ policy options	19
6.1. Migration policies to facilitate and protect in a global economy.....	19
6.2. Migration policies to help protect the interests of developing countries.....	20
6.3. International migration policies: Bilateral agreements, harmonisation.....	22
6.4. Diaspora options: Expatriates as a measure for development.....	23
6.5. Policies to facilitate economic development.....	26
6.6. Priorities for future research.....	28
7. Conclusions	30
References	32
Contributors	37
International Migration Papers	38
 List of boxes	
Box 1. Terminology.....	7
Box 2. Case study summaries.....	13
Box 3. Policy responses to high skilled emigration: The “Six Rs”.....	18
Box 4. Developed countries’ policy options.....	24

Foreword

This report forms the overall synthesis report of a series of studies conducted by the International Labour Office under the DFID-sponsored project on “*Skilled labour migration (the ‘brain drain’) from developing countries: Analysis of impact and policy issues.*”

International migration of skilled persons has assumed increased importance in recent years reflecting the impact of globalisation, revival of growth in the world economy and the explosive growth in information and communications technology. A number of developed countries have recently liberalized their policies to some extent for the admission of highly skilled workers.

The problem lies in the fact that this demand is largely met by developing countries, triggering an exodus of their skilled personnel. While some amount of mobility is obviously necessary if developing countries are to integrate into the global economy, a large outflow of skilled persons poses the threat of a ‘brain drain’, which can adversely impact local growth and development. The recent UK government (DFID) White Paper on International Development, “*Eliminating World Poverty: Making Globalisation Work for the Poor*” has rightly pointed out the need on the part of developed countries to be more sensitive to the impact of the brain drain on developing countries. It was in this context that the Department for International Development, United Kingdom, approached the ILO for carrying out research relevant to the above issues.

The synthesis report prepared by Professors Lowell and Findlay addresses the issues of the impact of high skilled emigration on developing countries, and the policy mixes and options available to both receiving and sending countries to harness its benefits. The study argues that the feedback or indirect effects of skilled migration can often outweigh any initial negative impacts on developing countries. The challenge is to maximize these benefits through appropriate policies relating to encouraging return migration, retention of manpower, tapping diaspora networks, and productive utilization of remittances. The paper highlights the role that receiving countries can play in the process.

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Mr. Piyasiri Wickramasekara, Senior Migration Specialist, International Migration Branch, acted as the ILO Project Coordinator and technically backstopped all the studies. ILO is most grateful to the two lead consultants, Professors Allan Findlay and Lindsay Lowell, for their valuable contribution.

Geneva, December 2001

Manolo I. Abella
Chief
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Executive Summary

This is a summary report of a research project on the impacts of high skilled emigration on developing countries and the policy options open to developed countries. Background papers were written on skill mobility and policies around the world; specific processes and policies in the United Kingdom; and yet more specific processes and responses in eight countries: Argentina, Bulgaria, India, Jamaica, Philippines, South Africa, Sri Lanka and Uruguay.

The volume of skilled emigration raises concerns.

1. Some skilled emigration from developing countries can stimulate economic growth, but significant outflows create concern about a “brain drain”. In order to gauge this possibility, we examined the only comparative data set on the percentage of highly educated persons abroad for 1990. Those estimates indicate losses of 10 to 30 per cent and much more of the highly educated workforce from a few developing countries. There is little doubt that blanket statements are not warranted, but equally there is little doubt that skilled emigration at such high levels may create a challenge for some developing countries.

Skilled emigration triggers multiple impacts.

2. Like most social processes, the net impact of skilled emigration from developing countries is a balance of direct and indirect effects. The most direct effect of skilled emigration is a reduction in the number of educated workers who are critical to productivity and a developing country’s economic growth, but it also sets in play a number of forces that can increase economic growth.

3. For example, there are three major feedback effects of skilled emigration. Return migrants, in particular, bring back their skills and work experience from abroad, thus boosting productivity. Expatriates who remain abroad contribute money via worker remittances; and many observers claim that their transfer of knowledge or technology to developing countries can increase productivity and economic development.

4. Similarly, some economic theorists focus on direct effects while others posit that the possibility of emigration may itself create opportunities. Neoclassical models find that a high level of skilled emigration slows economic growth and “new growth” models find an even greater reduction in economic growth and increases in poverty. Yet, the possibility of emigration for higher wages can stimulate individuals to pursue education and domestic enrolments may increase. Average workforce skill is thereby increased and economic growth stimulated—there may be an “optimal level” of skilled emigration.

5. Finally, “brain exchanges” between countries characterize all advanced economies, forming one component of the flow of goods and information in a globalising economy. A central challenge for developing countries can be to engage appropriately in the exchange of skills taking place in the global labour market. Ready examples exist of developing countries engaging in and benefiting from international migration for the trade in services.

Impacts may be specific to certain occupations and regions.

6. If the international mobility of highly skilled workers is likely to increase, what is the future of developing countries already experiencing substantial losses? First, the factors

mentioned above condition whether high skilled emigration is in fact a medium- to long-term drag on economic growth. Second, the adverse effects of high levels of skilled emigration may be restricted to certain occupations within a country, and/or to certain groups of countries that are closely linked by directed flows of highly skilled migration.

Response with migration, diaspora, and development policies.

7. Both developed and developing countries around the world implement policies to deal with the impacts of high skilled emigration. Here these are grouped under the “Six Rs.” A darling of the 1970s, *reparation* for the direct loss through a “brain drain tax” has long since been abandoned. Three of the “Rs” are variants of migration policy, i.e., *return, restriction, or recruitment*. For those who remain abroad, there are *resourcing* policies or “diaspora options”. Grand policies of *retention* through building educational institutions and assisting in economic development are the best long-run response to a brain drain.

Suggestions for policies.

8. This report suggests the following policy directions for policy makers in developed receiving countries:

- International migration is in the best interest of developing countries. The immigration policies of developed countries should facilitate movement; yet, they should incorporate mechanisms that encourage developing country economic growth. Developed countries might:
 - encourage temporary and return migration;
 - control recruitment from at-risk countries;
 - establish best practices;
 - regulate recruitment agencies;
 - establish bilateral agreements; and
 - standardise GATS (General Agreement on Trade in Services) commitments.
- Diaspora arrangements bring together a large number of strategies that are primarily under the aegis of sending countries, but receiving countries can contribute. Expatriate organizations and mechanisms of technology transfer are important, as are means of facilitating remittances or investments.
- Education, training, and targeted economic development may actually increase skilled migration in the short-to-medium term, but these are the best means of addressing developing country skill shortages over the long run. The promotion of human rights may also play a role in this context.

1. Introduction

Emigration of highly skilled persons from developing to developed countries has increased over the past decade.¹ On the one hand, there has been accelerating demand for skilled workers in developed economies experiencing labour shortages. On the other hand, better wages and employment conditions, better information, recruitment, and cheaper transportation are encouraging skilled migrants to seek jobs in developed economies. Globalisation is linking together labour markets creating labour flows spanning global cities that are rooted in hierarchies of labour demand.² What are the consequences for developing countries and what are appropriate responses by developed countries to these patterns of mobility?

This is a summary report of a research project undertaken by the International Labour Office for the United Kingdom's Department for International Development. Background papers were written on the impact of high skilled mobility from developing countries, general policy responses, specific processes and responses in the United Kingdom; and yet more specifics in eight countries and two regions: Argentina, Bulgaria, India, Jamaica (and the Caribbean), Philippines, South Africa (and Southern Africa), Sri Lanka and Uruguay.³ This report summarises the highlights of 12 background papers and suggests major policy directions that developed countries might adopt to manage the flow of skilled workers from developing countries.

First, the basic demography of high skilled emigration from developing to developed economies is explored using the only comparative data available. Next, we review the research literature on high skilled mobility: its direct and induced impacts on national economic growth in developing countries, its feedback effects that create opportunities from the outflow, and its role in globalisation and the growth of service industries. Then the future of international mobility is considered with reference to different types of migrant linked to various labour markets. Finally, we present the general policy options that developed countries might adopt to address high skilled mobility from developing country settings.

2. Demography of Skilled Emigration

No international system for recording skilled emigration exists. As a result the term "skilled" is often interpreted in the literature in terms of educational attainment. One study provides a unique attempt to map, on a global scale, skilled international migration from developing to developed countries for the year 1990.⁴ It draws upon several sources to construct somewhat crude, but reliable estimates of the emigration of highly educated persons from developing to developed countries. We focus here on all emigration from countries in a given region to all developed countries, i.e., no single country is identified. The source and receiving country populations are separated into the primary (0-8 years), secondary (9-12 years), and the tertiary educated (more than 12 years and college).

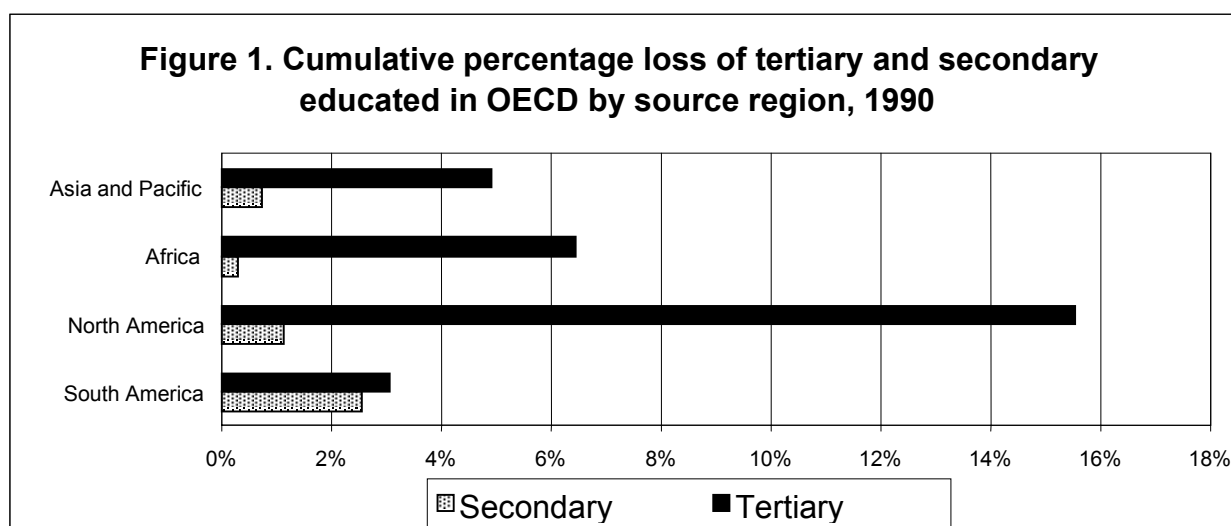
¹ Box 1 explains the terminology used in discussions on the international migration of highly skilled workers.

