

**HIGHLY SKILLED LABOR  
MIGRATION:  
SHARING THE BENEFITS**

*Philip L. Martin*

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*Geneva, May 2003*

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Philip L. Martin

International Institute for Labour Studies  
Geneva

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## Summary

This paper outlines the dimensions and impacts of the movement of professional, technical, and kindred or related (PTK) workers from developing to more developed nations; its purpose is to assess proposals for sharing the gains of PTK migration so that such migration does not increase global inequality. PTK workers are those who have education or specialized knowledge that takes time to acquire, usually the equivalent of a four-year postsecondary education.

PTK or highly skilled workers have moved from industrial to developing countries as expatriates for decades. However, the number of PTK workers moving from developing to industrial countries increased in the 1990s for reasons that range from the IT-related economic boom to more doctors and nurses from developing countries arriving to care for the elderly in industrial countries; there were also new opportunities for side-door entry and adjustment to worker and immigrant, as when foreigners entered as students and stayed to work. Data are scanty, but it appears that 10 to 30 per cent of developing country workers with PTK credentials have emigrated, including over half of the Jamaican nurses and Filipino doctors.<sup>1</sup> Employers in industrial countries have become aware of the abilities of foreign PTKs, more foreigners in developing countries know about educational and job opportunities abroad, and a migration infrastructure that includes schools, financial mechanisms, and brokers has developed to move PTKs over borders.

PTK emigration represents a “brain drain,”<sup>2</sup> a transfer of human capital from one country to another, much as trade transfers a good produced in one country to another. The major beneficiaries of PTK migration are the migrants and their new host societies, and global GDP is increased when people increase their earnings. The key question addressed here is the net effect of PTK emigration on developing countries. Unlike trade, where the economic theory of comparative advantage suggests a tendency toward convergence, economic theory suggests that PTK migration can increase inequality by speeding up growth in destinations and slowing growth in sending countries.

Calculating the net effects of PTK emigration on sending countries requires information on the 3 R's:

- Recruitment or who migrates abroad. Were PTK migrants employed as managers at home, so that their exit leads to layoffs, or were they unemployed recent graduates who would have been unemployed at home?
- Remittances from migrants abroad, and the use of remittance savings in the country of origin. Are remittances significant, and do they create jobs and spur development in the country of origin, or are they low and add to inflationary pressures in sending country housing and land markets? Do PTK migrants transfer technologies and other productivity-increasing ideas to their areas of origin, planting the seed for more local and foreign investment?
- Return. Is the sending country's stock of human capital increased by the return of PTK migrants who acquired additional skills and earnings abroad, or does PTK emigration represent a permanent loss of skills?

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<sup>1</sup> The 10 to 30 per cent of highly skilled abroad refers to all persons born in a country who have a postsecondary education, not necessarily a college degree — in some cases the education was acquired after emigration. The general rule is that, the harder it is to immigrate into a country, the higher the percentage of PTKs among the migrants in that country.

<sup>2</sup> There are many definitions of brain drain and PTK, including e.g. that of Beine, Docquier and Rapoport (2001, 276), whose definition of a brain drain is “the emigration of a fraction of the population that is relatively highly educated as compared to the average.”

The operation of the 3 R's in particular settings can result in virtuous circles, in which because the potential to obtain a high-wage job abroad: (1) more residents in less developing countries obtain nursing, engineering, or other training, (2) remittances spur economic development in migrant countries of origin and make migration self-stopping, and (3) emigration slows with development, as in Taiwan, Korea, and Ireland. The alternative vicious circle can occur if the emigration of nurses, teachers or engineers leads to deteriorating health systems, poorer schools, and less-productive industries that slow development and increase gaps between developing and developed countries. In this case, individual migrants may enjoy higher incomes, but their countries of origin are worse off, as in many African countries.

The data are not available to determine the parameters that lead to virtuous and vicious circles, and thus there is no consensus on how turn vicious into virtuous circles. However the OECD suggested that, if the more developed countries continue to expand "policies aimed at facilitating the recruitment and mobility of highly skilled workers...[they] must endeavor to ensure a fairer distribution of benefits" of such migration (OECD, 2002, 7), which prompts three policy recommendations:

- Sending countries should see PTK migrants abroad as economic resources, maintaining links with their Diasporas and encouraging them to remit savings and to act as bridges for foreign investment and trade. Migrants often form hometown and similar associations that provide a point of contact for sending country governments, which can discuss issues of mutual interest with nationals abroad, including dual nationality and the costs and ease of remitting funds.<sup>3</sup> Maintaining links to Diasporas can facilitate the return of PTKs abroad as economic development proceeds, as occurred in Taiwan, South Korea, China, and Ireland.
- Receiving countries that benefit from the presence of PTK migrants should replenish the human capital they import.<sup>4</sup> Replenishment means that countries accepting PTK migrants from places with per capita incomes 1/5 or 1/10 as much<sup>5</sup> should establish Human Capital Replenishment Assistance (HCRA) programs that channel funds to the basic educational systems of sending countries.<sup>6</sup> This means that a country accepting 1,000 nurses or engineers earning an average \$40,000 a year or a total \$40 million would provide an additional \$2 to \$4 million a year in targeted HCRA to the workers' country of origin.<sup>7</sup>
- Sending and receiving countries have mutual interests in protecting migrants abroad, and cooperation on PTK migration can also set the stage for cooperation bilateral and multilateral agreements to reduce unauthorized migration. Bilateral trust and cooperation can lead to regional agreements on best practices for managing PTK migration, and perhaps facilitate the PTK migration that often accompanies increased trade in services.

It should be emphasized that many developing countries want to send more skilled workers abroad to reduce un- and under-employment and to obtain remittances and to increase trade.<sup>8</sup> Instead of requesting replenishment assistance, many developing countries want the General Agreement on Trade in Services to increase access to developed country labor markets for their citizens. If trade agreements ease the migration of PTK service providers over borders, developing countries should re-evaluate their financing of higher or tertiary education to reduce public subsidies for workers who are likely to wind up in industrial countries.

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<sup>3</sup> The volume and development impacts of remittance savings and investments are likely to be greater if governments adopt market-oriented policies for economic and exchange rate management.

<sup>4</sup> Compensating developing countries for their loss of human capital is not a new idea, with proposals for compensation framed by two extremes: (1) link compensation directly to the number of PTK migrants and their earnings abroad, or (2) increase overall foreign aid.

<sup>5</sup> Limiting human capital replenishment assistance to countries with incomes that are less than 10 or 20 per cent of the host country would mean that there would be no compensation paid e.g. if nurses or engineers migrated from Canada to the US.

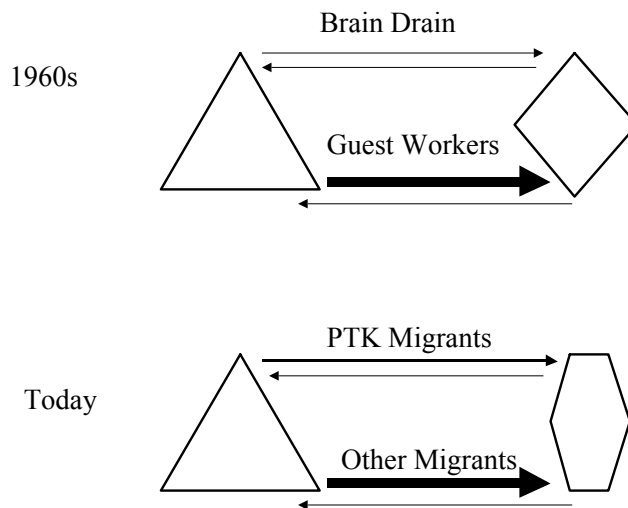
<sup>6</sup> Host countries may want to use replenishment assistance to e.g. guarantee education sector loans made by the World Bank and regional banks.

<sup>7</sup> The amount of replenishment aid, 5 to 10 per cent of the PTK's first year earnings, is about what an employer in the receiving country would pay to a recruitment agency to find a local worker.

<sup>8</sup> Many developing country governments believe that PTK migrants will be better able to protect their rights abroad.

Most developing countries have pyramid structures, so that, when workers are ranked by skill, there is a small share of PTK workers and a large share of unskilled workers. During the 1960s,

Labor Migration: 1960s, 2003



“brain drain” migration moved PTKs from the top of pyramids in developing countries to the upper half of diamond-shaped industrial countries; the wide diamond marked by large middle classes. Today, industrial countries, although still diamond shaped, are evolving toward hourglass shaped societies, as the middle class is squeezed with workers moving up and down the education-income ladder. The challenge is to ensure that 21<sup>st</sup> century PTK migration does not leave developing countries with pyramid shapes.

## Introduction: Winners and Losers

Professionals, technical, and kindred or related (PTK) workers are those with more than a high-school diploma or secondary education, usually at least a college/university degree or equivalent work experience.<sup>9</sup> A key feature of PTK workers is that they have education and training that takes time to acquire, so that their number cannot usually be increased quickly unless (1) trained workers who are not employed are induced to rejoin the work force or (2) workers are imported from abroad.

There is no global estimate of the number of PTK migrant workers. The UN estimated 175 million migrants in 2000, persons outside their country of birth or citizenship for 12 months or more, and reported that 60 per cent or 105 million of the world's migrants were in the more developed countries.<sup>10</sup> The UN data refer to all persons satisfying the 12 months abroad criterion, regardless of their reason for crossing borders or their legal status abroad. If the migrants in more developed countries have the same labor force participation rates as local workers, half or 52 million would be in the labor forces of more developed countries.<sup>11</sup>

Of these migrants in industrial countries, about 75 per cent or 40 million are from developing countries. How many have PTK credentials? The general pattern is that, the more difficult it is to immigrate from a particular country, the higher the percentage of PTKs among the migrants from that country. In developed countries, about 20 per cent of workers have PTK credentials, or 93 million of 470 million in 2001. If PTKs are 20 per cent of the migrants from developing countries in more developed countries, then 8 million PTK migrants from developing countries were in more developed countries in 2000, and they represented 9 per cent of the more developed country PTK labor forces.

The world's labor force in 2001 was 3 billion, including 2.5 billion in developing countries.<sup>12</sup> If PTKs are 4 per cent of developing country work forces, developing countries had 101 million PTKs, and PTK migrants were equivalent to 9 per cent of the stock in developing countries. Alternatively, if PTKs are 2 per cent of developing country work forces, developing countries had 50 million PTKs, and PTK migrants were equivalent to 16 per cent of the stock in developing countries.

**Table 1. Global Labor Force: 1980, 2001, 2010**

| Global Labor Force: 1980, 2001, 2010 |                         |       |                    |       |       |                            |         |
|--------------------------------------|-------------------------|-------|--------------------|-------|-------|----------------------------|---------|
|                                      | Population 15-64 (mils) |       | Labor Force (mils) |       |       | Average annual growth rate |         |
|                                      | 1980                    | 2001  | 1980               | 2001  | 2010  | 1980-01                    | 2001-10 |
| World                                | 2,600                   | 3,882 | 2,036              | 2,983 | 3,377 | 1.8                        | 1.4     |
| Developing Countries                 | 2,071                   | 3,240 | 1,662              | 2,517 | 2,894 | 2                          | 1.6     |
| PTK-4%                               |                         |       | 66                 | 101   | 116   |                            |         |
| PTK-2%                               |                         |       | 33                 | 50    | 58    |                            |         |
| High-income Countries                | 529                     | 642   | 373                | 467   | 483   | 1.1                        | 0.4     |
| PTK-20%                              |                         |       | 75                 | 93    | 97    |                            |         |

Source: World Bank. 2003. World Development Indicators, p. 44  
For PTK estimates, see text

<sup>9</sup> Some studies are restricted to a subset of PTKs, often scientists and engineers, also known as HRST, or human resources devoted to science and technology (OECD, 2002).

<sup>10</sup> Of the 105 migrants in developed countries in 2000, there were 56 million in Europe, 50 million in Asia, and 41 million in North America. During the 1990s, the number of migrants in developed countries rose by 23 million or 28 per cent, and immigration accounted for two-thirds of industrial country population growth.

<sup>11</sup> Migrants tend to be younger than other local residents, and thus may have higher-than-average labor force participation rates. In the US, for example, about 20 million of the 34 million foreign-born residents, almost 60 per cent, were in the labor force in 2002. These foreign-born workers included immigrants, temporary workers, and an unknown number of unauthorized workers.