² Castles, 1999.

³ Box 2 provides a summary of the country studies.

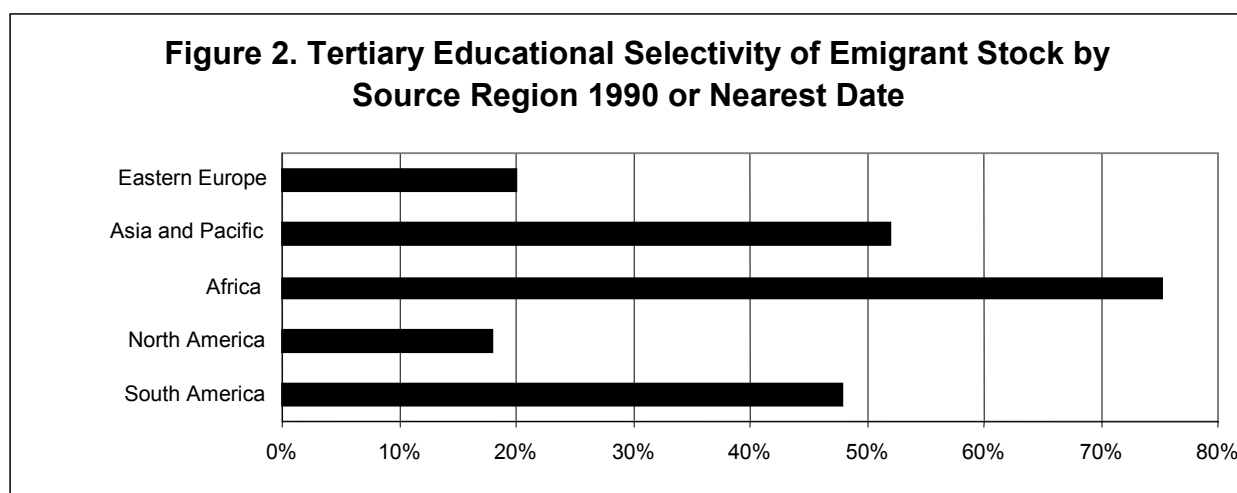
⁴ Carrington and Detragiache 1998.

There are two basic ways to measure tertiary educated emigration. “Cumulative loss” measures the percentage of all educated persons born in a given country, who are now living outside the country. Figure 1 shows that there are notable differences by region of the world. The percentage loss of tertiary emigrants is greatest for North America; about 15 per cent of all highly skilled persons from this region were outside their country of birth in 1990. The figure shows that population losses among the tertiary educated is substantially greater than those among the secondary educated.



“Educational selectivity” refers to the population abroad; it measures only the percentage of emigrants who have higher education. In the case of most developing countries, it reflects the degree to which emigration is a more attractive option for tertiary educated workers. Figure 2 shows that North American and Eastern European emigration was the least selective of the regions while African emigration was the most. Otherwise, the pattern for educational selectivity differs somewhat from the pattern of cumulative loss. Of course, this outcome is possible because the two measures capture different aspects of the stock of emigrants.

The percentage loss of tertiary skilled persons is far greater than that of secondary schooled persons, while the loss of primary schooled persons is very small (hence not shown). Emigration selects those who can afford it, whose skills are in demand abroad, and who stand to benefit most (the tertiary educated). However, many developing countries have sizable numbers of primary educated persons, so that a lower probability of emigrating will still generate a large number of emigrants.



Saying that there is less “selectivity” of primary educated migrants does not conflict with the observation that large numbers of illegal and legal emigrants have little education. Likewise, when there are few tertiary educated persons in a sending country, even a moderate number of emigrants can adversely affect the remaining share.

Clearly, cumulative loss can reach substantial proportions when averaged across developing countries. But there is a notable range of variation across national economies. Most importantly, these estimates demonstrate that the scale of movement of high skilled workers is significant for only a few developing countries. Losses of 10 to 30 per cent of the tertiary educated subpopulation, and up to three-quarters in a few cases, are significant on the face of it. Blanket statements about “brain drain” are not warranted, but it does appear that gross volumes of high skilled emigration are great enough to seriously challenge some developing countries. Interestingly, the developing countries most affected tend to be those that send migrants to the United States. By contrast, European countries and the United Kingdom in particular generally receive more skilled migrants from other parts of the developing world than does the United States.

Research over the past decade, as reflected in the case studies undertaken for this project, demonstrates that data remain spotty. For example, in Bulgaria, only gross movement is known with, as is often the case, no information on emigrant skills. Yet, about one-third of surveyed college students report “intent” to emigrate. Harder data indicate that about 12 per cent of Uruguay’s total professional class was lost during the 1980s. Occupation-specific data indicate that two-thirds of Jamaican nurses and 60 per cent of the Philippine’s medical doctors have emigrated. An ambitious project in South Africa yields the first-ever reliable estimates of emigration for the region, using receiving country data; the study documents a significant and growing outflow over past decades. The authors measure “loss” differently from above, choosing to report a 13 per cent loss of professionals out of those newly unemployed. Together, the project reports make it clear that a range of methods and measures are used; and that substantial effort is necessary to create an internationally comparable set of data. There is little room for complacency, especially given the significant upsurge in skilled emigration that has taken place over the last decade.

3. Research on Emigration and Economic Development

A large volume of movement of highly skilled workers from developing to developed economies raises questions as to how these valued workers affect the countries they leave. Critics argue that too much skilled emigration can undermine a developing nation's productive capacity. The degree to which this occurs, evidently, depends on the scale of permanent emigration, the offsetting feedback effects that it generates, and the evolution of the global economy.

We look next at research on the impact of skilled emigration on developing countries. Most economists conclude that large skill losses are detrimental to developing countries. But, ultimately, some degree of emigration may actually benefit developing countries, inducing greater enrolment in domestic education, and triggering feedback ranging from wage remittances to technology transfers. Furthermore, skilled mobility is intrinsic to the processes of globalisation. Many policy analysts focus not on whether skilled mobility is "good" or "bad," but rather note its integral role within globalisation and the conditions needed to benefit poorer countries. They argue that the focus of attention should therefore be on the migration policy-actions needed to benefit the poorer countries caught up in these important social and economic changes.⁵

3.1. Direct "brain drain" effect: Reduced economic growth

Before considering skilled migration from a globalisation perspective, it is useful to reflect on the traditional concern that has been expressed about skilled emigration from developing countries. There was a lively debate in the early literature over the welfare effects of a brain drain, with some consensus that global welfare is raised by the rational choice of highly skilled emigrants to seek improved incomes abroad.⁶

However, subsequent work recast the assumptions of the first analysts and agreed that neoclassical models of economic development generated an expectation that brain drain has adverse effects on sending country development.⁷ In particular, high levels of skilled emigration slow economic (GDP) growth and, adversely affect those who remain. As a consequence poverty and inequality are likely to increase.

More recent economic theory, a.k.a. new or endogenous growth theory, also typically predicts that high skilled emigration reduces economic growth rates. Indeed, research finds that the average level of human capital in a society has positive effects on productivity and growth. One study of 111 countries 1960 to 1990 found that a one-year increase in the average education of a nation's workforce increases the output per worker by between 5 and 15 per cent.⁸ Conversely, low average levels of education can slow economic growth, damage the earnings of low-skilled workers, and increase poverty.

Models of high skilled emigration support the expectation that reductions in the average level of human capital slow economic development; and the first order effect of emigration is unambiguously to reduce human capital. Empirical research finds that Eastern Europe's

⁵ DFID, 2000.

⁶ Johnson, 1967; Berry and Soligo, 1969.

⁷ Bhagwati and Hamada, 1973.

⁸ Barro and Sala-I-Martin, 1995; Topel, 1998.

economic growth was slowed by skilled emigration during the 1990s.⁹ The loss of human capital holds back potential economic growth. Further fallout would be upward wage pressures for remaining skilled workers and hence increased inequality.

3.2. Induced effect of skilled mobility: Stimulus to domestic education

Another theoretical variant finds that at some optimal level of emigration (greater than none but not too much), sending countries actually benefit. The possibility of emigrating to higher wage countries may stimulate individuals to pursue higher education in anticipation of finding better-paid work abroad. One economic model suggests that, at a sufficiently high volume of skilled emigration, the share of skilled workers in the source country actually grows.¹⁰ As enrolments increase spurred by the chance of emigration, average human capital increases and, therefore, overall source country growth can be stimulated.

This suggests that there may be an “optimal level of emigration” or a “beneficial brain drain”. If emigration is blocked there is less incentive to pursue education, but an excessive level of skilled emigration will deplete the stock of skilled workers faster than it can be regenerated. In these economic models there is a “right” level of highly skilled emigration. Empirical analysis offers some support for these theoretical expectations.¹¹ There may be an optimal level of emigration that stimulates the pursuit of higher education in developing countries and spurs economic growth.