<sup>12</sup> In this global labor force, average years of schooling was 6.4; 7.2 for men and 5.2 for women.

This suggests 8 million PTK migrants from developing countries in developed countries, where they represent 9 per cent of PTKs in developed countries. The most widely cited study of PTK migrants, by Carrington and Detragiache (1998), divided adult migrants who presumably finished their schooling into three groups based on years of education: less than 9 years, 9-12 years, and 13 or more years.<sup>13</sup> Carrington and Detragiache considered those with 13 or more years of schooling to be skilled or highly skilled—they were called persons with tertiary education. Using estimates from Barro and Lee on the educational attainment of persons 25 and older by country, Carrington and Detragiache estimated the level of education<sup>14</sup> of adult immigrants enumerated in the 1990 Census of Population in the US from 61 developing countries<sup>15</sup> in 1990. They assumed that migrants in other OECD countries had the same educational profile as immigrants from a particular country in the US, so that, e.g. the distribution of South African migrants by education in the US was applied to South African migrants in the UK.<sup>16</sup>

The Carrington and Detragiache data can be used to measure educational selectivity and cumulative loss:

- educational selectivity is the percentage of migrants from a country who have PTK credentials, e.g. 75 per cent of adult Indians in the US in 1990 had PTK credentials (p14), as did 60 per cent of the Egyptians, Ghanaians, and South African adults in the US, 40 per cent of Jamaicans, but only 13 per cent of Mexicans;
- cumulative loss measures the share of PTK migrants in a particular country who are abroad. The highest cumulative losses were in Jamaica, Guyana and Trinidad and Tobago — there may be more PTKs outside than inside these countries.

Less detailed data on the foreign born by region of birth are available from the 2000 US Census of Population, and they show sharp differences in the educational level of immigrants by region of origin. In the aggregate, the percentage of foreign-born and US-born adults with college degrees or more is similar, 27-28 per cent, but a far higher percentage of the foreign-born have less than a high-school diploma. Immigrants from Asia and Europe are most likely to have advanced degrees, 16-18 per cent, while immigrants from Latin America are least likely to have high levels of education.

**Table 2. Education of Foreign-born US Residents, March 2002**

| Education of Foreign-born US Residents, March 2002 |              |        |       |          |       |         |
|--|--------------|--------|-------|----------|-------|---------|
| Percentage   | All For-born | Europe | Asia  | Latin Am | Other | US-born |
| Less than HS Diploma                               | 33           | 16     | 13    | 51       | 18    | 13      |
| HS Diploma, some col                               | 41           | 49     | 38    | 38       | 49    | 60      |
| BA or more   | 27           | 35     | 49    | 11       | 34    | 27      |
| MS or more   | 10           | 16     | 18    | 3        | 12    | 9       |
| Number (000)                                       | 25,790       | 3,969  | 6,879 | 12,835   | 2,107 | 156,352 |

Source: <http://www.census.gov/population/socdemo/foreign/ppl-162/tab03-05.xls>

Foreign-born residents 25 and older

The Carrington and Detragiache effort is suggestive rather than definitive because:

- The educational categories include large numbers of people not considered to be highly educated in other studies. Carrington and Detragiache included as “tertiary educated” all

<sup>13</sup> The actual “mapping” between years of education recorded on the US Census and the Barro-Lee grouping was as follows: less than 9 years corresponded to no or primary schooling, 9-12 years corresponded to secondary schooling, and 13 or more years corresponded to high school graduates and beyond. In the US there are many adults who would be classified in the 9-12 category of the US Census, and the high school graduate category in Barro-Lee (p. 12).

<sup>14</sup> Migration from the ex-USSR and Eastern Europe, as well as migration from one developing country to another, was excluded.

<sup>15</sup> About 54 per cent of the migrants from these 61 developing countries who were in OECD countries were in the US.

<sup>16</sup> The data cannot say where the person obtained the education, and do not record the legal status of the foreigner, who may be an immigrant or a graduate student, although Carrington and Detragiache tried to subtract graduate students from their data.

persons with a postsecondary education (a high school diploma), but most discussions of the brain drain are limited to those with a college degree or more (p.18).<sup>17</sup>

- The 1990 US Census may be out of date. The OECD noted that, “while it is difficult to measure...there is every reason to believe that [PTK] flows rose substantially during the 1990s. (OECD, 2002, 7).
- Carrington and Detragiache excluded PTK migration between developing countries, as from India or the Philippines to the Gulf states, which may explain why they found that only 7 per cent of the stock of Filipino PTKs were abroad.<sup>18</sup>

The presence of PTK migrants adds to the stock of human capital in destination areas and, according to most growth theories, raises the incomes of individuals who move. Most of the benefits of PTK migrants accrue to host countries, augmenting economic growth in three major ways:

- Making available trained workers to fill vacant jobs, as foreign PTK workers bridge gaps until more local workers are trained to fill jobs in boom sectors such as Information Technology,
- Increasing potential innovation in strategic sectors by having diverse work teams, which may boost innovation and productivity growth, and
- Reducing the costs of providing labor-intensive services such as medical care and education.

Losing PTK workers reduces the stock of human capital in emigration countries, which can slow economic growth. In cross-section studies, lower average levels of education are associated with slower productivity and economic growth across countries because.<sup>19</sup>

- The temporary or permanent loss of human capital can make the country less attractive to local and foreign investors. However, some of these economic losses may be offset if migrants remit funds or invest in their countries of origin and return with enhanced skills.
- Governments may “lose” investments made in the education of PTK emigrants. A revisionist literature emphasizes that, in the special case of countries that were closed to emigration, and then allow emigration, the opportunity to go abroad can encourage more young people to obtain PTK credentials, not all of them emigrate, and the country’s stock of human capital can increase because of emigration (see next section).
- Emigration may result in a lack of dynamism, innovation, and creativity in the emigration country since the young and well educated are most likely to emigrate.

In the absence of definitive data, conclusions about the impacts of PTK migration on developed and developing countries often rest on world views. Ellerman (2003) discusses the debate between “internationalists” who believe that, if migrants move voluntarily and achieve higher incomes, global economic welfare increases because e.g. each one million migrants earning an average \$10,000 more increases global income by \$10 billion. Even if the people in the country of emigration are worse off, internationalists believe that the benefits to migrants and the increase in global economic welfare are more important than losses to particular countries. The “nationalist” model, on the other hand, aims to maximize growth in a particular country, and nationalists note that such growth may be fostered by strictly limiting the time abroad of students and professionals if their exit sets in motion a vicious circle that slows growth and development (2003, 7).

<sup>17</sup> In the US in 1990, 75 per cent of adults had a high school diploma or more, and thus would have been considered PTK by Carrington and Detragiache. However, only 20 per cent had a college degree or more. Another 25 per cent had education beyond high school, but not a college degree.

<sup>18</sup> A different approach was taken by Meyer and Brown (1999). They estimated there were 170,000 foreign-born scientists and engineers in the US from developing countries in the mid-1990s, based on 1 million scientists and engineers employed in US R & D activities, including 23 per cent who were foreign born (230,000), with 72 per cent of the foreign-born from developing countries (166,000). Meyer and Brown concluded that half of the foreign-born scientists and engineers employed in industrial country R & D activities are in the US, for a global estimate of 331,000 foreign-born scientists and engineers from developing countries in industrial countries.

<sup>19</sup> Barro and Sala-I-Martin (1995) used data from 111 countries between 1960 and 1990 to conclude that a work force with an average one year more of education was 5 to 15 per cent more productive than work forces in countries with less education.

During the 19<sup>th</sup> century, trans-Atlantic migration from Europe to the Americas had an equalizing or convergence effect that set in motion a virtuous circle that eventually stopped European emigration. The arrival of migrants in the land-abundant and labor-short Americas put downward pressure on wages there, while emigration put upward pressure on wages in land-scarce and labor-abundant Europe. The result was a convergence in factor prices and a “natural end” to emigration from Europe. It is not clear if current developing to developed migration will produce similar convergence. Emigration may set in motion factors that perpetuate emigration, as when the residents of a desert regions in Africa can sustain a low-level equilibrium existence because remittances.<sup>20</sup> Neoclassical economics treats convergence as the norm, but Ellerman notes that PTK emigration in a world that values and rewards human capital could put many developing countries in a low-level desert-type equilibrium (2003, 10).

### ***Revisionism: Gains from a Brain Drain***

In neoclassical economic models, the outflow of any labor, unskilled or skilled, slows economic growth. More recent economic growth models have emphasized that, with human capital scarce in developing countries, PTK emigration represent a transfer of human capital from poorer to richer countries which, under so-called endogenous growth theory, can slow economic growth (Straubhaar and Wolburg, 1997).

However, the increased PTK migration of the 1990s was accompanied by a new literature that reached the seemingly counterintuitive conclusion that the emigration of skilled workers can accelerate economic growth in their countries of origin. This conclusion is a straightforward result of the assumptions. Imagine a developing country with no emigration that suddenly opens its borders, so that PTK workers who emigrate have incomes abroad that are 5 or 10 times their incomes at home. For all workers with PTK credentials, emigration has raised the average returns to education, which should induce more people in the emigration country to stay in school and obtain PTK credentials. However, not all of this expanded number of PTK workers will in fact emigrate, so switching from no or low emigration to more emigration can, paradoxically, increase the number of PTKs in an emigration country (Mountford, 1997; Beine, Docquier and Rapoport, 2001). The conclusions of such studies suggest that:

- Neither developing nor industrial countries should ban the exit or entrance of PTK migrants if their goal is to prevent a brain drain
- There may be some “optimal level of brain drain”: low enough to avoid a vicious downward spiral but high enough to inspire more residents to acquire PTK skills.

In empirical studies, it is hard to separate (1) rising education levels in developing countries, (2) more PTK migration from developing to developed countries, and (3) the portion of the increased education due to emigration. Studies that try to test for “brain gain effects” and “brain drain effects” in emigration countries must make heroic assumptions. For example, one study assumed that the 1994 level of education in a country was a function of the average number of migrants from that country who arrived in OECD countries between 1988 and 1994, as recorded in SOPEMI data, and concluded that “migration prospects seem to play a significant role in education decisions,” (Beine, Docquier and Rapoport, 2001, 288). The strongest conclusion seems to be that, given the choice between no PTK emigration and some, some may not stall development and may actually foster development.

There is a second level of concern about the revisionist view because, even if PTK emigration induces more people to obtain PTK credentials, the increase in human capital may not be “appropriate” for development. The South African experience is frequently cited. Migration from

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<sup>20</sup> Ellerman suggests (2003, 10) a “thought experiment:” imagine the 50 US states as independent countries, so that migration between them would involve crossing international borders. Even if trade and capital flows were free, how would harder-to-cross borders have affected US economic development?

South Africa was restricted during apartheid, there was a significant emigration of scientists, engineers, and medical staff<sup>21</sup> after the mid-1990s, and many more South Africans went to university. However, many of the new students enrolled in humanities, not in the fields in which emigration depleted human capital, so that the South African government imported nurses and doctors from Cuba to serve in medically understaffed rural areas rather than call on new graduates.

Similarly, after the 1998 financial crisis in Russia, student enrollment in science and technology courses increased sharply, in part because Russian students thought science and technology credentials improve opportunities for emigration (Ellerman, 2003, 31). However, if not all of the new scientists and engineers emigrated, so that Russia's human capital stock rose in response to emigration opportunities, there is still a question of whether there would be enough jobs for the them in Russia. Since many scientists and engineers are employed in government-financed research institutes, there were fears that the increased number of scientists and engineers expecting government-financed jobs might be "second-rate," the people who could not find jobs abroad.

### ***Recruitment, Remittances, and Returns***

Empirical studies seeking to determine the net effect of PTK emigration on countries of origin generally focus on the 3 R's of recruitment, remittances, and returns. Recruitment refers to who goes abroad — the number of migrants as well as the roles they played in the sending country economy. The impacts of emigrants depend on the answers to questions such as: were the migrants employed in critical jobs at home, so that their emigration leads to hospital or factory shutdowns, or were they recent graduates facing periods of extended unemployment? Does the presence of migrants abroad boost economic ties between sending and receiving countries, including trade and investment? Does PTK migration put the sending country "on the map" in the scramble for Foreign Direct Investment (FDI), as seems to have occurred for Indian IT migrants in North America, or do PTK migrants quickly break ties with their countries of origin, as seems to occur with many migrants from Africa who move to industrial countries?