Box 1: Terminology on the International Mobility of Skilled Workers

Mobility of highly skilled persons

Refers to the movement of “tertiary” educated persons, primarily those with at least four years of education after primary and secondary school (12 years). Mobility refers to any type of international movement from one-time target to recurrent or permanent patterns.

Brain drain

A brain drain can occur if emigration of tertiary educated persons for permanent or long stays abroad reaches significant levels and is not offset by the “feedback” effects of remittances, technology transfer, investments, or trade. Brain drain reduces economic growth through loss return on investment in education and depletion of the source country’s human capital assets.

Optimal brain drain

Some economists argue that developing countries benefit from the “right” amount of skilled emigration (not too much, but not too little). The possibility of working abroad for higher wages creates an incentive to pursue education; this may raise domestic educational levels and stimulate economic growth.

⁹ Haque and Aziz, 1999; Wong and Yip, 1999; Straubhaar and Wolburg, 1998.

¹⁰ Mountford, 1997.

¹¹ Beine et al., 1999.

Brain waste

When developing country labour markets cannot fully employ native-born workers there is a “brain waste” and emigration poses little economic threat. This might be the case if, for example, there are few jobs for mathematicians. Likewise, emigrants may be underemployed in receiving countries, as when scientists can only find work as cab drivers.

Brain circulation

Lively return migration of the native born, or “brain circulation,” re-supplies the highly educated population in the sending country and, to the degree that returned migrants are more productive, boosts source country productivity.

Brain exchange

A given source country may exchange highly skilled migrants with one or many foreign countries. A “brain exchange” occurs when the loss of native-born workers is offset by an equivalent inflow of highly skilled foreign workers.

Brain globalisation

Trade sometimes follows in the wake of skilled mobility; in fact, some level of tertiary migration appears to be integral to trade. Multinational corporations and the forces of globalisation necessarily require international mobility.

Brain export

In a few cases, developing countries choose to educate and export their highly skilled workers, either in bilateral contract programs or in free-agent emigration. The strategy is to improve the national balance sheet through return of earnings and the return of more-experienced workers, or through remittances, technology transfer and investment.

3.3. Feedback effects: Return, remittances, diaspora and technology transfer

The international mobility of skilled workers sets in play feedback effects that, generally speaking, generate favourable economic outcomes. Return migration, in particular, can re-supply the highly educated population in the source country and, to the degree that returned migrants are more productive, they further boost source country productivity. Money returns via worker remittances. And the transfer of technology can be as important as the physical return of expatriates.

3.3.1. Return migration accelerates productivity. High rates of return migration after temporary stays abroad may be the best of all in an “optimal brain drain” world. Domestic workers may pursue higher education in the hope of going abroad, and if they return they can increase source country average productivity, especially if they return after gaining experience and skills in a more advanced economy. Many observers believe that rates of return are high enough—on average at least 50 per cent of skilled emigrants return from most stints abroad—to warrant dispensing with the term, “brain drain”, altogether. These authors prefer to speak of “brain circulation” or “professional transience”.¹²

Some economists argue that return migration may be more effective in boosting development and wages than foreign assistance, at least when developed economy experts run development projects and not local workers. Outcomes depend upon the relative growth of core versus

¹² Johnson and Regets, 1998; Appelyard 1991.

developing economies, but generally developed-country “consultant advice” may not be as effective as policies that promote return skilled migration and employ developing country workers.¹³ Highly paid consultants in source countries can, over the long run, distort the wage structure and create incentives for the emigration of local skilled workers.

Multinationals that move to developing countries have typically brought along their own managers and skilled workers. The available evidence suggests that transnational companies are relatively slow to employ local or third-party nationals in senior positions, much less to move them to high-level managerial posts in other international locations.¹⁴ Still, it is argued that as companies gain international experience and presence they are changing their business strategy from employing home-country managers to hiring local managers and skilled workers.¹⁵ Such shifts in employment opportunity have the potential to encourage the return of skilled nationals and boost developing country growth.

3.3.2. *Too little is known about the remittance behaviour of the highly educated.* Most international migrants choose to emigrate with the intention of sending part of their earnings back to their country of origin to help support their immediate and extended family. Critics charge that remittances are spent on consumption that does little to boost domestic production, employment, or exports while increasing market volatility and inequality. On the other hand, recent empirical literature finds that remittances have “GDP multiplier effects” which increase national income.¹⁶

Unfortunately, researchers have not distinguished between emigrant groups and have mostly failed to study the remitting behaviour of just the highly skilled. We know, for example, that remittance multipliers are greatest in rural areas, not the likely origins of the most skilled emigrants. It is possible that each remittance dollar from an unskilled emigrant yields a greater developmental multiplier than a remittance dollar from a highly skilled emigrant. Then again, skilled emigrants are likely to travel with their families and their more rapid integration abroad may reduce the amount they remit in the first place. One empirical analysis of remittances to Eastern Europe finds that they do not offset the slowing of economic growth due to human capital loss.¹⁷

At the same time, the story may not be quite that simple. There are other avenues through which the remittances of the highly skilled favourably affect source country development. Highly skilled emigrants earn more than their low-skilled compatriots and empirical data show that the likelihood of remitting, and the amount remitted, increase with emigrants’ earnings. So while relatively fewer highly skilled emigrants remit, when they do send money home they may well send larger amounts. Larger sums of money permit a wider range and a greater level of expenditure on the goods that generate multiplier effects throughout the economy.

Further, highly skilled workers may be more likely to invest in their home country. One special example should be noted here of an investment expressing some of the same motivations that drive remittances. For example, the Indian government campaigns in the

¹³ Haque and Kahn, 1997.

¹⁴ Findlay et al., 1996.

¹⁵ Straubhaar and Wolter, 1997.

¹⁶ Taylor and Adleman, 1995.

¹⁷ Straubhaar and Wolburg, 1998.

United States and elsewhere, urging its professional emigrants to invest in Indian remittance-backed bonds. Indian banks market the bonds and they are capitalized on the flow of future remittance monies to India. Foreign currency accounts in developing countries with prime rates of exchange and prime/assured interest rates are another way to attract expatriate earnings. Such investment vehicles tend to be solely the preserve of highly skilled emigrants. The India study provides an extensive discussion on various forms of remittances from expatriates and their utilization.¹⁸

3.3.3. Technology and knowledge transfer increase growth. Most workers move for better opportunities. Yet, having moved abroad they retain connections and networks back to their home country. When these networks are fostered they can yield a flow back of knowledge and new technologies that can boost source country growth. Whether emigrants are permanent or temporary, backward linkages to their source country can increase the available knowledge and technology that boost productivity.

Sometimes expatriates organise networks that stimulate return flows of knowledge and lead to collaborative ventures with home-country researchers.¹⁹ The Internet has played a key role in this regard and there is evidence that at least 41 new e-based expatriate networks were founded during the 1990s. Apparently, most began autonomously, spontaneously, and independently of each other. There is no single authoritative evaluation of the effects of these expatriate organizations, but they hold the promise of facilitating linkages that may aid economic development. The South African Network of Skills Abroad (SANSA) is one example of an active network with more than 2000 members (Bhorat, et. al., 2001).

Certainly, policies that strengthen educational institutions will have a beneficial long-term impact. Research indicates that cooperation between developed and developing countries in academic and research settings improves the conditions for economic growth in developing economies.²⁰ Many observers assert that knowledge or technology transfers are a primary way for developing countries to benefit from high skilled emigrants.

3.4. Linked processes: Globalisation, trade in services, and skill mobility

During the 1980s, social scientists observed increased movements of skilled workers between developed countries and they coined the term “brain exchange”.²¹ Modern communications and travel have reduced time and cost. Intracompany transfers between countries by employees of transnational corporations are one factor accounting for a greater volume of movement. Migration exchange between global cities is also driven by international recruitment agencies. Brain exchanges are characteristic of all advanced economies, forming one component of the flow of goods, information, and finance that bind countries to one another.

3.4.1. Skill mobility is part of global integration. Skilled migration is a key component of globalisation. One problem for developing countries can be to engage in enough skilled migration of the kind that is being driven by globalisation. Economic development may be hampered in countries that fail to have a lively exchange of skilled workers. As companies

¹⁸ Khadria, 2001.

¹⁹ Kaplan, 1997; Brown, 2000.

²⁰ Smallwood and Maliyamkono, 1996.

²¹ Findlay, 2001a; Findlay, 1988.

from developing countries emerge onto the national stage, they too must make international linkages through personnel transfers to foreign labour markets. Tight restrictions on the employment of developing country expatriates in developed nations are a barrier to this form of development.

Certainly, emigrants may stimulate trade with their country of origin. Research finds that transnational communities boost trade (imports) from their country of origin. One Canadian study found, over the 1980s, that a 10 per cent increase in the number of immigrants from a given country was associated with a 1 per cent increase in exports to and a 3 per cent increase in imports from that country.²² OECD research on immigrants in three key receiving nations and their leading source countries found a long-term increase in exports and imports between them over the 1980s.

Research on economic development, trade, and highly skilled migration in the newly industrial countries (NICs) during the 1980s suggests three important lessons.²³ First, two-way skill mobility makes developing economies more attractive to international capital investment. Second, rapid economic growth makes a country more attractive as a destination for both non-nationals and returning nationals. Third, the transformation from a production base to an increasingly service-oriented economy requires an ever-greater mobility of skilled workers if a country is to compete successfully in the international trade in services.