Migrants go abroad for higher wages, and remittances are the monies they send home. How does the volume of remittances compare with the earnings and savings that would be available if the migrant stayed home? Are remittances more likely than domestic savings to be invested in ways that increase economic growth, such as when remittances from migrants abroad enable farmers at home to buy machinery that makes them more productive? Do remittance savings generate additional FDI as migrant-investors establish successful businesses in their areas of origin? An alternative scenario sees remittances as a substitute for local earnings, setting the stage for a downward spiral if the recipients of remittances leave their land idle because they no longer have to farm to survive, the low-level desert equilibrium scenario. Remittances can even have inflationary impacts, hurting residents not connected to international migration, if they raise prices for fixed assets such as land or brides.<sup>22</sup>

Remittances to developing countries more than doubled in the 1990s to \$65 billion in 1999, and their distribution by region was as follows: Asia, \$28 billion, Western Hemisphere, \$16 billion, and

<sup>21</sup> Some 35 per cent of doctors who graduated from the University of the Witwatersrand's medical school in the 1990s emigrated by 2002. James Lamont, "S African leaders do little to stem exodus of skills," *Financial Times*, July 24, 2002, p. 9. There were estimated to be 1.6 million South Africans abroad in 1999, and 39,000 reportedly left in 1999 — 20 per cent of skilled South Africans were believed to have emigrated by 2002. Emigrants had many reasons for leaving, including violent crime (some 250,000 people were murdered in South Africa in the 1990s), a falling currency, and opportunities for travel that were not available during apartheid. Some 800,000 South Africans, many skilled, hold British passports.

<sup>22</sup> At the height of the Indian emigration boom in 2000, remittances increased bride prices. One migrant married off his first daughter for 56 grams of gold and his third daughter for 136 grams, reflecting rising dowries. Dowry prices remain high, and family life has been changed by men living apart from their families for most of several decades. South Asia. 2003. *Migration News*. Vol 10. No. 2. April.

Africa, \$7 billion. The drop in remittances in 1991 was associated with the Gulf War, and that in 1998 with the Asian financial crisis.

**Table 3. Remittances to Developing Countries, 1988-99**

| Remittances to Developing Countries, 1988-99 |                     |        |
|--|---------------------|--------|
|  | Remittances (\$mil) | Change |
| 1988   | 28,340              |        |
| 1989   | 32,136              | 13%    |
| 1990   | 39,052              | 22%    |
| 1991   | 33,050              | -15%   |
| 1992   | 37,196              | 13%    |
| 1993   | 38,872              | 5%     |
| 1994   | 44,134              | 14%    |
| 1995   | 50,632              | 15%    |
| 1996   | 54,851              | 8%     |
| 1997   | 65,021              | 19%    |
| 1998   | 60,895              | -6%    |
| 1999   | 65,325              | 7%     |
| Total  | 549,504             |        |

The World Bank's Global Development Finance (GDF) report estimated that remittances to developing countries reached \$80 billion in 2002. The GDF noted that remittances have become a very important source of foreign exchange in many developing countries, and warned them that "a positive investment climate is also important for effective utilization of workers' remittances." If an emigration country's exchange rate is overvalued, or if there are barriers to investing remittances in the migrant's country of origin, there are likely to be fewer remittances, and they are more likely to be spent on immediate consumption rather than invested.<sup>23</sup>

The third R is returns, the permanent or temporary return of migrants. If most migrants return, then a "brain drain" in one period can become a "brain gain" in the next. Alternatively, back-and-forth migration can become brain circulation that contributes to economic growth in both countries. The selectivity among returned migrants may be important for assessing their impacts for development. Do the best and brightest stay abroad, circulate, or return permanently? Do PTK migrants return to retire, or do they return with investable savings and energy?

This summary of suggests that the 3 R's of migration could unfold in ways that contribute to virtuous OR vicious development circles in countries of origin. Most brain drain analyses emphasize vicious circles, concluding that the loss of human capital slows development, although the recent literature on net brain gain holds out hope in very special cases.<sup>24</sup> As Lowell and Findlay emphasize, too little is know about the effects of migration generally, and PTK migration in particular, to assess whether vicious or virtuous circles are the result in most countries that export PTK migrants.<sup>25</sup>

<sup>23</sup> Remittances tend to be counter-cyclical, since economic downturns encourage additional workers to migrate abroad and those already abroad increase the amount of money they send to families left behind. GDF noted that tighter restrictions on informal transfers and lower banking fees mean that remittances through the banking system are likely to continue to rise.

<sup>24</sup> A typical summary conclusion is: "the policy challenge is to facilitate the circulation of highly skilled workers across frontiers while generating benefits for both sending and receiving countries. (OECD, 2002, 71).

<sup>25</sup> Lowell and Findlay suggest that, whether vicious or virtuous circles are the rule, PTK migrants may contribute less than other migrants because they are likely to come from urban areas, where remittance multipliers are lower and they often go abroad with their families, which may reduce their remittances and increase the likelihood they will stay abroad permanently.

## **Host Country Data, Issues, Policies**

### **Data**

There have been two recent efforts to assess the effects of PTK migration:

- The OECD convened a seminar that examined data on PTK migration, studies of PTK impacts in host countries, and reviewed the migration policies that could make PTK migration mutually beneficial (OECD, 2002).
- The ILO commissioned a series of country studies that examined the impacts of PTK migration on selected countries.<sup>26</sup>

Both projects were motivated by increased PTK migration in the 1990s, and fears that such migration could increase global inequality.

The OECD contributions begin with the data and measurement issues involved in assessing the migration of scientists and engineers, concluding that more usage of standard definitions would be desirable. The Canberra Manual (OECD, 1995) defines human resources devoted to science and technology (HRST) in supply and demand terms. Supply includes persons with at least a postsecondary (college) degree in a science or technology field, while demand includes persons employed in science or technology occupations that normally require such a degree, even if they lack a degree, a demand or employment definition (OECD, 2002, 13). Using both definitions, there were an estimated 65 million HRST workers in the EU in 1997, but only 23 million, about a third, satisfied both education and occupation criteria.<sup>27</sup>

The number of HRST workers in OECD countries has been rising but, “because of data problems, it is not possible...to quantify movements in comparative or global terms.” (OECD, 2002, 29). Data problems were also apparent in studies of foreign students, who may become PTK migrants — study abroad is an increasingly important path to work and residence abroad. Most employers in OECD countries do not engage in long-distance recruitment, so one way for a developing country national to get hired is to study in an OECD country, thereby increasing the chance of coming to the attention of local employers. A US study found that 23 per cent of a sample of H-1B workers, foreigners with a university degree or more employed in the US in a job that requires a university degree or more, had previously held US student visas.

Foreign students in OECD countries are concentrated in the US (34 per cent), the UK (16 per cent), Germany (13 per cent), France (11 per cent), and Australia (8 per cent) (OECD, 2002, 52); half are from non-OECD countries. The foreign students tend to study subjects that are most transferable internationally, e.g. science and engineering rather than law. This contribution concluded that student mobility “deserves encouragement,” but that “greater coordination and cooperation... would lead to a fairer sharing of the advantages linked to international student mobility.” (OECD, 2002, 64).

### **Issues**

The number of PTK migrants from developing countries in developed countries is expected to continue rising in the 21<sup>st</sup> century for reasons that include:

- aging populations that increase the demand for medical personnel, which is often supplied by institutions seeking to minimize labor costs;

<sup>26</sup> The ILO papers are on line at: <http://www.ilo.org/public/english/protection/migrant/publ/imp-list.htm>

<sup>27</sup> Narrower definitions, produced smaller numbers, e.g. there were 8 million scientists and engineers, including 2 million each in Germany and the UK (OECD, 2002, 20). The US Scientists and Engineers Statistical Data System (SESTAT) found 12 million scientists and engineers in 1997, but only 3.3 million of them were employed in Science and Engineering (OECD, 2002, 23).

- continued globalization of education, business, and trade, which leads to more foreign students, more business teams comprised of nationals of the various countries in which a firm operates, and the migration that accompanies trade, investment, and service flows;
- rigidities in host-country labor markets that are costly to change, such as wages not high enough to induce nurses in industrial countries to remain nurses, to work in inner city hospitals or at night and on weekends or in private homes;
- the development of an infrastructure of middlemen and brokers whose livelihood depends on moving PTK migrants over borders; and
- incentives in the educational and research institutions of OECD countries to maintain student and researcher numbers even in fields that local students shun, including agriculture and advanced engineering.

The issues that arise in the transfer of PTK migrants over borders include determining the need for such migrants and recognizing their credentials. There is not a consensus in industrial countries on the “need for” PTK migrants or on how to recognize their credentials. However, economics needs tests and credentials recognition are issues on which sending and receiving countries could cooperate to improve migration management.

### ***Economics Needs Tests***

Local employers usually begin the migration process by requesting migrant workers, and many countries require them to satisfy an “economic needs test” before the foreigners can be admitted or, if already in the country, work legally. Economic needs tests are the rule before unskilled foreign workers can be admitted. In most cases, employers must prove, on a job-by-job basis, that they tried and failed to find local workers despite offering government-approved wages and working conditions before foreigners can be admitted and employed. Only after local recruitment efforts fail may employers hire foreigners. Economic needs tests, also called labor certification, are often time-consuming and expensive, so that in practice, migrants often go to work illegally for employers, and the economic needs test fails to find local workers because the employer is in fact seeking permission to employ unauthorized foreigners legally.

Most economic needs tests are to be conducted before the foreigner is hired, that is, the border gate remains closed until a government agency agrees that local workers are unavailable. However, PTK workers are often treated differently, with employers allowed to have admitted or employ foreign professionals on the basis of their assertions that the workers are needed and will be paid prevailing wages, and any enforcement deferred until after the migrants arrive and there are complaints. Such post-employment government checks make it easier for foreign PTKs to be hired.

The US H-1B program (named for that part of immigration law that authorizes the program) is an example of a post-employment enforcement process. Canada, Germany, and the UK have similar trust-the-employer systems, and in most cases the trade off for easy admissions system is a ceiling on the number of visas that can be issued in any year.<sup>28</sup> The H-1B program allows US employers to simply assert or attest that foreigners with a university degree or more are needed, and that the job they will fill requires a university degree or more, and these employer assertions, if correct, are sufficient to allow worker entry and employment.<sup>29</sup>

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<sup>28</sup> In the US case, this cap was raised in stages from 65,000 a year to the current 195,000 a year; the cap is scheduled to revert to 65,000 a year beginning October 1, 2003.

<sup>29</sup> Experience shows that some US employers abuse this easy-access to foreign workers. Under US law, the US Department of Labor must approve the employer’s request for H-1B workers unless the attestation contains obvious errors, such as asserting that the prevailing wage is \$5 an hour. As the US General Accounting Office noted in 2000: “Labor (DOL) can certify that an employer’s application form for H-1B workers is error free, but it has no authority to verify the information on the form. Labor cannot take enforcement action even if it believes that employers are violating the law” unless it receives a complaint of violations.

This easy admission system has helped make the H-1B program the world's largest for PTK migrants, and post-admission enforcement experience shows that there are trade offs between employment and protection. By making it easy for employers to obtain highly skilled migrants, employment rises, but the competing good of maximizing wages and opportunities for local workers may be compromised, as could occur if the presence of foreign scientists and engineers holds down wages, and fewer local workers seek science and engineering degrees. If such a scenario unfolds, "dependence" on foreigners can become a self-fulfilling prophecy.

Even if local wages are not affected, the presence of foreign workers can reduce incentives for local workers to enter particular occupations. For example, H-1B visa holders can make a transition from guest worker to immigrant if they find a US employer to sponsor them, which requires going through a pre-hiring economic needs test. H-1B workers can be employed in a temporary status for up to six years, and the economic needs test for an immigrant visa can be 2-3 years long. During this time, the H-1B worker will generally aim to please the employer, since failure to do so could endanger the employer's sponsorship. Since the H-1B door is fairly wide open, but the immigrant visa door is much narrower, H-1B visa holders can be in effect indentured servants for several years.