At some point in the transition to greater trade in international services developing countries may retain and return skilled migrants: the Republic of Korea, Taiwan (China), Hong Kong (China), and Singapore are examples. Increased mobility appears to be intimately tied both to the tertiarization of labour forces and the importance of services in world trade, especially in developing economies.²⁴ The acceleration of globalisation creates new patterns of international investment and skill exchanges. While these trends may have initially benefited developed countries, ready examples exist of developing countries engaging in and benefiting from the international trade in services.²⁵

3.5. Case studies show diverse issues and need for research

This project's case studies demonstrate some of the above points, but they most clearly demonstrate a diversity of analytic conclusions. In the first place, there have been no systematic empirical analyses of the economic impacts of skilled emigration in Bulgaria, the Philippines, or Mexico. In Argentina and Uruguay an early critical empiricism of the 1960s has not been continued, being replaced today by media alarm. There is a dearth of reliable, systematic economic analysis.

The case studies mostly detail the available demographic observations. A large degree of skilled emigration with little return or foreign skills exchange, especially in the face of domestic labour shortages, is generally taken to indicate that a "brain drain" is taking place. The South African study suggests that a large share, perhaps half, of its educated emigrant outflow will *ultimately* return; about the same as to Argentina. But quality is important: in Bulgaria it is observed that the least qualified of the emigrants return and contribute little to

²² Vertovec, 1999; Head and Ries, 1998; Stalker, 2000.

²³ Findlay et al., 1998.

²⁴ Held et al., 1999.

²⁵ Findlay, 2001b.

economic vitality. Likewise, a large wave of returnees to Jamaica in recent decades came only to retire. Concern is expressed in the Philippines that the best and the brightest dominate the permanent outflow, leaving behind less-qualified workers.

Otherwise, the impact analysis is restricted to specific channels of influence. The return of monies—remittances—was documented in many studies with little positive commentary. Increasing monetary flows could not be shown to spur economic growth in India or Mexico. In Jamaica it was reported that remittances generated new housing starts, but that remittance flows are otherwise economically marginal and unreliable. Elsewhere, remittances were unknown or unreported as in Argentina/Uruguay, Bulgaria, Philippines or South Africa. Only in India were explicit links reported on remittances or investments by the highly educated in government-created India deposit schemes.

As a stimulus to domestic education, skilled emigration plays an uncertain role. In the Philippines a globally responsive educational system produces more graduates; yet, the 39 per cent of its emigrants who are professionals outstrip the net change in domestic skill levels. Unemployment rates in many skilled fields remain high. In South Africa most significant increases in tertiary enrolments during the past decade were in fields with little labour market demand such as philosophy or languages, not in the sciences. In Sri Lanka free education has more than doubled scientific enrolments in the past decade, but domestic demand cannot absorb so many graduates and unemployment is high. India is a real powerhouse, responding to global demand for information technology (IT) workers and turning out some 70-85,000 software engineers and 45,000 IT graduates every year, with government plans to treble those numbers by 2002. But even so forecasts are for a domestic IT labour shortage.

In terms of diaspora, in India there appears to be increasing investment in rural areas by returnees and foreign entrepreneurs in high technology industries. Academic feedback into research and development are also important. The South African report spoke favourably of a small scale IOM return of qualified African nationals and academic linkages, but established no solid evidence of economic inputs. While occasionally noting the prominence of national academics or businessmen abroad, most of the studies do not marshal clear evidence that their diaspora contributes significantly to domestic economic growth. Neither do they unambiguously connect their diaspora with increasing global trade linkages.

As noted in the sections above, there is some evidence that these feedback effects hold promise. However, the case studies suggest that more research is needed to establish the conditions under which diasporas and global linkages boost economic growth—unfortunately, a generic and somewhat stereotypical conclusion. But the project's case studies also clearly indicate that, whatever the averaged findings of macroeconomic models, the differences between national experiences may well be as great as their commonalities. While they establish a reasoned concern about adverse effects of skilled emigration, the case studies also point to a diversity of expectations about the future.

Box 2: Case study summaries

Argentina and Uruguay

Following a scientific golden age in the 1950s and 1960s, Argentina's dictatorship triggered an across-the-board retrenchment yet to be turned around. Likewise, Uruguay's military dictatorship triggered an estimated loss of one-fifth of working persons through the 1980s; about 12 per cent of Uruguay's professionals and technicians are thought to live abroad. There is increasing concern over the loss of highly skilled persons, typically presented as symptomatic of political failure and one of the lowest R&D expenditures in Latin America. Policy responses include support by the Inter-American Development Bank for improving the infrastructure of research institutions. In both countries, national commissions for return were created; in Uruguay these policies were partly funded by the International Organization for Migration. Both countries have active expatriate organizations (see Pellegrino, 2001).

Bulgaria

Following the collapse of the former Soviet Union over 200,000 Bulgarians left their country and the numbers today run at about 50,000 per year. Tenured academics were among the first to leave, followed by younger scientists with records of international publication. There are no data on the skills of emigrants, but surveys on intent to emigrate indicate that one-third of college students want to leave. Despite recent inclusion in the Schengen agreements there has been no shift in the intent to emigrate, but most Bulgarians cannot afford to move. It appears that only about 20 per cent of emigrants return and they are not "agents of modernization". New initiatives promote short-term employment abroad through bilateral agreements with Germany, Switzerland, and many other countries, with a strong role played by intermediaries. Skilled workers comprise some of these flows, for example, medical technicians are supplied to Libya.

India

India has long been an important player in the global supply of professionals and students. It is today's most sought-after source country for highly skilled workers and most of the flow is to the United States. India has geared up quickly to meet demand in information technology, producing some 120,000 graduates a year with plans to double production. Yet, there is an "anticipatory theory" that forecasts adverse long-term impacts from the export of IT workers where projected Indian shortages are greater than the forecast production of IT workers. Certainly research on specific sectors, e.g., medicine and engineering, raise concerns about adverse effects. The government perceives little problem with these trends, but the media decry the "brain drain." Memoranda of understanding on student and academic exchange are an important way of addressing these issues (see Khadria, 2001).

Jamaica and the Caribbean

The 1962 British Commonwealth Act shifted emigration to North America. One-quarter of today's outflow to the United States is made up of professional, technical, and kindred workers in the most productive age group. Emigration accelerated in the 1990s driven, in part, by recruitment "frenzy". Simultaneously, the return of low-skill UK retirees increased as did non-Jamaican immigration, three-quarters of which is highly skilled. Still, there is a shortage of skilled workers. Two-thirds of Jamaica's nurses emigrated over the past two decades and few return, in their place Cuban nurses are recruited. Feedback effects are few, i.e., remittances are uncertain and their most favourable impact is to stimulate house building. While public opinion tends towards a favourable view of the inevitability of skilled outflows, the "brain drain" fuels negative perceptions of the region's future. Policies have included readily accessible job information, tax concessions, and recruitment efforts including a short-lived IOM programme to return expatriates (see Thomas-Hope, 2001).

Mexico

Renowned as an exporter of low skilled labour to the United States, Mexico was also the world's third largest exporter of tertiary educated migrants in 1990. Ten per cent of Mexico's tertiary population, but fully 30 per cent of its scientific and engineering graduates were living abroad at that time. A major recipient of worker remittances, research nonetheless finds that educated Mexican emigrants in the United States have a lower likelihood of remitting than their less educated compatriots. Furthermore, the national GDP-multiplier effects of remittances are less for the urban areas from which highly skilled emigrants come. Mexico has a number of programmes that capitalize on remittances including federal, state, and local matching fund programmes for development projects. It also forgives student loans for Mexicans who study abroad but who then return and work in Mexico (Verhaal, 2001).

Philippines

The greatest export of workers is under temporary programmes to the Middle East, while permanent emigrants tend to go to North America. Four-tenths of the permanent outflow is college educated, and their numbers exceed the net change of skilled workers in country. Highly skilled workers face high rates of unemployment and there is evidence that young college educated emigrants are selected from those with experience and high productivity. Domestic educational systems are responsive to global demand; witness a strong increase in graduates with IT degrees. Still, it is estimated that 30 to 50 per cent of information technology workers emigrate and 60 per cent of physicians. Changes in the global economy may help address the brain drain: the IT sector has just started up in the Philippines, financial markets have been liberalized, regional cooperation has improved, and there is hope of reverse migration. The later may be abetted by greater connectivity through the Internet (see Albuero and Abella, 2001).

South Africa

New estimates show that official data undercount emigration and that the outflow began before the fall of Apartheid. There was a loss of about 13 per cent of yearly turnover in professional employment; both white and black professionals are involved. At the same time, increasing educational enrolments tend to be in non-scientific fields. Concern is widespread and the skills outflow dampens economic growth. Country-by-country analysis indicates shifts in destination and occupational selectivity. For example, health professionals and engineers drove a dramatic increase in emigration to New Zealand in the 1990s. Likewise, restrictive immigration policies have created a situation where South Africa provides its neighbours with skilled workers but there is no reciprocal exchange. Contemplated policies to facilitate skilled immigration should change the skill balance of the nation and the region (see Bhorat et al., 2001).

Sri Lanka

Sri Lanka has become a labour exporting country and about one-quarter of all households have a family member who has migrated for employment or to reside abroad. Since the 1980s there have been large temporary contract flows to Middle Eastern destinations, as well as more permanent emigration to Western Europe and North America in the 1990s. Academically qualified professionals comprise between one-quarter and one-third of the outflow. One result appears to be increased enrolments in higher education; indeed there is overproduction for domestic markets, although shortages exist in medical fields. Further, low public/private sector wages do not encourage return. Policies to foster return include foreign currency banking accounts and tax breaks, though it is believed that high skilled emigrants tend not to remit (see Korale, 2001).

4. Trends in Major Classes of Skill Mobility

The international mobility of highly skilled workers is likely to increase in the future. This is not the place to detail all the factors ordaining an upward trend, e.g., faster and cheaper transportation, faster and cheaper information, expansion of global labour markets, shortage of highly educated workers in the information-age economies, the ageing of the workforce in developed economies, just-in-time demand from industries eager to get on the front of technology curves, and so on.²⁶

These trends are particularly salient considering other trends: enrolment rates in higher education are likely to continue to rise around the world (and especially in developing countries); and the centripetal forces of globalisation help drive strong pressures to liberalize human capital flows to match the increased liberalization of trade and international capital flows. But while one can confidently predict increasing international mobility, it is remarkably difficult to forecast with accuracy specific patterns of international mobility or their impact.

In the first place, different types of migrant are found in different types of labour market, e.g., the “internal” labour markets of transnational corporations shaped by globalisation and corporate strategies; or the “open” labour markets shaped by forces of supply and demand in both developed and developing countries. In the second place, the crosscutting consequences of different types of labour market, lags in supply and demand, and institutional failures in education or training, mean that much of the impact of skilled migration may be limited to specific occupations.

4.1. Supplying transnational corporations

Business migrants, particularly intracompany transferees, and other professional, technical, and kindred workers will be among the largest future categories of movement.²⁷ There is likely to be an increase in business class mobility in the short-to-medium term. Transnational companies locate most labour-intensive production and service work in branches in developing countries, but they also need highly skilled labour in the capital cities of the developed world and at their sites overseas. Companies are clamouring for more control and flexibility in managing skilled labour flows between sites of their global organization.

Ease of movement for intracompany transferees is generally in the interest of the developing countries where transnationals are situated. Over the medium-to-long run, furthermore, transnational companies may begin to groom and hire local managers. As transnational businesses mature, and the pool of internationally experienced skilled workers increases, businesses may seek other ways to reduce their costs. Within the OECD countries in recent years business migration appears to be increasingly dominated by short-term stays.

At the same time, the growing specialization of global labour markets means that as new industries and service activities emerge within the “new economy,”²⁸ so too will the need to source skills quickly and efficiently to allow for the development and expansion of cutting-edge sectors in the open labour market. The most recent example is the demand for

²⁶ Glover et al., 2000; Martin, 2000b.

²⁷ There are at least five types of international migrant each with distinctive labor markets; see Mahroum, 2000.

²⁸ Rothboeck, 2001.

information technology (IT) specialists that has seen India emerge as a major global supplier of skilled labour for the world's IT industries.

The key point is that to be internationally competitive in a globally interconnected world, a country must expect that the demand for new skills will continue to emerge.²⁹ The needed skills will require flexible and efficient immigration policies that permit skill exchanges to emerge quickly as global industrial systems evolve with new source and destination regions. If correctly managed, skilled migration should be to the advantage of both developed and developing countries.

4.2. Addressing domestic conditions of supply

Problems in developed countries in meeting demand for certain workers in the short-to-medium term often have little to do with demand from newly evolving occupations, and much to do with the inflexibility of domestic conditions of supply. Shortages in the domestic supply of specialized workers frequently reflect difficulties with staff retention, as well as under-investment in training. And deeply entrenched problems of training medical workers, along with markets in inner cities, etc., where natives decline to work, have generated a long-standing demand for workers in developed countries' health care systems. The key issue is how to manage migration so as to maximize benefits to those developing countries that wish to play a part in the internationalisation of health services.

On the other hand, more recent developed-country demand for the international recruitment of primary and secondary teachers may be shorter lived. Investment in teachers' salaries, improved teaching conditions, and improved enrolments in academic institutions can readily supply domestic workers. In fact, if developed countries are to significantly increase their domestic supply they cannot become overly reliant on workers from developing countries.

4.3. Impact of skilled emigrants on specific occupations

There is likely to be a positive outcome when policies facilitate the movement of foreign workers in specific occupations that face supply and demand bottlenecks over the short run. The developed country recruits workers to meet cyclic demands and the developing country gains a return on international mobility. However, over the longer term reliance on high volumes of foreign workers in specific occupations hinders the labour market adjustment that might otherwise occur in developed countries. Ongoing supplies of foreign workers may retard growth in the domestic supply of labour.

As to the outcome for the developing country, exports of certain skilled workers, say in health care, can become an industry in itself. The longer run effect of this strategy is unknown, but it is clear that many developing countries, including the well-known examples of the Philippines and India, have engaged in the export of skilled labour. The impact of high-end exporting is often within well-defined occupational sectors such as health care or engineering. Thus, any adverse effects may not spill over into the larger developing country economy, while the skill export strategy will be beneficial to the degree that it triggers favourable induced and feedback effects.

²⁹ Findlay, 2001a.

The impact of high skilled emigration is generally not a blanket phenomenon, but rather affects specific occupations within a country, and/or certain groups of countries that are closely linked by flows of highly skilled migration. Consider the experience of Jamaican nurses.³⁰ The United Kingdom was the major destination until the 1970s. Since then the United States and Canada have become the major receiving countries. At the same time, the number of nurses in Jamaica dropped from 3,000 to 1,000 in the late 1980s. Efforts to replace the loss with training programmes have yet to succeed fully as young qualified nurses stay only long enough to pay off their government bonds and rarely return. Jamaica has turned instead to recruiting Cuban nurses, but has increased the number of nurses to only 2,000.

Or consider that South Africa's emigration losses are intimately tied up with the United Kingdom. For historical reasons an estimated 800,000 South Africans hold British passports. The United Kingdom has always been a very popular destination for skilled emigrants as many of the international finance, investment, and trade links of South Africa are nested within London's sphere of global influence.³¹ The future pattern of highly skilled migration between the United Kingdom and developing countries, while overlapping and competing with other developed economies in some places, will probably continue to be distinctive.

All of which is not to say that new patterns of recruitment will not also emerge as certain international recruitment agencies seek for a "global reach".³² This may lead them to shop for skills for the United Kingdom in new locations, for example nurses from the Philippines, even though no previous migration link exists. It is not hard to demonstrate that the United Kingdom experience is not unique. Over the last few years highly skilled migration to many other developed countries has reached unprecedented levels.³³ Competition for skilled labour in a global economy will further the movement of highly skilled workers from developing to developed countries.

5. Policy Responses to High Skilled Mobility

In both developed and developing countries a range of policies are pursued in response to the emigration of highly skilled workers. At least six general policy types can be identified, each of which has subtypes and examples that are actually implemented (see Box 3). Of course, the choice of "Rs" is simply expository; there is no agreed terminology for the policies used to respond to high skilled emigration.³⁴

³⁰ Thomas-Hope, 2001.

³¹ Boyle et al., 1996.

³² Boyle et al., 1996.

³³ OECD, 2000.

³⁴ Lowell, 2001b.

A darling of the 1970s, *reparation* for the direct loss through a “brain drain tax” has long since been abandoned. *Restrictive* exit policies touch on the rights of the individual international migrant and are largely counter-productive. Contrast these with *recruitment* policies, which are pursued by some developing countries to bring in foreign workers to increase the nation’s human capital. The counterpart of recruitment policies are export policies where developing countries choose to train workers to work in international markets, in order to export their skills. At the same time, positive policies to *return* expatriates make sense, but are difficult to achieve. The International Organization for Migration’s return of talent programme is a significant contribution to the attempt.

For those who remain abroad, there are *resourcing* policies. These “diaspora options” rely mainly on the creation of expatriate networks, which return knowledge to the home country, i.e., which facilitate the transfer of technology. To date, most expatriate networks are autonomously founded and there may be a role for the expanded involvement of both source and receiving countries. Further, remittances are a significant source of income for developing countries. Outreach to skilled expatriates can take advantage of the greater likelihood that they will save in foreign currency accounts in the home country, buy remittance-backed bonds, or invest in entrepreneurial activities when incentives such as reduced tariffs or income tax breaks are offered.

Grand policies of *retention* are likely to be the best long-run response to large volumes of high skilled outmigration. To be sure, in the short term development can actually lead to increases in emigration, but over the long term this is the best way to reduce wage differentials and conditions that lead to high levels of skilled emigration. The most active policies continue to be academic ventures based on regional and international cooperation where receiving countries play an active role. Additionally, many developing countries have individually, or in the context of regional accords, targeted ICT development as a means of getting on the information-age bandwagon. Such projects promise to be a fruitful way of stimulating economic growth and reducing the permanent outmigration of highly educated nationals.

Box 3. Policy responses to high skilled emigration: The “Six Rs”

1. Return of migrants to their source country

The return of emigrants is one sure way to cultivate human capital for source countries, especially when there is value added from working abroad. Permanent return tends to be the focus of most such policies (kindred temporary return programmes are under point 5 below).

2. Restriction of international mobility

Many developing countries have restrictive emigration policies that make it difficult for their nationals to take a job abroad. Almost all countries restrict the immigration of foreign nationals to protect their domestic workers from competition.

3. Recruitment of international migrants

If there are domestic shortages of skilled workers, for any reason, why not court foreign workers? For example, the information technology revolution sparked a worldwide competition for workers: new policies worldwide ease numerical and “protective” regulations on admissions.

4. Reparation for loss of human capital (tax)

A favourite but never-implemented economic prescription in the 1970s, the idea is that developed countries either compensate source countries, or that emigrants pay taxes, to deal with externalities created by the immediate loss of human capital.

5. Resourcing expatriates (diaspora options)

Skilled emigrants abroad can be a significant resource, especially if ongoing contact between academic and private sector institutions is fostered. Government and private sector initiatives seek to increase communications, knowledge transfer, remittances, and investment.

6A. Retention through educational policies

Creating a highly educated workforce begins with strengthening domestic educational institutions. A viable system encourages graduates to stay with the system, retains people and ensures that the source country keeps its original investment in education.