In fact, most immigrants receiving visas for economic/employment reasons are already in the US and often employed: 85 per cent in recent years. In one study, 99 per cent of the 24,000 foreigners sponsored by US employers for immigrant visas were already working for the employer who requested them, including 4,000 who were unauthorized foreigners. These employers had to advertise for US workers, and government investigators examined what happened to the 165,000 applicants for the jobs that were advertised.<sup>30</sup> Even though the typical attracted seven US applicants, in virtually every case the employer found US worker applicants not qualified, and the foreigner eventually received an immigrant visa. However, as soon as the immigrant got his visa, he typically quit, since as an immigrant there was no requirement to continue in the same job.

**Table 4. Employment-based Immigration and H-1Bs, 1992-2001**

| <b>Employment-based Immigration and H-1Bs, 1992-2001</b> |         |         |         |         |         |         |         |
|--|---------|---------|---------|---------|---------|---------|---------|
|  | 1992    | 1993    | 1994    | 1995    | 1996    | 1997    | 1998    |
| Employment-based Ceiling                                 | 140,000 | 140,000 | 140,000 | 140,000 | 140,000 | 140,000 | 140,000 |
| Employment based Immigration -                           | 116,198 | 147,012 | 123,291 | 85,336  | 117,499 | 90,607  | 77,517  |
| Employment-waiting list                                  | 140,000 | 161,207 | 143,213 | 146,503 | 140,000 | 140,000 | 160,898 |
| H-1B Visa Ceiling  | 65,000  | 65,000  | 65,000  | 65,000  | 65,000  | 65,000  | 65,000  |
| H-1B Admissions (double count)                           | 110,223 | 92,795  | 105,899 | 117,574 | 114,458 | 200,000 | 240,947 |
|  | 1999    | 2000    | 2001    | 2002    | 2003    | 2004    | 2005    |
| Employment-based Ceiling                                 | 140,000 | 140,000 | 140,000 | 140,000 | 140,000 |         |         |
| Employment-based Immigration                             | 56,817  | 107,024 | 179,195 |         |         |         |         |
| Employment-waiting list                                  | 142,299 | 194,074 | 142,632 |         |         |         |         |
| H-1B Visa Ceiling  | 115,000 | 115,000 | 195,000 | 195,000 | 195,000 | 65,000  |         |
| H-1B Admissions (double count)                           | 302,326 | 355,605 | 384,191 |         |         |         |         |

1997 admissions are estimated; the INS has no data

Employment-based immigration can exceed the 140,000 ceiling if visas were not fully used in previous years

There is a recognition that these different economic needs tests lead to problems, and there are also questions about their usefulness. In many cases, it is hard to believe that US workers are not available. The Gannett News Service reviewed admissions of needed workers sponsored by

<sup>30</sup> Deborah Billings, "Audit by DOL Inspector General Faults Employment-based Immigration Programs," Daily Labor Report, April 15, 1996.

US employers between 1988 and 1996, and found that 40,000 housekeepers received immigrant visas because US workers were not available, as were 5,000 cooks and chefs, 3,000 auto repair workers, 252 fast-food workers, 199 poultry dressers, 173 choral directors, 156 landscape laborers, 122 short-order cooks, 77 plumbers, 68 doughnut makers, 53 baker's helpers, and 38 hospital janitors.<sup>31</sup> In many cases, employers sponsored housekeepers for immigrant visas as a reward for faithful service to their families, while the cook and chef visas often went to relatives of the owners of ethnic restaurants.

**Table 5. US Economic-Employment Based Immigration: 2000**

| <b>US Economic-Employment Based Immigration</b>    |            |          |                   |          |
|--|------------|----------|-------------------|----------|
|  | Prins-2000 | Per Dist | Prin-Adjusts-2000 | Adjust-% |
| Preference 1: Priority Workers (no labor cert)     | 11,452     | 24%      | 9,211             | 80%      |
| Extraordinary Ability                              | 2,002      |          | 1,498             | 75%      |
| Outstanding Professors                             | 2,667      |          | 2,442             | 92%      |
| Executives & Managers                              | 6,783      |          | 5,271             | 78%      |
| Preference 2: Professionals of Exceptional Ability | 9,815      | 20%      | 8,973             | 91%      |
| Preference 3: Skilled and Other Workers            | 22,435     | 47%      | 18,670            | 83%      |
| Skilled Workers                                    | 13,651     |          | 11,397            | 83%      |
| BA Professionals                                   | 8,771      |          | 7,260             | 83%      |
| Unskilled workers                                  | 1,951      |          | 1,571             | 81%      |
| Preference 4: Special Immigrants                   | 4,403      | 9%       | 3,853             | 88%      |
| Ministers of religion                              | 1,011      |          | 906               | 90%      |
| Religious Workers                                  | 2,280      |          | 2,112             | 93%      |
| Preference 5: Investor Immigrants                  | 79         | 0%       | 56                | 71%      |
| Total  | 48,184     |          | 40,763            | 85%      |

Source: INS Statistical Yearbook, 2000, pp. 29-32

The operation of the temporary admissions and adjustment to immigrant programs in practice calls into question whether, e.g., the H-1B program is permitting employers "to meet urgent, short-term demand for highly skilled, unique individuals who are not available" in the US. The numbers involved can be large. If the maximum 195,000 H-1B visas a year were actually issued, there could be over 1.2 million H-1 foreign professionals in the US at any one time.<sup>32</sup> During the 1990s, the major country of origin was India, and surveys found that over 95 per cent of H-1B visa holders had at least a first university degrees, and that half had at least a second university degree.

<sup>31</sup> Jim Sprecht, "Government has little control over job-based immigration," Gannett News Service, August 4, 1996.

<sup>32</sup> H-1B visas issued to foreigners employed in universities and nonprofits are exempt from the cap.

**Table 6. H-1B Visas Issued by Country: 1990-1999**

| <b>H-1B Visas Issued by Country: 1990-1999</b> |        |        |        |        |        |        |        |        |        |         |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
|  | 1990   | 1991   | 1992   | 1993   | 1994   | 1995   | 1996   | 1997   | 1998   | 1999    |
| China (mainland)                               | 610    | 1,145  | 894    | 1,031  | 1,256  | 1,887  | 2,330  | 3,214  | 3,883  | 5,779   |
| India  | 2,697  | 4,102  | 5,552  | 7,606  | 11,301 | 15,528 | 19,203 | 31,686 | 40,247 | 55,047  |
| Japan  | 3,791  | 5,167  | 2,767  | 2,152  | 2,217  | 2,070  | 2,411  | 2,929  | 2,878  | 3,339   |
| Philippines                                    | 7,302  | 7,221  | 7,550  | 7,596  | 8,753  | 10,026 | 4,601  | 2,685  | 2,758  | 3,065   |
| France   | 2,293  | 2,413  | 1,686  | 870    | 1,003  | 1,216  | 1,463  | 1,894  | 2,110  | 2,633   |
| Germany  | 1,637  | 1,888  | 1,501  | 1,012  | 1,092  | 1,484  | 1,518  | 2,088  | 2,242  | 2,451   |
| UK   | 7,174  | 8,794  | 6,726  | 3,993  | 4,230  | 4,771  | 5,601  | 6,928  | 6,343  | 6,665   |
| Russia   | 3,709  | 3,942  | 1,651  | 1,892  | 1,245  | 1,196  | 1,255  | 1,357  | 1,395  | 1,619   |
| Mexico   | 3,727  | 3,227  | 2,488  | 1,307  | 1,147  | 1,451  | 1,909  | 2,785  | 2,320  | 2,419   |
| Australia                                      | 827    | 1,102  | 990    | 863    | 1,050  | 1,042  | 1,123  | 1,438  | 1,666  | 1,651   |
| Subtotal                                       | 33,767 | 39,001 | 31,805 | 28,322 | 33,294 | 40,671 | 41,414 | 57,004 | 65,842 | 84,668  |
| Ceiling  | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 115,000 |

Source: US Department of State, Visa Office

The US experience demonstrates that the incentives of migrants, their employers, and the brokers who match migrants and employers can change what began as a program to fill short-term labor gaps into a more general immigration program. The revenues of body brokers and middlemen depend on the fees they can charge migrants and employers and on the number of migrants moved over borders, and their interests can be different from those of migrants seeking jobs and employers seeking workers.<sup>33</sup> Furthermore, the promise of adjustment from temporary worker to immigrant means that most H-1B visa holders do not complain for fear that their chances of obtaining an immigrant visa may diminish.

In extreme cases, body brokers can become in effect high-end migrant smugglers, and are detected only in the rare instances in which there are complaints.<sup>34</sup> The number of complaints has been rising. In FY00, DOL received 140 complaints from H-1B workers, up from 48 in FY97. The Wall Street Journal on June 21, 2001 profiled a typical dispute, which involved an Indian H-1B who arrived in November 2000 to work for ChristAm, and Indian-owned body broker. ChristAm never found a US job for the H-1B worker, paid him no wages, and went out of business after collecting fees from the migrant. In other cases, body brokers require H-1B workers to sign contracts that include penalties if the worker finds a "regular" US employer, as occurs if an H-1B worker assigned to IBM is offered a job by IBM, but US courts have found some of these penalty clauses unlawful, and refused to enforce them.<sup>35</sup>

Since the 2000 downturn in the IT economy, have raised far more complaints about H-1B workers. Many US workers complain that they were forced to train H-1B workers and then were laid off while the H-1Bs were hired — most US employers may lawfully lay off US workers and replace them with H-1B workers.<sup>36</sup> Laid-off US workers cannot claim that the employer violated immigration laws by laying them off. Instead, their suits allege that employers violated e.g. age discrimination laws, which was the charge against Sun Microsystems Inc when it laid off 2,500

<sup>33</sup> H-1B IT workers without jobs are considered "benched," and there are frequent disputes over the allowances they receive when they incur living costs but do not earn wages.

<sup>34</sup> The US Department of State reported in 1999 that 45 per cent of a sample of the H-1B worker applicants in Chennai (formerly Madras), India presented credentials that could not be authenticated; 21 per cent were clearly fraudulent.

<sup>35</sup> For example, a San Mateo County court in April 2001 ruled that a \$25,000 penalty clause in a contract between one body shop, Compubahn, and a H-1B worker was unlawful, and ordered Compubahn to pay the affected Indian \$215,050 in legal fees and other expenses.

<sup>36</sup> The exception — the US employers who must seek US workers and not lay off US workers to open jobs for employers — are "H-1B dependent" employers with 15 per cent or more H-1B workers.

US workers in 2000 while retaining and hiring additional H-1B workers. Sun's defense, which was ultimately successful, was that its management decisions on whom to hire or retain were based strictly on merit.

More recently, a new issue has arisen: can employers avoid economic needs tests altogether by bringing foreign workers into the country as intra-company transfers, and then send them to other US employers to work. The case that prompted critics to charge that employers are abusing intra-company transfer rules, which are being liberalized under the General Agreement on Trade in Services (GATS), involved a decision by a Siemens subsidiary in the US to subcontract its software maintenance work to Tata, a firm with operations in both India and the US. Siemens had its US workers train the Indian workers who replaced them, and then laid them off. Meanwhile, Tata sent as much of the software work as possible to India, and brought additional Tata workers to the US as intra-company transfers, with L-1 visas.

There is disagreement among government agencies as to whether Tata's use of L-1 visas was lawful. The Bureau of Citizenship and Immigration Services says Tata's activities were unlawful: "If an L-1 comes into the United States to work, they're coming to work for their specific company that petitioned for them, not for another company that they're being contracted out to." The State Department, which issues L-1 visas, says that Tata's activities were lawful: "The fact that someone is on the site of (a client) does not make them ineligible for an L-1 as long as . . . the company they actually work for is truly functioning as their employer in terms of how they're paid and who has the right to fire them." Legislation pending in Congress would clarify the use of L-1 visas, and likely prohibit Tata-style activities. The number of L-1 visa holders in the US rose from 75,315 in 1992 to 328,480 in 2001.

Experience with PTK programs during the 1990s demonstrates that (1) determining an employer's need for highly skilled migrants is neither simple nor straightforward, and raises important trade off questions about how easy to make importing skills versus changing educational systems and wage structures to fill skill gaps and (2) regulating the recruitment and employment of PTK migrants raises many of the same issues that have arisen in the management of unskilled migrant worker programs.

### **Credentials Recognition**

Highly skilled migrants generally have a credential or license earned by education or experience, and a major issue is whether an individual's credentials from one country are recognized in another. If not, the migrant may not be allowed to work in the same occupation abroad as at home; if she works below her qualifications, as when a doctor works as a nurse, or a nurse works as a nurse's assistant, there may be a "brain waste" as migrants work below their qualifications.