6B. Retention through economic development

Giving people a reason to stay (or return) is doubtless the most effective policy for reducing emigration and the surest long-term means of boosting average human capital, as well as economic growth.

6. Developed Countries' Policy Options

While the schema above loosely categorizes government responses, there has been little systematic discussion on how best to address the possible adverse consequences of high skilled mobility from developing countries. This report offers the following policy directions for policy makers in developed receiving countries (see box 4 for a summary).

6.1. Migration policies to facilitate and protect in a global economy

Migration policies that respond to the demands of a modern economy can benefit both receiving countries and developing countries.³⁵ The balancing act is in devising policies that facilitate not by making everything “easy to do,” but by managing the process in a way that protects domestic labour markets and the economic interests of developing countries.

6.1.1. Facilitating means flexible, efficient, and transparent policies. Facilitating mobility does not mean an open-door policy; it means migration policies that are flexible, efficient, and transparent. Flexible migration policy permits increased supplies of foreign workers when demand is hot, but restricts access to foreign workers when demand is down. It protects domestic labour markets. Efficient migration policy delivers a foreign worker for a job in a process that is speedy and that requires minimal paperwork. It meets employers' labour demand. Transparent policy delivers clearly defined promises: migrants and employers must know their obligations and be held responsible, there should be no hidden costs or ways to game the system, and the likely transition to permanent resident status (or not) should be clear at the outset. Transparency protects the conditions of employment and human expectations.

³⁵ Glover 2001.

6.2. Migration policies to help protect the interests of developing countries

There are a number of policy options open to developed countries that could help to protect the interests of developing countries. Primary among these is the encouragement of return migration,³⁶ but there are complementary options including restrictions on recruitment, establishing good practices, and regulating recruitment agencies.

6.2.1. Encourage truly temporary stays. There is clear evidence in the academic literature that the longer migrant workers stay abroad the lower the chance that they will return to their place of origin during their working life. Equally, it seems highly probable that most skilled migrants receive the maximum benefit from their work experience, new skills acquisition and career development, in the first few months if not years of a foreign work placement. With the passage of time, although the individual has more opportunity for pecuniary reward, the opportunities for skill development decline, as do the opportunities for transferring knowledge to their origins. By encouraging return, the number of people from developing countries having the opportunity to gain work experience in developed countries is increased and there are more opportunities for other foreign staff to work abroad. In developmental terms there are strong reasons to encourage skilled migrants from developing countries to return at the end of fixed term contracts.

6.2.2. Restricting immigration or stays from at-risk countries. Of the various ways in which work permits are granted in receiving countries, a list of domestic shortage occupations often decides whether or not an employer can fill a particular job with a foreign worker. In parallel fashion, receiving nations, perhaps in consultation with key source countries, could identify countries that are most vulnerable to skill losses and ban recruitment there. Such a list should reflect sectoral strengths and weaknesses; it might be acceptable to recruit from certain occupations, but not others. A specific listing is required, rather than one that simply discourages the recruitment of skilled workers from, say, the 40 least developed countries. An alternative would be a list of recommended source countries for employers seeking to fill shortage occupations in the developed country.

Yet another alternative, and one that is less heavy-handed and less reliant on inexact statistical forecasts, is to issue work visas with the clear message that return is required after a given period of stay. One example of such a visa is the U.S. “cultural exchange” visa (J) issued for varied durations for work in health care, research and development, summer programmes, and other work for the purpose of fostering international exchange and experience. After the permitted stay, the “cultural exchange” visitor is required to return home for a two-year period before applying for re-admittance into the United States. This type of visa restriction presumes a type of mobility that is designed to increase the experience of the foreign worker and return that experience to the country of origin.

6.2.3. Making recruitment agencies and employers accountable. International recruitment agencies cannot apply for migration work permits, but they are widely used to source staff from developing countries. Much of the exploitative behaviour that is reported in the international migration literature is directly attributable to such agencies.³⁷ For example, agencies sometimes require potential migrants to accept a period of work without pay prior to departure on the pretence of “training” applicants. Others levy high fees from workers in

³⁶ UNESCO, 1998.

³⁷ ILO, 1997.

developing countries, requiring them or their families to sell their assets to pay a fee in order to be short-listed for interview or for immigration documentation. There are, of course, many very professional and well-run recruitment agencies, but bad practice must be avoided. Governments should ensure that their employers abide by a set of ethical guidelines in recruiting foreign workers or using recruitment agencies. The UK Department of Health *Guidelines on the International Recruitment of Nurses*, produced in 1999, is an example of good practice. Efforts should be made to ensure that only employers, not migrants, pay fees to international recruitment agencies. An accreditation system should be introduced for such agencies.

6.2.4. Establishing best practices on the employment of foreign workers. Protecting foreign workers in the developed economies is the right thing to do and integral to protecting the domestic labour force. It becomes part of “facilitation” when host countries establish a reputation for fairness to foreign workers. The case studies prepared for this project noted that one reason for increased migration from developing to developed countries is the perception that discrimination against foreigners has lessened in the past decade.

For developed countries the critical reason for establishing good practices is that they help protect both domestic workers and guest workers who may become permanent residents. Stakeholders should work together to establish what is good practice in the employment of foreign professionals. A best practices handbook or guidelines should be readily available.

The absence of such guidelines leaves employers in a highly competitive industry, such as the IT sector, in an uncertain situation that could result in the proliferation of exploitative actions because “other companies do it”. Ultimately, there are reinforcing reasons for making sure that foreign skilled workers enjoy good conditions, both from the perspective of the workers concerned and from the perspective of the long-run domestic competitiveness of the industries, which employ them.

6.2.5. Facilitating return migration. Return policies may be active or information-based. An example of an active programme would be the International Organization for Migration (IOM) programme which funds the expatriate family’s return and helps re-establish them in their home country. Funding for such a programme logically comes from governments or international organizations. While somewhat costly, having to cover job search, travel and settlement, the cost of such programmes in the medium term is likely to be small relative to the advantages they create for the source country, as well as the increase in global productivity over the longer run. Longer-term programmes of return, as in the case of Germany and Turkey (which mostly apply to semi- and low-skilled migrants), may be more effective than short-term return programmes that are limited in scope.

Information-based approaches require the least economic or political capital. The Internet role has increased over the past decade and governments are creating job databanks in an attempt to help expatriates learn of opportunities in their country of origin. Malaysia, South Africa and Thailand have online job listings. Typically, these websites also provide fora for other sources of information and exchange, e.g., encouraging return (see diaspora options below). Industry information and economic performance are given to familiarize the expatriate with conditions at home. Naturally, a job candidate listing would complete the information loop, giving home-country employers a chance to consider expatriates looking for return opportunities.

Many emigrant workers are reluctant to return to their developing country if they have to give up the right to return to work or reside in their newly adopted developed country. However, if they retain residency rights they can safely return to their origin: the option to go back to the higher-wage economy at any time creates a buffer to the risk of returning home to the lower-wage developing economy.³⁸ Advocates of dual nationality or citizenship argue that this encourages return and circular movement. Other options would be to permit foreign workers to return home for periods of several years while still retaining the right to work in the developed country at some point.

6.3. International migration policies: Bilateral agreements and harmonization

There is broad agreement that in an ideal world both migrant receiving and source countries would be working from the same script on high skill mobility. In practice, a harmonized global regime, similar to the regime(s) that have been evolving for several decades to regulate trade relations, will take years if not decades to construct.

6.3.1. Advantages of bilateral and multilateral agreements. Many participants in this debate advocate bilateral and regional agreements on worker mobility. Such agreements have long governed movement from temporary agricultural workers to medical personnel. The value of inter-governmental agreements between developed and a small number of developing countries should be considered.

Bilateral and multilateral agreements have the benefit of permitting authorities in developed countries to liaise directly with governments in developing countries wishing to export highly skilled workers on a temporary basis. Such workers may be surplus to infrastructural needs, or they may have been identified as candidates for skill enhancement through work experience abroad. The use of inter-governmental accords to develop migration linkages also avoids the potentially damaging effects of “head-hunting” by international recruitment agencies seeking foreign workers from the easiest sources in the developing countries.

At the same time, bilateral agreements can stipulate that foreign-worker training in skills appropriate to the needs of the developing country be part of an integrated programme. Development agencies could target investment to stimulate the sector losing the skilled workers, as part of a package designed not only to improve the prospects of the source country, but as a means of ensuring that conditions are more attractive for return migration.

Such agreements are most appropriate for occupations that are in chronic undersupply in developed countries and in which certain source countries have a particular advantage. Medical specialties have historically fallen into this category and meeting demand to service the ageing societies of the developed world will remain a challenge. Admission policies, as well as uniform credential requirements, should be on the table.

However, bilateral and regional agreements are less appropriate for meeting the short-term or cyclic shortages typical of many high skilled occupations. For example, the 1990s surge in information technology workers occurred far too quickly for governments to adequately anticipate foreign supply lines or domestic shortages. Governments need policies that flexibly and efficiently target the movement of such short-term workers. The General Agreement on

³⁸ Bertelsman Foundation, 2000.

Trade in Services (GATS) is the most promising approach for establishing a broad framework for these types of skilled migrant.

6.3.2. Boosting developing countries' trade in services. The GATS agreement from the Uruguay round represents the first multilateral and legally enforceable agreement on the international trade in services. Its central objective is the progressive liberalization of trade in services. Commentators from the developing countries argue that Western constructions of "highly skilled" are the greatest problem with GATS, biasing it against the liberal movement of service providers from the developing world who are not already employees of large companies.³⁹ Many developing countries have a natural advantage in their supply of inexpensive high quality labour; liberalization of the international trade in services should provide a major opportunity for them.

Yet restrictions by developed countries are greatest in the very fields where developing countries have the strongest comparative advantage. This applies particularly to that part of GATS on the trade in services through the movement of labour.⁴⁰ Further, developed countries have more commitments in GATS under modes of (1) cross-border supply (2) consumption in the territory of the supplier (3) commercial presence abroad. Developing countries have more commitments to (4) delivery of services abroad. For example, Brunei, China, the Philippines and Thailand are good examples of countries that have more commitments under GATS delivery of services by natural persons abroad. In contrast, Australia and Canada have significantly more commitments to liberalization of services through commercial presence than through the movement of persons.

Even where developed countries have agreed under GATS to the movement of persons, developing countries are often thwarted by the specific immigration law of developed countries, as well as by the terminology of GATS. Hopefully, the current round of GATS negotiations will resolve terminology on the movement of service providers and their staff. Findlay (2000) makes several suggestions for GATS that would benefit developing countries: expanding and standardizing the definitions of occupations; specifying standard timeframes for stays and extensions to make a clear distinction between temporary transfers and permanent migration; creating a new category for small teams and self-employed foreign specialists.

Finally, a GATS code of conduct on the employment of foreign workers should be promulgated. Such a code should be drawn up for all GATS signatories with regard to fair wages for migrant work, prohibitions on types of work activities (dangerous and undesirable) for which foreign skills will be recruited, prohibition on confiscation of travel documents, rules for treatment of workers following contract termination and guidance on the relative treatment of local workers engaged in the same sectors. The International Labour Organization (ILO) and GATS share responsibility for drawing up such a code of conduct. The ILO has a mandate for the elaboration of fair treatment standards and policies.

6.4. Diaspora options: Expatriates as a resource for development

Whether emigrants are a permanent or a temporary loss, their backward linkages to their source country may offer significant benefits. There is a natural proclivity for emigrants to

³⁹ Findlay, 2001b.

⁴⁰ Findlay and Warren, 2000.

maintain ties to the home and this feeds back knowledge and investments. At the same time, many of the diaspora options are facilitated or implemented by the source country. A few options are mentioned here because they have potential for a positive impact on migrant exchange, they are low cost, and receiving countries could readily contribute.

6.4.1. Creating expatriate organizations. At least 41 expatriate organizations were founded in the last decade and most were apparently created autonomously.⁴¹ They began spontaneously, usually without government support, independently of each other, and they mostly rely heavily on the Internet. A few have links to source country agencies in education, science and technology. Indeed, a recent IOM Conference on Migrants' Development of Country of Origin issued a statement that countries can benefit from the knowledge of expatriates or emigrants without actually creating an expatriation programme.

However it is fostered, the mantra of "technology transfer" is an integral part of diaspora policy. To benefit from technology transfer it is important that the nature of the exchange comprise appropriate technology that uses local material and human resources. Technology transfer should be economically, socially and technically competitive if it is to have a significant effect. It can be argued that it needs patience, persuasive skill and the continuous support of those with financial and administrative power.⁴²

Box 4: Developed Countries' Policy Options

Migration policies to facilitate and protect in a global economy

Facilitating migration is in everyone's best interest; policies must protect domestic labour markets and the economic interests of developing countries.

Migration policies to help protect the interests of developing countries

Options that developed countries could adopt to protect the interests of developing countries:

- **Encourage temporary stays.** In economic terms there are strong reasons for work permits that encourage return to developing countries.
- **Restrict duration of stay or immigration from at-risk countries.** A list of occupations could identify countries that are most vulnerable to skill losses.
- **Make recruitment agencies and employers accountable.** Employers should agree to abide by a set of ethical guidelines and international recruitment agencies should be accredited.
- **Establish best practices on the employment of foreign workers.** Best practice guidelines or handbooks help protect domestic workers and foreign workers who may become permanent residents.
- **Facilitate return migration.** Programmes that aid return are one good idea. Information-based approaches rely on the Internet and job databanks. Some migrants may be persuaded to return if they retain a right to work in the future in their adopted developed country.

⁴¹ Brown, 2000.

International migration policies: Bilateral agreements and harmonization

Agreements are the best way to create harmonized expectations and movement:

- **Bilateral and multilateral agreements.** Such agreements are most appropriate for occupations that are in chronic undersupply in developed countries.
- **GATS trade in services.** There is a need to standardize and expand GATS definitions on occupations and duration of stay. A code of conduct for the employment of foreign workers should be promulgated.

Diaspora options: Expatriates as a resource for development

Emigrants' backward linkages to their source country may offer significant benefits:

- **Create expatriate organizations.** Governments can help set up expatriate organizations. However fostered, the mantra of technology transfer is an integral part of diaspora policy.
- **Create incentives for return investment.** Tariffs/taxes may be reduced for investments by emigrants. Developed and source countries can cooperate on entrepreneurial efforts.

Policies to facilitate economic development

International migration can increase with economic growth in developing countries. Still, retention of would-be migrants is most likely with long-term economic development:

- **Development assistance and education.** The support and development of all institutions of education is certainly one of the best ways to offset brain drain.
- **Strengthening institutions and human rights.** International efforts that promote protection of human rights will encourage highly skilled migrants to stay and are in everyone's interest.
- **Targeted economic development.** A focus on information technology can boost global integration and growth, but should not displace investments in education and health.

Priorities for future research

Developed countries should reach agreement about critical data items to collect on a regular basis. The major priority should be to construct comparative measures of high skilled emigration, and to further research on migration's feedback effects and relationship to trade.

⁴² Adotevi, 1998.

It would be worthwhile to explore the political power that expatriate organizations may exert to improve conditions in some developing countries. Many highly skilled workers move precisely because conditions in their home country hinder independent research or business. For example, the Chinese, Cuban and Indian caucuses exert influence on the US Congress. With international assistance they may be able to promote changes in the political institutions that drive many of the best workers to leave and seek employment in developed democracies.

6.4.2. *Creating incentives for return investment.* There are number of ways in which expatriates can be encouraged to invest in their country of origin.⁴³ One approach is to influence the remittances or the skills that return migrants bring. Incentives are created for migrants abroad to spend remittances on job-creating investments. Tariffs on imported machinery and equipment may be reduced for migrants abroad (or return migrants) to encourage them to establish microenterprises. Other programmes encourage the entrepreneurial proclivities of return migrants and involve coordination between receiving country NGOs or public sector institutions and the source country.

6.5. Policies to facilitate economic development

The first effect of economic development is to dislocate rural labour from traditional jobs and create urban-bound streams: international migration too has had its roots in the demographic transition to low fertility/mortality regimes, and the economic transition from agricultural to industrial and, now, information-age economies.⁴⁴ The ultimate effect of economic development is to create a “U turn” in the forces of development that initially drive the process. Retention of would-be or return emigrants is most likely when a loose parity is reached between economic conditions in the host country and the country of origin.

But surges in economic development can increase the rate of emigration, and over the short-to-medium term most observers now agree that international migration increases with economic growth in developing countries.⁴⁵ Economic stimulus increases the rate of dislocation and the creation of new opportunities. It may create a class of would-be emigrants seeking higher education who, for the first time, are prepared for and able to afford that choice. And when emigration is driven by a social diffusion process, new opportunities are more easily realized through network ties. This seems to be a cost of present investments in development, i.e., a risk of stimulating emigration over the short run hedged by steeper reduction of emigration in the future.

6.5.1. *Development assistance and education.* The support and development of education at all levels is certainly one of the best ways to offset brain drain. In the short run, the developing country increases its domestic supply and counts on many of its newly educated citizens staying in-country. Over the longer run, education and training bolster the endogenous stock of human capital and create opportunities that help retain would-be emigrants.

Unfortunately, limited economic research comes to conflicting conclusions about the value of emphasizing primary/secondary or tertiary education to offset skilled emigration. Source countries that improve their tertiary educational institutions may unwittingly increase the rate

⁴³ Lowell and de la Garza, 2000; Puris and Rizema, 1999.

⁴⁴ Mexico/U.S. Binational Study of Migration, 1997.

⁴⁵ Martin, 1990.

of loss as their nationals are better prepared to compete in industrial and information economies. Investments in primary education may actually yield more benefits, raising the average level of human capital more effectively.⁴⁶ Many poor countries under-invest in education and so there is a strong case for prioritising primary and secondary schooling. Yet, if higher education is neglected the best and brightest school-leavers may have little opportunity for higher education other than going abroad. The trade-offs are difficult to generalize and each nation needs to weigh the critical need for universal primary/secondary education against the current and projected stock of tertiary students.

Cooperative ventures may be among the more policy-relevant tools available.⁴⁷ Pooling regional resources for tertiary education, as exemplified by the University of the South Pacific in Suva, may be a more efficient option for small countries than attempting to support fully-fledged domestic tertiary education at the expense of primary/secondary schooling. Many international agencies are involved in managing and improving institutions of higher education. Numerous institutions are involved in research in this area as well.⁴⁸ Human resource development is one of the keys to economic development and policies that strengthen educational institutions and promulgate training will have a beneficial long-term impact.

6.5.2. *Strengthening institutions and human rights.* Highly educated individuals are particularly prone to leave countries when their security and professional integrity are at risk. The intellectual class is often singled out in oppressive political regimes. This is not the place to elaborate the long history of oppressive conditions that have fallen on the educated elite from long standing ethnic tensions, to revolutionary changes, to declining academic and legal rights as described in this project's reports from Argentina, the Philippines, or South Africa.⁴⁹ Such examples amply demonstrate that personal safety, right to legal redress, and human rights are often factors that impel high skilled emigration in particular.