Mutual recognition agreements (MRAs) are usually considered the best solution to credentials recognition problems for migrants crossing borders. MRAs are usually based on reciprocity, meaning that, if one country has given a doctor or nurse a credential, another country will recognize that credential as sufficient for employment in that occupation. As might be expected, MRAs are most common among neighboring countries with similar educational systems and credential-issuing systems, such as within the EU and Mercosur, or between countries that were previously colonies, as in the British Commonwealth. Efforts to develop MRAs for particular occupations among more diverse countries has been limited largely to accounting and actuarial sciences, and there has been discussion of standardizing medical education worldwide.

Most PTKs do not have their credentials recognized automatically under MRAs because they come from "different" countries, which raises the question of brain waste. Australia has been a leader in trying to minimize brain waste, using "competency-based" assessments of migrant skills; the theory is to assess competency, not necessary educational qualifications. In the early 1990s, at least 40 per cent of the doctors and engineers in Australia, and 25 per cent of the

nurses, were born abroad, but only a third of these “degree-qualified migrant” medical staff were employed within five years after their arrival in the profession for which they were trained.<sup>37</sup> The response was an Overseas Skills Recognition system to expedite the testing of nurses’ qualifications, with responsibility for assessing (potential) migrant nurses qualifications given to Australian nursing associations. However, these associations tightened standards in the 1990s, which led to criticism by migrant advocates (Iredale and Appleyard, 2001), so that only a third of the nurses from non-English speaking countries have their qualifications recognized immediately in Australia.

There is no easy answer to the credentials recognition issue. Global educational standards are in the distant future, and there may be few occupations such as accounting in which multinational firms want uniform requirements. Even when there is a MRA, there are often problems with credential recognition, as within the EU and Mercosur. However, without more MRAs, the international migration of highly skilled workers will wind up being constrained.

### ***Return or Stay?***

Do PTK migrants from developing countries stay abroad or return, and what are the implications of high and low return rates? If the migrant rate of return is high, the appropriate term for describing PTK migration may be brain circulation, brain exchange, or professional transience. If the rate of return is low, the appropriate terms may be brain drain and brain gain. US studies of foreign students completing advanced degrees in science and engineering suggest that about half eventually return to their developing countries of origin (Johnson and Regrets), and case studies in e.g. South Africa also suggest a 50 per cent return rate.

There is no agreement on whether returns should be encouraged or discouraged. Lowell and Findlay (2002) are among those who urge developed countries to promote returns by enforcing truly temporary stays for PTK migrants, and they cite as a best-practice program the US cultural exchange (J-1) program, which requires a 2-year return to the migrant’s country of origin after a “cultural exchange” in the US (<http://www.usia.gov>). It is very hard to enforce returns if migrants really want to stay, and the host country considers their presence useful. Even the J-1 program demonstrates that foreign or International Medical Graduates who enter the US for paid medical residency training can stay despite the return requirement. In 1994, US J-1 regulations were changed to allow up to 20 foreign doctors a year in each US state to become immigrants if they are employed at least three years by a government agency in a government-designated Health Professional Shortage Areas (HPSAs) of the US; the so-called “National Interest Waiver” allows the US to accept up to 1,000 foreign-trained doctors a year as immigrants.<sup>38</sup>

### ***Host Country Policies***

There are several major reasons why increasing the supply of workers via PTK migration may be preferable to other steps that industrial countries could take to bring the supply of and demand for highly skilled workers into balance, including:

- The desire to avoid wage inflation in a labor-short industry, occupation, or area that has spillover effects and thus could, if PTK migrants were not admitted, cause wages and prices to rise in PTK labor markets
- A belief that the PTK labor demand-supply gap is only temporary because of e.g. an economic boom, so that importing IT specialists can allow that industry to expand as fast as markets allow, generating additional economic output via multipliers or by augmenting strategic economic sectors.

<sup>37</sup> The case of nurses was more extreme — 28 per cent of the foreign-credentialed nurses were not in the labor force and another 17 per cent were not working as nurses.

<sup>38</sup> The US created a small (maximum 500 a year) H-1C visa that admits foreign nurses for up to three years, with no extensions, to serve in Health Professionals Shortage Areas. Only 29 H-1C admissions were recorded in 2001.

- In some industries, most production and thus most experienced PTK workers with industry-specific skills are overseas, and can be made available to local firms only via immigration. A related argument often made by multinationals is that employers need to have temporary foreign workers admitted, or receive permission to hire foreign graduates of local universities, in order to develop the multinational teams of employees necessary for their global operations.

There are 3 R's in all labor markets: recruitment, remuneration, and retention. Recruitment refers to how employers seek and screen workers, remuneration to how work is exchanged for reward, and retention involve evaluations that rank employees to promote the best workers and discharge underperformers. When PTK migrant workers are involved, all three R's can change from textbook models. For example, recruitment abroad is generally different from recruitment inside the employer's country (unless the potential employee is already abroad as a student); middlemen brokers often play a role in international recruitment. Even if the potential employee is already abroad, the local employer may have to go through additional steps to hire him, so that the recruitment of PTK migrants is generally more costly than hiring local workers — the additional costs may be borne by the employer, the migrant, or shared between them.

Remuneration is generally the same for all workers with the same job title, experience etc. However, there may not be equality or a level playing field between migrants and local workers if the migrants are dependent on the employer for the right to live and work in the country. The dependence of migrants on their employers can benefit employers, as when their health care costs, usually borne largely by employers, are less if they are in the country without their families, so that, even if they receive the same wage as other workers, their total labor costs are lower. For IT workers who have no fixed hours of work, PTK migrants without families may be willing to work longer hours, especially if their chance to adjust to immigrant status depends on satisfying the employer. US H-1B visa holders often have more education than the US workers with whom they work.<sup>39</sup>

The third R, retention, deals with how employers rank workers and, in the case of PTK migrants, whether employers sponsor migrants for long-term residence or immigrant status. When the IT sector was expanding rapidly in the late 1990s, there was little concern about the “extra benefit” that a PTK migrant might obtain from the employer by being sponsored for immigrant status. However, after IT employment fell in 2000, there were complaints from US workers that the migrants had extra incentives to please their employers.

## ***Sending Country Data, Issues, Case Studies***

### ***Data Issues***

Most studies of PTK migrants in developing countries rely on data from industrial countries to estimate the number and characteristics of migrants. There are frequent reports in developing countries asserting that there is a brain drain, and often repeats data whose source is uncertain. For example, it is widely asserted that there are 250,000 African-born professionals outside Africa, and they have been partially replaced by 100,000 expatriates who have moved to Africa. Other reports assert that 70,000 professional Africans emigrate each year.

The University of Cape Town studied the emigration of South Africans to the five most popular destinations — Australia, Britain, Canada, New Zealand and the United States — and reported that 233,609 South Africans had settled in those countries between 1989 and 1997, including 41,000 professionals. South Africa graduates about 1,500 doctors a year. New graduate doctors

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<sup>39</sup> H-1B workers who are employed by labor brokers or body shops and sent by them from job to job earn less than H-1Bs who are employed directly by US employers.

have been required since 1999 to perform community service, often in rural areas, before they receive a medical license. In 2002, it was reported that 1/8 of the 44,000 strong public sector medical staff had quit, and 450 Cuban doctors were imported to join doctors from Zimbabwe in rural areas of South Africa (Deutsche Presse-Agentur, October 23, 2003). During the World Summit on Sustainable Development, the South African government pressed for a Code of Conduct for Recruitment of Health Professionals for the Commonwealth of Nations. One result was that the UK's National Health Service, which has long relied on doctors and nurses recruited from Commonwealth countries, pledged not to recruit South African nurses.<sup>40</sup> As an example of the new sensitivity to the effects of recruitment on sending countries, with the NHS agreeing with Uganda to hire Ugandan nurses only for fixed periods, and to subsidize nursing training in Uganda.

An extreme case is Jamaica. An estimated 75 per cent of the Jamaicans with higher education have emigrated (Economist, 2002), and Jamaican Minister of Foreign Trade Anthony Hylton said that the government would try to prevent the emigration of teachers to the US and nurses to the United Kingdom to prevent a brain drain. Instead, he said that Jamaica must enter into "bilateral and multilateral arrangements with countries like England and the United States so that they pay at least a part of the training cost to the government for recruiting people that we have trained and will not necessarily benefit from their service." (quoted in Latin America. 2001. Migration News. Vol. 8. No 10. October). However, Jamaican graduates have few incentives to stay in light of high unemployment. The unemployment rates for University of the West Indies (UWI) graduates almost doubled in the late 1990s, from seven per cent in 1996 to 12 per cent in 1999.<sup>41</sup>

Jamaica, a country of 2.6 million, has a per capita income of \$1,600 a year; net emigration is about 22,000 a year, with most emigrants headed for the US. In 2000, the US admitted 16,000 Jamaican immigrants; Canada, 2,500; and the UK 360. There is also a return migration of 1,200 Jamaicans a year, including half from the UK, often to retire.<sup>42</sup> Jamaica received \$967 million in remittances in 2001, another \$100 million in pension payments from the UK, and an additional \$100 million in Social Security payments from the US and Canada. However, Jamaican leaders and academics do not consider these remittances adequate compensation for the loss of human capital.

One reason for doubting the benefits of remittances is that emigrants may be the best and brightest, and thus the hardest to replace. About three per cent of Indian doctors emigrated in the 1980s, but half of the graduates of the All India Institute for Medical Sciences, India's best, emigrated in the 1990s. Demographer Agustin Escobar notes that 12 per cent of the Mexican-born labor force is in the United States, but 30 per cent of Mexicans with PhDs are in the US.

Albania, a country of 3.1 million, provides an example of selective emigration. During the 1990s, some 700,000 Albanians emigrated, 1/4 of Albanians and 1/2 of Albanian professionals. One result is that Albania has been experiencing unbalanced economic growth. Albania receives \$615 million in remittances as well as aid from the European Union (EU) and other sources, and the spending of remittances and aid has fueled a building boom. The optimistic scenario is that remittances and aid will produce an economic take off based on value-added food production and tourism in the "Switzerland of the Balkans." The pessimistic scenario is that corruption and divided government will prevent the implementation of a successful economic strategy, and that low wages, high unemployment, and inadequate services such as health care and education will prompt the continued emigration of young and educated Albanians.

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<sup>40</sup> However, the agreement does not cover recruitment activities by private hospitals. Some 1,500 of the 13,000 foreign nurses who arrived in the UK between April 2001 and April 2002 were from South Africa. The number of foreign nurses in the UK doubled in the past three years

<sup>41</sup> Between 1994 and 2000, the US issued almost 67,000 immigrant visas and 80,000 nonimmigrant visas to Jamaicans.

<sup>42</sup> Another 2,500 Jamaicans are deported each year, over half from the US.

## **Impacts on Countries of Origin**

The emigration of highly skilled migrants can lead to virtuous and vicious circles in countries of origin. The major factors affecting the impacts of migration can be grouped under the 3 R's.

### **Recruitment/Restriction**

If more human capital increases a country's growth rate, retaining PTKs could increase national income and tax payments and have important positive externalities, since PTKs are least likely to commit crimes, more likely to ensure that their children get a good education, and more likely to provide leadership and engage in economic activities that have multiplier effects (Straubhaar, 2000). Governments that try to restrict PTK emigration, as many Communist societies did after World War II, raised the ire of many of their citizens as well as the international community.

Restricting emigration is difficult, as migrants can leave illegally or as tourists, but sending countries can nonetheless shape patterns of emigration with their regulation of recruitment. Simply monitoring who leaves and tracking who is most likely to remit and return can help governments to devise policies to encourage remittances and returns. Recruitment is often shaped by employers in receiving countries, but there may be additional room for cooperation between sending and receiving country governments to agree on a frame work to regulate which employers and migrants get priority and sending country support for recruitment. Sending countries can regulate recruiting activities, as with the agreements between the UK National Health Service and several African countries on nursing recruitment.

### **Remittances/resources**

Most migrants remit some of their foreign earnings to families and friends in their countries of origin. Sending countries could try to mandate or require remittances, but few forced remittance schemes have been successful. Even less promising are efforts to extend the power of national governments to tax their nationals wherever they live. The US taxes residents on their worldwide income, and exempts the first \$80,000 in foreign earnings from US income taxes (and thus exempts most overseas Americans from paying taxes), but few developing countries have the infrastructure to collect income taxes from their nationals abroad, and they run the risk that efforts to do so may prompt the migrants to cut their ties to their countries of origin quickly.