Many developing countries have a fully developed judicial system and a strong civil society, but others do not have fully operating judicial or legal systems that foster individual rights. International efforts to improve the protection of human rights are one influence that will encourage highly skilled migrants to stay and contribute. Expatriate organizations also need not confine their influence to knowledge transfer or investments; they can actively promote free speech and democracy. Return migrants, especially those with new skills in mediation, minority rights, and legal action can help developing countries establish the rule of law. In countries where such changes are called for, improved conditions can promote retention and return among highly skilled workers.⁵⁰

6.5.3. *Targeted economic development.* Some developing nations target specific industries or projects for economic development. Such approaches have advantages but they also raise some concerns. Consider the interest of many developing nations in capitalizing on the information technologies that take advantage of highly educated workers. As of 1998, there were on average 1.6 Internet users for every 100 citizens in the world, compared with rates of between 10 and 20 per cent or better in the developed countries. Clearly, there is a digital

⁴⁶ Haque and Kahn, 1997; Haque and Kim, 1995.

⁴⁷ Smallwood and Maliyamkono, 1996.

⁴⁸ CIHE, 2001.

⁴⁹ Pellegrino, 2001; Albuero and Abella, 2001; Bhorat, Meyer, and Mlatsheni, 2001.

⁵⁰ Martin, 2000a.

divide and developing countries require infrastructure development and knowledge to exploit the potential of the Internet revolution.⁵¹

Singapore's Prime Minister Goh Chok Tong recommended an Asian ICT belt at a recent ASEAN summit (Association of Southeast Asian Nations). ASEAN heads of state signed the e-ASEAN Framework Agreement that sets out a plan to speed up economic integration through the Internet. There is discussion about the creation of a regional ICT environment to reverse the region's brain drain, and retain available skills in the face of a regional shortage of ICT workers. The recommendation is to create an Asian ICT belt to link Asian ICT hubs and attract global companies while retaining Asia's professionals.⁵² These investment strategies offer one way to retain highly skilled workers; they stimulate demand for tertiary education; they can boost economic growth that benefits everyone; and by bridging the digital divide they create opportunities for the entire populace.

However, as the recent ICT downturn demonstrates, such single-minded investment runs substantial risks. And if the ICT strategy is overly reliant on domestic investment funds, it may further deplete resources needed throughout the economy and disadvantage the poor. While favouring targeted strategies of all sorts that create demand for skilled workers, we must point out that investments need to be diverse, drawing upon foreign investors, and including parallel investments in health, training, and education. Growth strategies must balance investments aimed at strategic advantage against investments aimed at alleviating poverty. This is the core challenge.

6.6. Priorities for future research

This project encountered several difficulties in reaching a systematic and concrete set of conclusions on the impacts of high skilled emigration from receiving countries. Reliable data are often only available from developed countries, but those sources themselves have limitations. There is little empirical research, either statistical modelling or case studies, that employs comparable methods.

6.6.1. Construct measures of the phenomenon. The real priority for conducting further research in this area is to construct comparative measures of high skilled emigration for a large number of developing and developed countries. Agreed measures enable case studies to be meaningfully evaluated, while a sample of countries permits strong empirical analysis. However there are intermediate research and long-range data collection tasks that precede this priority.

First, an objective analysis should be made of the implications of measuring forfeited emigrant skills (brain drain) using different methods or definitions. An obvious example is the measure of would-be-emigration intentions versus measures of the actual skills of departing workers. But there is disagreement about the definition. The present report has differentiated between measures of cumulative loss or educational selectivity. Yet the report on Southern Africa prepared for this project implies that a definition of "loss" should not include migrants who complete their education abroad where they establish ultimate citizenship. Promising composite indexes of brain drain have also been constructed. The alternative measures need to be presented side-by-side and compared.

⁵¹ Slowinski, 1998.

⁵² Xinhua General News Service, 2001.

Second, a systematic review of available data sources should be completed,⁵³ and a new set of international estimates of loss and selectivity should be constructed. The data reviewed in this project report are for 1990 only and they necessarily rely on imperfect assumptions. Nonetheless, it should be possible to construct estimates of highly skilled mobility for most sending countries drawing on *several* national data sources and imputing information as necessary. To the degree possible, such estimates need to encompass sex-specific and occupation-specific flows. An intermediate task should be the creation of parallel international measures of variables such as occupation.⁵⁴ A simple, longitudinal set of estimates of this type would significantly advance our understanding of the phenomenon. Subjected to econometric analysis, they can provide empirical answers on the impact of skilled emigration.

Thirdly, source countries need to improve their data gathering capacity and this may require support and technical assistance from developed countries and international agencies. At the same time, developed countries should agree on the critical data items to collect on a regular basis. Definitions of foreign-born persons differ and there is a general lack of information about their gender, educational, occupational, or other skill characteristics. Information about length of stay or rates of return migration for the highly skilled and students is, likewise, often unavailable. A systematic cataloguing of SOPEMI⁵⁵ reports on migration is one place to start a comparative critique of the strengths and weaknesses of data collection in the OECD.

At the least, it is clear that developed countries should collect information about the education and occupation of the foreign born within their borders. The “Eurostat” survey goes some way to satisfying this requirement,⁵⁶ and could be used to construct European values for estimates of cumulative loss like those discussed here. But more could be done. A longitudinal database on immigrants would provide an invaluable source of information on rates of return and the accumulation of experience by foreign workers while in the developed country. Longitudinal data on movements help clarify the many possible patterns of mobility and the best ways of gauging the impacts of skilled mobility.

6.6.2. Create a core of new empirical research. There are a number of issues that future research, preferably empirically based, needs to address. The methodology used to explore these issues need not be of any single given type and, most certainly, our understanding would be best improved by employing more than one approach. Bottom-line information is needed from statistical macroeconomic models, as well as from case studies of single nations or industries and global cities.

As the first priority an econometric analysis of quantitative data, collected through the steps sketched above, would help set the tone of debate. While a large amount of economic theory predicts a direct, adverse impact of high levels of skilled mobility, there has been too little statistical analysis of data on a given nation or sample of nations. Such an analysis needs to be rigorous and empirical. Ideally, panel data on a set of countries could be pooled for a reliable quantitative analysis of impacts on GDP, poverty, or other outcomes. However, it is imperative that any such analysis be supplemented by a complex model of the feedback

⁵³ Bhorat, Meyer; and Mlatsheni, 2001; Carrington and Detragiache, 1998; Khadria, 2001.

⁵⁴ Khadria, 2001.

⁵⁵ The French acronym for OECD’s continuous reporting system on migration.

⁵⁶ Straubhaar and Wolburg, 1998.

effects generated through other channels of influence. While the direct impact of substantial skilled emigration may be to constrain growth, the range of forces it sets in play can readily generate net positive growth for source countries.

Little or no research has been devoted just to particular channels of influence generated by highly skilled emigration. Statistical models may be less valuable on such topics than analysis of trend data and in-depth case studies. For example, very little is known about the policy variables affecting the remitting behaviour of highly skilled workers. Surprisingly little is concretely known about the contribution of diaspora communities to stimulating investments, skill development, and technology transfer to their countries of origin. Assertions about their universal success need empirical support. And after a decade of intensifying globalisation, too little is known in a systematic fashion about how high skilled migration contributes to increases in developing country trade networks and subsequent economic growth and distribution.

Finally, there is a clear need for policy-related, evaluative research. An updated comparison is needed of international policies governing the mobility of skilled migrants; it should include both developed and developing countries. Documentation and a comparative assessment are needed of best practices for maximizing the benefits of skilled migration to both countries of origin and countries of employment. More could be known about the success of formal programmes of return of skilled migrants and other policies to encourage return. The effect of legal restrictions on temporary and permanent mobility by class of migrant should be systematically compared. This area of research will depend upon the available documentation on official policies, data on recent changes in flows, as well as case studies of particular programmatic attempts to influence skilled mobility.

7. Conclusions

Globalisation has many complex effects, which will directly influence future trends in skilled migration from the developing world. First is the increasing importance of the global organization of production and service activity.⁵⁷ Demographic and economic trends in the developed countries will probably lead to increased numbers of skilled immigrant admissions. In fact, it is likely that various national policies will combine to further the movement of highly skilled workers from developing to developed countries. One thing most experts agree upon: developed countries stand to benefit from the contribution of highly educated foreign workers. Having accepted the principle of opening markets to trade, and the belief that all parties win in an open regime, policy makers are more likely than in the past to listen to those who urge more liberal regimes of international mobility.⁵⁸

These current events raise the spectre of developing countries losing substantial fractions of their educated workforce. What damage will this cause? Will the feedback loops from high skilled emigration return some benefits that offset and even boost emigrant-source country development? Despite three decades of discussion, there are no well-calibrated measures of whether or not a “brain drain” is occurring. Even more problematic to sweeping statements about skilled emigration, it seems clear that true long-term detrimental effects are unique to particular countries where the situation compounds the fundamental problems that led to

⁵⁷ Salt and Findlay, 1989; Findlay et al., 1996.

⁵⁸ Chang, 1997; Straubhaar, 2000.

skilled emigration in the first place. Significant adverse effects may depend on the degree to which source country wages are flexible, and this may even vary by occupational category. In short, institutional factors mean that the direct effect of skilled emigration needs to be evaluated on a case-by-case basis.

Developed countries should facilitate the movement of highly skilled foreign workers while implementing policies that address possible brain drain effects. This report has mentioned several that would be part of a developed nation's immigrant admission policy regime. Policies that clearly define temporary status and encourage return are key, as are those that attempt to avoid recruitment from sectors and nations identified as being at risk of brain drain. Otherwise, taking advantage of a skilled diaspora falls most directly in the scope of developing country policies, but developed countries can readily aid diaspora projects. Likewise, developed countries can help develop human capital with targeted policies on education and training, academic exchange, and integration in advanced information, communications, and technology.

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