Instead of a stick to compel remittances or tax payments, emigration countries can best attract remittances from migrants abroad by having appropriate exchange rates and creating conditions that foster investments and that attract funds home.<sup>43</sup> During the 1990s, remittances to developing countries increased steadily, but it is not possible to determine how much of these remittances were from PTK migrants, and whether PTK remittances were used differently from remittances from other migrants. The conventional wisdom is that PTK migrants earn more abroad than unskilled migrants, but may remit less, in part because they are more likely to be abroad with their families and quicker to integrate into host countries, which may weaken or break ties to their countries of origin. On the other hand, if PTKs remit, they are more likely to do so via formal banking channels. Because PTK migrants are most likely to come from urban areas, any multipliers from their remittances could be lower than those of unskilled migrants from rural areas, where there is less likelihood that remittances will be spent on imported goods.

PTK migrants may be important sources of investment capital for their countries of origin, investing their own savings or steering the investments of their employers to their countries of

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<sup>43</sup> Most countries charge their nationals fees for passports and other documents. The US charges \$65 for a passport good for ten years, and the Dominican Republic charges \$40 for a six-year passport in the DR. But Dominicans obtaining or renewing passports in the US must pay, \$40 plus \$160 in fees at the Dominican Consulate in New York City; the extra charge brought protests.

origin. In the subsequent virtuous circle that can arise, migrant investments or migrant-steered investments may be accompanied by technology transfers that lead to new jobs and industries, as in IT in Taiwan, Korea, and India. In some cases, relatively few highly skilled migrants can make significant impacts on their countries of origin. For example, half of the foreign-born professionals in Silicon Valley were involved in founding or operating a start-up company in California, demonstrating their success in the US, and a fourth in one survey had some type of economic relationship to their country of origin, from subcontracting to a joint venture, suggesting significant impacts in countries of origin.<sup>44</sup>

In the past, many sending country governments viewed migrants as “traitors,” and made no special efforts to maintain links with them. This changed in the 1990s, perhaps symbolized best by Mexican President Vincente Fox, elected in 2000, calling Mexican migrants in the US “heroes” and declaring that their remittances and returns were vital to Mexico’s economic development. The key link between the Mexican government and Mexican migrants in the US have been the 600+ “hometown associations” formed voluntarily by migrants from particular villages in the US. In many cases, these associations evolved from operating beauty contests and soccer matches to collecting funds to improve the infrastructure in the migrants’ village of origin. The Mexican government began to work actively with these associations to increase remittances and contributions, matching those that were invested in infrastructure and job-creating investments.

Governments that maintain ties to migrants abroad are able to sustain interest in the migrants’ country of origin, which can promote investments and voluntary returns. Migrants from particular countries have developed many networks that serve as points of contact for their home country governments, including the Colombian Red Caldas network, the Global Korean Network, the Philippines Brain Gain Network, the Polish Scientists Abroad, the Association of Thai Professionals in North America and Canada, the Iranian Scientific Information Network, the Tunisian Scientific Consortium, and the Arab Scientists and Technologists Abroad.

The concept of emigration governments seeing their Diasporas<sup>45</sup> abroad as a resource for development is spreading. The Indian government in January 2003 held its first meeting in India for the 20 million people of Indian origin abroad.<sup>46</sup> The Indian Diaspora has been very successful economically — estimates are that the 20 million Indian-origin people abroad have incomes totaling \$160 billion a year, a third of the GDP generated by one billion Indians in India.<sup>47</sup> However, Indians abroad invest relatively little in India, \$0.5 billion, compared to \$60 billion invested in China by 55 million overseas Chinese.

In order to forge closer links to the Diaspora, the Indian government pledged to allow dual citizenship for Indians who naturalize in the United States, the United Kingdom, Australia, New Zealand, Canada and Singapore. (South Asia. 2003. Migration News. Vol. 10. No. 2. April). Bhagwati (2003) emphasizes that “a Diaspora model, which integrates past and present citizens into a web of rights and obligations in the extended community defined with the home country as the center,” is more likely to induce returns than governmental efforts to restrict PTK emigration.

### **Returns/Retention**

The goal of developing countries sending PTK migrants abroad is to grow economically, so that emigration is unnecessary. Some countries see themselves as long-term sources of fine wine or

<sup>44</sup> Local and Global Networks of Immigrant Professionals in Silicon Valley. [www.ppic.org](http://www.ppic.org)

<sup>45</sup> Diaspora is a Greek word first applied to Jews in the 6th century BC, after Nebuchadnezzar of Babylon destroyed the first Jewish temple.

<sup>46</sup> Estimates of Indians abroad include 2.2 million in the UK; 1.7 million each in the US and Malaysia; 850,000 in Canada; 700,000 in Mauritius; 500,000 in Trinidad and Tobago; 400,000 in Guyana; and 340,000 in Fiji. See South Asia. 2003. Migration News. Vol 10. No. 2. April. Harvard’s Mihir Desai put the number of Indians in the US at one million, 0.1 per cent of India’s population, and their income at 10 per cent of India’s GDP.

<sup>47</sup> Remittances to India were \$14 billion in 2002.

airplanes, but few see themselves as long-term suppliers of nurses, doctors, or engineers to other countries. The goal of most countries is to encourage PTK migrants to return, and eventually to retain PTKs, and the best way to achieve these goals is to develop an economy that is growing and offering opportunity.

Several countries operate programs that actively encourage PTK migrants to return; these programs range from "science parks" in Taiwan to job fairs organized by the Chinese government in California. The Hsinchu science park has been very successful — 113 of 312 companies in 2002 were started by American-educated Taiwanese engineers with professional experience in Silicon Valley, and 70 of the Hsinchu park's companies had offices in Silicon Valley to get ideas and to recruit workers (Economist, 2002).

China is a special case. Since 1979, some 580,000 mainland Chinese students have traveled abroad for study, usually in science and engineering, and 150,000 returned, although the number returning in 2002, 18,000, was twice the number who returned in 2000.<sup>48</sup> Premier Zhao Ziyang called highly skilled Chinese migrants "stored brainpower overseas," and many Chinese cities try to attract them home with buildings labeled: "Returning Student Entrepreneurial Building." The Chinese government has provided expense-paid return visits, seeking to set in motion a "reverse brain drain" similar to that in Taiwan. In Shanghai, there are reportedly 30,000 returned PTKs, 90 per cent with MS or PhD degrees earned abroad, working or starting businesses (Wall Street Journal, March 6, 2003); Shanghai's Pudong Service Center for Returned Overseas Students helps them to get restarted in China.

The Thai government has since 1997 promoted a "reverse brain drain" aimed at "building Thai global links to strengthen Thai global rank" by promoting technology transfers and offering incentives to Thais abroad to return and work in state agencies for at least a year (<http://rbd.nstda.or.th/>).

Few African governments operate national return of talent programs, but several international organizations operate such programs for them, including the International Organization for Migration,<sup>49</sup> which operates return-of-qualified-African nationals programs in 10 African countries. Generally, PTKs who return to their countries of origin with IOM assistance sign two-year contracts that require them to work in the public sector in exchange for travel and housing assistance and enhanced pay. UNDP has a similar Transfer of Knowledge Through Expatriate Nationals (TOKTEN) program that subsidizes the return of teachers, consultants, or researchers to assist with particular projects.<sup>50</sup> In most cases, the PTKs who return with assistance have an immigrant or long-term secure status abroad, and retain the right to return after their assistance stint at home. These assisted return programs are expensive, and several analysts have concluded that they are "expensive failures."<sup>51</sup>

Could the developed countries that host PTK migrants do more to encourage them to return and contribute to the development of their countries of origin? One suggestion is that developed countries should follow the TOKTEN model of allowing PTK migrants who are settled abroad to return to their countries of origin temporarily. The theory is that PTK migrants are more likely to return to their countries of origin if they are assured that they can return to their host countries abroad, and some commentators suggest that easing the process of securing dual nationality

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<sup>48</sup> Jonathan Kaufman, "China Reforms Bring Back Executives Schooled in US," Wall Street Journal, March 6, 2003. Rone Tempest, "China Tries to Woo Its Tech Talent Back Home," Los Angeles Times, November 25, 2002.

<sup>49</sup> IOM operates similar programs to help PTKs to return to post-conflict situations in e.g. Afghanistan and Bosnia.

<sup>50</sup> It has been observed that, if the foreign professionals are only temporarily at home, their threat to established professionals who have stayed behind is reduced

<sup>51</sup> Sussex University's Richard Black says that return-of-talent programs are expensive failures because the key is not return, but the "investment that [return] should bring." Quoted in Alan Beattie, "Seeking consensus on the benefits of immigration," Financial Times, July 22, 2002, p. 9.

can further increase brain circulation. However, there is little empirical evidence to determine the extent to which secure status abroad encourages work-centered visits home.

Many industrial countries also complain of a brain drain, with countries from Australia and Canada to Germany and the UK worrying that some of their “best and brightest” graduates move to the US for higher wages and lower taxes. For example, there is a significant net migration of professionals from Canada to the US, including immigrants to Canada who naturalized after three years and then moved to the US. Many Canadian professionals enter the US on temporary visas, a process made easier by the migration provisions of the North American Free Trade Agreement, which allows Canadians and Mexicans beginning in 2004 with a university degree or more to enter the US to fill jobs in 70+ occupations in a very simple process. Entry is accomplished by presenting a passport, proof of university degree, and a US job offer, but once granted, the Nafta-visa can be renewed indefinitely. ([http://strategis.ic.gc.ca/pics/ra/hand\\_e.pdf](http://strategis.ic.gc.ca/pics/ra/hand_e.pdf)). Some of these professionals with temporary visas return, but only 20 per cent of Canadians who emigrated in 1995 returned by 1999.

Almost a million Australians, 5 per cent of residents, live outside Australia. The Australian literature takes a more benign view of this emigration than does the Canadian data, stressing that often young Australian PTKs can expand the economic reach of Australia by e.g. recommending to their foreign employers the Australian suppliers with whom they are familiar, as Australian engineering migrants have reportedly done in recommending Australian mining equipment.<sup>52</sup> A report to the Australian government recommended maintaining ties to PTK migrants abroad via email, and inviting Australians abroad to embassy- and consulate-organized events to remind them of the virtues of home.

## ***Sending Country Case Studies***

### ***Nurses and Health Care***

Health care is one of the fastest growing sectors most countries, due in part to aging populations in industrial countries, and aging as well as diseases such as AIDS/HIV in developing countries.<sup>53</sup> The emigration of medical personnel has been called “a Sisyphean obstacle” to improving the health care of developing country residents, as increased government expenditures to train doctors and nurses often leak out of the country via emigration.

Health care is unique in several senses. It requires trained doctors and nurses as well as medical facilities and equipment in places where patients live. Second, government expenditures affect both the supply of and the demand for health care services, including the number of doctors and nurses trained, their salaries, and the charges that patients pay for care, which in turn affects patient demand for health services. Third, both developing and developed countries have problems keeping health care providers in rural areas and in inner cities where there are concentrations of poor residents who often need health services. For example, if students take out loans to receive health care training, and health care workers’ salaries are kept low to keep health care costs low, young graduates may be encouraged to emigrate as soon as possible in order to repay their loans. Once abroad, they may stay abroad.

Nurses are the largest single occupation in the health care industry, most are women, and industrial countries are often accused of recruiting nurses needed in developing countries. In the US there are 2.1 million registered nurses with a BA degree, three times the number of doctors, and another 2 million nursing aides and assistants, many of whom have two-years of postsecondary schooling. The wage structure for nurses is relatively flat, which helps to explain

<sup>52</sup> Kate Legge, “EXPATS, precious EXPORTS,” *Weekend Australian*, December 7, 2002, p. 23.

<sup>53</sup> Report of the WHO Commission on Macroeconomics and Health.

why “upward mobility” for nurses often means finding a job in a “nicer” facility or with better hours of work.<sup>54</sup> This leaves “shortages” of nurses in less desirable health care facilities and, with administrators under pressure to reduce costs, it is often easier to recruit nurses in lower-wage countries than to restructure the nursing labor market and pay appropriate premium wages in less desirable facilities and for less desirable hours of work.

One major source of migrant nurses is the Philippines, which has “globally responsive” public and private educational institutions that quickly incorporate into their curricula the educational requirements that must be satisfied to work as a nurse in Canada, the US, and other countries.<sup>55</sup> In recent years, more Filipino nurses emigrated than were graduated: some 14,000 nurses left in 2001 (more may have gone without registering), but only 6,000 graduated from Filipino nursing schools. Average salaries for nurses were reported to be \$36,000 a year in the US, and \$2,400 in the Philippines (Baguioro, 2002). Filipino nurses move abroad via a migration infrastructure that involves private recruitment firms acting as recruiters for foreign employers, although their activities are influenced by government policies.<sup>56</sup> For example, if host country governments make it easy for foreign nurses to enter, they are sending a signal to recruit abroad rather than to restructure nursing at home.

There are few model agreements or best practices for recruiting nurses in developing countries. The UK had about 644,000 nurses and related health care staff in 2002, including two-thirds employed by the National Health Service (Buchan, 2002, 6). However, the NHS was believed to have about four times as many registered nurses as any other UK employer of nurses, and in 1998 launched an effort to increase the number of nurses by, *inter alia*, recruiting nurses abroad. The UK requires foreign nurses to be registered, a process that is automatic for EU nationals because of mutual recognition agreements, but non-EU foreign nurses must have their credentials verified by the Nursing and Midwifery Council (NMC).<sup>57</sup> In recent years, about 15,000 non-EU nurses a year were registered, half from the Philippines, 15 per cent from South Africa, and 10 per cent from Australia.

After the UK Department of Health instructed National Health Service employers not to recruit nurses in South Africa and the West Indies, the number of nurses from these countries fell between 1999/00 and 2000/01, but then the number of South African nurses rose in 2001/02, as did the number from Zimbabwe, Ghana, and India (Buchan, 2002, 18-19). In 2001, a code of (best) practice was published by the UK Department of Health that began, “international recruitment is a sound and legitimate” practice, but continued “NHS employers should not target developing countries for recruitment of health care personnel unless the government of that country formally agrees” to nursing recruitment by making an agreement with the DoH (Buchan, 2002, 19). The International Council of Nurses issued similar recruitment guidelines in 2001 ([/www.icn.ch/psrecruit01.htm](http://www.icn.ch/psrecruit01.htm)).

The migration of doctors is also of concern. In OECD countries in 2000, the percentage of doctors who were trained abroad ranged from 4 to 5 per cent in France and Germany to 25 to 30 per cent in the English-speaking and often immigrant-receiving countries of Canada, the UK and US. Despite mutual recognition of credentials, there is relatively little migration of doctors within the EU, where EU nationals have freedom of movement. However, in the countries with the most immigrant doctors, they tend to practice in areas that are less attractive, including rural areas and inner cities.

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<sup>54</sup> Over 95 per cent of nurses are women, and many quit for a few years to have families and then do not return to work as nurses.

<sup>55</sup> One US hospital administrator noted that Filipino “nurses receive a four-year baccalaureate ... their programs and textbooks are all in English. They take the same tests that American nurses take.”

<sup>56</sup> For example, Nurses to USA Inc ([www.nursestousa.com/](http://www.nursestousa.com/)) promises Filipino nurses that the US hospitals that employ them will sponsor them for immigrant visas.

<sup>57</sup> About 69 per cent of the Australian nursing applicants, and 5 per cent of the Nigerian applicants, had their credentials verified in 2000. (Buchan, 2002, 10).

The South African government has tried to prevent the quick exit of doctors by withholding their credentials until they perform a two-year residency in rural and other medically underserved areas. However, as soon as they can, many South African doctors emigrate, in part to earn higher incomes and thus more quickly repay their training loans. The South African Medical Association (SAMA) estimated that at least 5,000 doctors had emigrated (Africa News, May 15, 2002), but the government decided not to recruit replacement doctors in neighboring countries, reasoning that such a move would increase doctors' shortages there. Instead, the government recruited Cuban doctors to replace emigrants, and one estimate is that 80 per cent of the doctors in rural areas are from Cuba (Martineau et al., 2002).

Jamaica has also replaced some emigrant health care personnel with Cuban workers. Jamaicans trained with government subsidies must repay the bonds they are required to post before emigrating, but there are reports that "migration fever" often breaks out among graduates, with most believing that the key to success and quick repayment is emigration. The Cubans who replace emigrant health-care workers in Jamaica are quasi-indentured servants, since much of their pay is sent to the Cuban government rather than paid directly to the workers.

### ***IT Specialists***

During the 1990s, employment in the Information Technology industry grew rapidly in most countries, and some IT employers in the industrial countries asserted that there were too few workers to fill IT jobs, and that they needed easy access to foreign IT workers to fill what they estimated to be 10 to 15 per cent vacancies. Despite counterarguments that wages for IT workers were not rising as fast as would have been expected if there were a labor "shortage," and that there was an understandable reason for the "shortage" — primarily the layoffs of scientists and engineers in the early 1990s after the end of the Cold War that discouraged students from studying these topics — the US and other governments responded to employer pleas with easy-entry programs for foreign IT workers, many from India.

A typical Indian computer programmer or engineer earns \$20,000 to \$24,000 a year, compared to \$50,000 to \$60,000 in industrial countries, a wage gap of about 1 to 3. Many of the Indian migrants are graduates of publicly funded Indian Institutes of Technology (IIT); 20 per cent of the IIT graduates have emigrated, with the percentage of IIT graduates emigrating rising in the 1990s to between 40 and 50 per cent.<sup>58</sup> Critics allege that the Indian government has diverted resources to the IITs at the expense of more needed investments in primary education, so that poor Indians are subsidizing the education of engineers who are likely to emigrate. For example, the seven IITs received \$113 million in government funds in 2002, while primary education received \$715 million.

What are the long-term consequences of heavily subsidized Indian higher education? The optimistic scenario is based on the assumption that India's growing IT industry is based in part on emigration. The major Indian high-tech companies, including Wipro, Tata Consultancy Services, and Infosys Technologies, are multinationals, with offices in India and abroad. They have evolved from recruiters of Indians for IBM or Siemens into software maintenance and development firms with employees in India and in the industrial countries. The hope is that this progression from supplying workers to services and eventually products will help India climb the computer-related "value chain" exporting ever more sophisticated products. The pessimistic scenario is that India could wind up exporting its best and brightest workers, and end up with only lower wage call center and similar back-office jobs vulnerable to lower-wage competition in other countries. The pessimistic argument notes that India developed a software industry, but not the associated semi-conductor, computer and other electronics manufacturing sectors, as in China and Singapore.

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<sup>58</sup> In 2000-01, India had some 120,000 IT graduates a year, and has plans to double the number.

## **The GATS and Migration**

The General Agreement on Trade in Services (GATS) entered in to force in January 1995, and is a central focus on the current Doha round of World Trade Organization negotiations aimed at liberalizing flows of goods and services over borders. The GATS aims to liberalize trade in services, which are often defined as goods that are produced and consumed simultaneously, and usually change the consumer, as with medical services. There are four major modes or ways to move services over borders — cross border supply, consumption abroad, FDI or commercial presence, and migration or the movement of natural persons — and 80 per cent of world trade in services are in Modes 1 and 3, cross border supply and FDI. Led by India, developing countries want the Doha round of trade negotiations to liberalize the migration of service providers, the Mode 4 method of trade in services, a difficult challenge in the wake of terrorism and a downturn in the IT sector.

The GATS, which is part of the World Trade Organization, has 29 articles covering four major groups of services:

- Mode 1. Cross-border supply. Services that are provided from the territory of one country to another, such as international telephone calls to call centers, sometimes called business outsourcing—services but not consumers cross borders, so this form of trade in services is most analogous to trade in goods.
- Mode 2. Consumption abroad. Services provided within one country to consumers from other countries, such as tourism or educational and health services, that is, the consumer travels abroad to receive the service.
- Mode 3. FDI or commercial presence. Services provided abroad via a subsidiary of a bank, insurance company, or other firm located in the country where the service is provided.
- Mode 4. Temporary movement of natural persons. Services provided by individuals abroad and paid abroad, such as fashion models, accountants, or consultants.

Liberalization of trade in services has been achieved primarily via the most-favored-nation (MFN) principle: if a country allows foreigners to enter a sector such as banking, the GATS generally requires the country to treat all banks from WTO member countries on an equal basis. Unlike trade liberalization in goods, which often occurs on a reciprocal basis, GATS negotiations are often not reciprocal, as when the US allows foreigners to teach in public schools, but other countries do not allow Americans to teach in their schools. Once a liberalization commitment is made, there is to be no backtracking, e.g. the US committed to providing 65,000 H-1B visas a year in the first GATS round, so that efforts to reduce the cap below 65,000 a year would be a violation of the US's GATS commitment.

The second liberalization principle is national treatment — equal treatment for foreigners (firms) and nationals (firms). Under trade in goods, national treatment means that there should be no preference for e.g. US-made cars in procurement. However, since many services are provided by governments, the GATS allows exemptions in national treatment, e.g. countries may allow only national firms to provide military goods, or only citizens to teach in public schools.<sup>59</sup> The GATS states explicitly that countries may cite national immigration policies as a reason not to open a particular sector to the temporary movement of natural persons or to deny entry to certain individuals.

Services are the largest sector of most economies in terms of the value of output and employment, and the service sector tends to expand with economic development, as e.g. women go to work outside the home, generating a demand for day care and restaurant meals. The demand for services is income elastic, which means that if incomes rise 10 per cent, the

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<sup>59</sup> Countries may also de-regulate the provision of services, but limit competition to national suppliers, e.g. introduce vouchers and charter or private schools, but allow only national firms employing nationals to provide educational services.

demand for tourism or health care services rises more than 10 per cent. Many services once considered to be immobile, including back-office processing, have become mobile over borders with falling telecommunications costs. Among developing countries, Turkey and India have commercial services as the highest percentage of total exports, 38 and 28 per cent in 1998, respectively.

During the current Doha round of trade negotiations, expected to culminate in 2005, industrial countries led by the US and EU have been pushing for liberalization of Mode 3 commercial presence, so that their banks, insurance companies and other service providers can more easily establish subsidiaries and sell services to consumers in developing countries. Developing countries, led by India, are advocating liberalization of Mode 4 temporary movement of natural persons, where they feel that they have a comparative advantage. Their demands fall in four major areas: eliminating or reducing economic needs tests, easing visa and work permit issuance, expediting the recognition of individual worker credentials, and avoiding the requirement that service provider migrants must pay social security and related taxes. Developing countries also want Mode 4 extended to apply to semi-skilled workers who are providing construction, cleaning and similar services.

Liberalization of Mode 4 migration appears very difficult to envisage in mid-2003, since most industrial countries have only offered to commit to the status quo. The concessions made in industrial country offers deal with intra-company transfers such as the US L-1 visa. There are currently no numerical caps on such admissions in the US and Europe and no economic needs or labor market tests before foreign managers and specialists arrive from another country to work in their subsidiary in the US or UK. The European Union has proposed that trainees be allowed to transfer into a subsidiary for up to one year, provided they have a university degree and the company to which they are transferring has a training program. In the US, by contrast, there are proposals pending to cap the number of L-1 visas and impose prevailing wage or other tests to curb what are seen as abuses of intra-company transfer visas.

Even more difficult is the admission of so-called independent service providers, such as architects entering to provide services to clients when they have no facilities (commercial presence) in the destination country; as self-employed professionals, they have no local employer, and thus are not subject to local labor laws. The EU has proposed some liberalization in this area, but sending countries want far more, including the right of service providers to be "employed" by agencies in the foreign country, so that an architect could arrive and work for a local architectural firm; developing countries want such "market access" for their professionals, and no wage requirements.

Many developing countries express frustration at the difficulty their nationals have getting their credentials recognized abroad. The GATS requires that, if a country allows the entry of foreign doctors as service providers, it must make its licensing requirements for doctors transparent and freely available, and must administer tests of foreign doctors in a reasonable and impartial manner. At the same time, countries committed to allowing the entry of foreign health care service providers have the right to check foreigners' credentials to ensure that they are consistent with national credential rules, and there are no specific limits on the cost, duration, and standards of this testing. Furthermore, many countries issue licenses to practice medicine, nursing, or teaching in a specific geographic area, such as a state or province, and the GATS does not require national testing and licensing systems.

## ***Policies for Mutual Gains***

If more developed countries increase their recruitment of PTKs in developing countries, what policies can help to achieve a fairer distribution of the gains from the migration of highly skilled persons? Three suggestions follow:

- Sending countries should see PTK migrants abroad as economic resources, maintaining links with them and encouraging them to remit savings and act as bridges for foreign investment and trade in their countries of origin. Migrant hometown and similar associations provide a point of contact for sending country governments to stay in touch with nationals abroad, they should be used by governments to discuss issues of mutual interest, including dual nationality. Maintaining links to PTK migrants abroad can facilitate remittances,<sup>60</sup> investments and the return of talent as economic development proceeds, as in Taiwan, South Korea, China, and Ireland.
- Many of the benefits of PTK migration accrue to the already richer receiving countries. If they do nothing, PTK migration can increase inequality between developing and developed countries. To avoid increased inequality, PTK recruitment countries should replenish the human capital they accept via immigration.<sup>61</sup> Replenishment means that countries accepting PTK migrants from places with per capita incomes 1/5 or 1/10 as much<sup>62</sup> should establish Human Capital Replenishment Assistance (HCRA) programs that channel funds to the basic educational systems of sending countries, perhaps 5 to 10 per cent of the first year's earnings of the PTK migrant abroad.<sup>63</sup> Under such a program, a country accepting 1,000 nurses or engineers earning an average \$40,000 a year or a total \$40 million would provide an additional \$2 to \$4 million in targeted<sup>64</sup> HCRA to the workers' country of origin.<sup>65</sup>
- Sending and receiving countries have mutual interests in protecting migrants during recruitment and while employed abroad, and this cooperation can extend to trust and cooperation that can improve migration management. Bilateral agreements can lead to regional agreements on best practices for managing PTK migration, and perhaps global understandings to facilitate the PTK migration that often accompanies trade in services.

## **Replenishment Compensation**

Since the emigration of PTK migrants is a potential loss to sending countries, and since efforts by sending countries to restrict or prevent emigration are not likely to be effective and may violate fundamental human rights, developing countries should (1) allow emigration and (2) receive replenishment compensation for their loss of PTK migrants from industrial countries that have per capita incomes substantially higher than their own.<sup>66</sup> Indian-born economist Jagdish Bhagwati, whose professional career has been in the US, is most closely associated with the call for compensation from migrant-receiving countries for their intakes of migrants. Bhagwati's major recommendation is to encourage emigration countries to tax their nationals abroad, or alternatively to have immigration countries divert some of the taxes paid by migrants to their countries of origin. Both recommendations make the amount of "compensation" dependent on

<sup>60</sup> Sending countries can attract remittances by reducing the cost of remitting funds. The volume and development payoffs of remittance savings and investments is likely to be greater if governments adopt market-oriented policies for economic and exchange rate management.

<sup>61</sup> The range of replenishment policy proposals are bookmarked by two extremes: link compensation directly to the number of PTK migrants and their earnings abroad, and increase overall foreign aid.

<sup>62</sup> Limiting human capital replenishment assistance to countries with incomes that are less than 10 or 20 per cent of the host country would mean that there would be no compensation paid e.g. if nurses or engineers migrated from Canada to the US.

<sup>63</sup> This is about what an employer in the receiving country would pay to a recruitment agency to find a local worker.

<sup>64</sup> Increases in foreign aid are increasingly targeted to deal with a specific issue, such as AIDS, or limited to countries satisfying certain criteria. The US adopted this approach when President George Bush proposed to increase US foreign aid to \$18 billion in FY04, adding \$2 billion in the Millennium Challenge Account (MCA) to supplement the \$16 billion distributed by the United States Agency for International Development. MCA funds are targeted on countries with per capita annual incomes below \$1,435 that meet performance standards in human rights, democracy and lack of corruption.

<sup>65</sup> Host countries may want to use replenishment assistance to e.g. guarantee education sector loans made by the World Bank and regional banks.

<sup>66</sup> Lowell (2002b, 24) concluded that "the direct impact of significant outflows of highly educated persons...is to reduce economic growth in the source country."

the number and incomes of PTK migrants abroad, and their willingness to pay taxes, or the government's ability to collect them (Bhagwati, 1976).<sup>67</sup>

Compensation via tax systems have not been implemented for enforcement and constitutional reasons. Eritrea has since 1993 imposed a tax of 2 per cent of annual income on its expatriates, and enforces collections by making it hard to keep or buy land in Eritrea or renew passports unless the tax is paid. Only countries in which most residents abroad intend to return, and which exempt most residents abroad from paying income taxes, have been able to extend taxation to nationals abroad. The constitutional problem is that PTK migrants cannot be required to pay higher taxes than others with the same tax obligations in host countries. If some of their taxes were diverted to their countries of origin, then PTKs would be paying less than other residents for government services such as defense.

Compensation based on migrant earnings marks one end of the spectrum; the other calls for additional aid to emigration countries. This could be achieved with a general increase in official development assistance, having rich countries contribute 0.7 per cent of their GDP in ODA, which would increase ODA from \$55 billion to \$175 billion a year.<sup>68</sup> However, there is skepticism about ODA: over the past 50 years, the industrial countries provided about \$1 trillion in development aid to poorer countries, with very mixed results.<sup>69</sup>

Instead of a general increase in ODA, compensation for PTK immigration could be targeted, which is an increasingly common way to provide increased assistance. Targeted replenishment aid based provided to the educational systems of countries that have per capita incomes that are 10 to 20 per cent of immigration countries has a precedent in the compensation paid when industrial country firms take renewable resources such as forestry products from developing countries. The best practice model in such cases is to ensure that the resource is renewed by replanting trees etc, so that the resource owner receives the market value of the resources removed, and the country's long-term productive capacity is maintained.

Countries receiving PTK migrants should replenish the human capital that has emigrated with aid targeted to education systems by providing at least the amount that a recruitment agency would charge a local employer to find a local worker, typically 5 to 10 per cent of the first year's salary. Human Capital Replenishment Assistance should probably be directed to primary and secondary schools, since more advanced education has a higher private payoff to the recipient.<sup>70</sup> In some cases, HCRA may best be provided in the form of industrial countries guaranteeing loans provided by the World Bank and regional banks that strengthen basic educational systems. Developing countries should rethink their educational expenditures. Many now direct the highest subsidies to college and university students, and many spend far more per student in tertiary

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<sup>67</sup> Bhagwati two major proposals are to: (1) tax the windfall higher earnings of migrants in their country of destination and remit these taxes directly to the country of origin or via the UN, and (2) have developing countries tax their citizens regardless of residence.

<sup>68</sup> The richest OECD countries have a combined GDP of about \$25 trillion, and they currently provide \$55 billion a year in ODA. If they were to reach the 0.7 per cent ODA goal, they would contribute \$175 billion a year, meaning an additional \$120 billion in ODA.

<sup>69</sup> Critics of ODA say that 800 million people in the 20 rich countries that provide most of ODA cannot solve the poverty problem in the 75 countries with 2.5 billion residents who are living on less than \$750 a year. Development economists stress the need for correct economic policies to spur development, including institutions such as property rights and the rule of law as well as favorable geography, which affects disease patterns, comparative economic advantage in what to produce, and access to the low-cost sea transportation. A common theory notes that, where Europeans colonized and settled, in part because the geography limited disease, good institutions developed and growth flourished, such as in Canada and the US. However, in areas with less favorable geography, as in Africa and Asia, there were few settlers, and colonization aimed to extract natural resources rather than build growth-increasing institutions.

<sup>70</sup> For example, the private sector in India and the Philippines has quickly added the capacity to train IT workers and nurses for jobs abroad, including developing the financial infrastructure that can assess potential returns and make loans to students.

education than in primary and secondary education, even though many university graduates will emigrate. (2002 World Development Indicators, p87).<sup>71</sup>

## **Data and Research**

The upsurge in PTK migration in the 1990s has not been accompanied by an improved data and research base that allows definitive assessments of the impacts of PTK migration. A typical conclusion of a sending country analysis, this one for India, is as follows: “the total lack of information on both emigration and return migration...prevents the country from embarking on systematic planning for manpower and the development of human resources.” (OECD, 2002, 210). Without better data and analysis, there is no way to respond to recommendations such as the following for South Africa: “sending countries must take measures to stem the brain drain” (OECD, 2002, 219).

Better data and more research could lead to policies that increase the benefits of PTK migration to countries of origin or at least prevent PTK migration from increasing inequality between sending and receiving nations. Why are some countries far less concerned about the emigration of highly skilled workers than others, say India or the Philippines versus South Africa or Jamaica? Is facilitating the emigration of nurses from the Philippines, and complaining about their emigration from South Africa, due to differences in the way that nursing education is financed, differences in the local labor market, or differences in remittances and returns?

There may also be a need to examine the content of education, and the link between job requirements and education or credential requirements in both developing and industrial countries. Dore (1997) has observed that in developing countries, where highly skilled workers are often unemployed, there is often a diploma disease, as employers screen applicants by the number of credentials they have. This encourages students to engage in an “arms race” with each other to obtain more credentials, and the result may be that graduates have good test-taking skills rather than an ability to do a job well. If employers in developing country had ports of entry for workers with fewer credentials, and provided on-the-job training, there might be less of a brain drain because the on-the-job skills acquired at work would be less transferable over borders.

## **Conclusions**

Most migrants cross national borders to maximize their incomes and opportunities, and their migration increases the size of the global economy since they have higher incomes in their destinations. However, the loss of human capital may slow development in countries of origin and increase global inequality. If PTK migration is motivated only by the considerations of individual migrants and employers, the result may be increased economic inequality that leaves some developing countries on a labor exporting treadmill.

PTK migration involves three actors: the migrant, the sending country, and the receiving country. In most cases, receiving countries are the key actors, since their policies regulate entries and employment. Sending countries largely react to the demands of employers in industrial countries. Most emigration countries do little to affect the 3 R's of recruitment, remittances, and returns, but as the migration of the highly skilled increased in the 1990s, there was a renewed interest in:

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<sup>71</sup> As a percentage of per capita GDPs, Malawi topped the chart in 1997, spending (per student) 15 times its per capita GDP on tertiary education, and 8 per cent of its per capita GDP on primary education. In Jamaica, 1980 data show spending per student in higher education that was twice the per capita GDP, but only 1/8 of per capita GDP per student in primary education. (2002 World Development Indicators, p87).

- Regulating recruitment, such as South Africa's efforts to avoid aggressive recruiting of its nurses by the UK National Health Service, a sharp contrast to the efforts of the Filipino government to promote the export of PTK workers;
- Remittances, which became a more important factor emigration country GDPs;
- Returns achieved a new prominence, as countries such as Taiwan and Korea successfully attracted professionals home, while countries such as India developed "brain circulation" systems for IT workers.

Emigration countries hold most of the keys to their economic futures, and their policies on issues ranging from providing economic opportunities to graduates to their adherence to human rights are usually the major factors that determine whether PTK migrants emigrate, remit, and return.<sup>72</sup> Sending countries may have only limited abilities to offer the educational and research opportunities needed to keep PTKs at home in the short- to medium-term, and industrial countries that accept highly skilled migrants from poorer developing countries should agree to replenish the human capital they acquired via migration.

For most of human history, the world's societies had a pyramid shape, with a king and nobility on top, a small middle class, and masses of peasants, workers, and slaves at the bottom. The great achievement of the past half century was the creation of diamond-shaped societies with large middle classes in the industrial democracies, with upper classes kept in check by taxes and lower classes shrunk in part by social welfare systems. During the 1960s guest worker era, there was a brain drain of professionals from the top of the pyramid in developing countries to the top of the diamond in industrial countries, while guest workers migrated from the bottom of the pyramid to the bottom of the diamond. The middle class is shrinking in industrial countries, which may evolve hourglass shapes, but developing countries continue to have pyramid shapes. The challenge is to ensure that PTK migration does not leave developing countries with pyramid shapes.

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<sup>72</sup> Lowell and Findlay also note that less discrimination in receiving countries may be a reason more migrants may go and stay abroad. Docquier and Rapoport develop a theory of migration in response to discrimination by the majority that controls government against minorities.

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## **Appendix: ILO-DFID Case Studies**

In 1992, the ILO Migrant Branch ([www.ilo.org/public/english/protection/migrant/publ/index.htm](http://www.ilo.org/public/english/protection/migrant/publ/index.htm)), with the support of the UK Department for International Development ([www.dfid.gov.uk/](http://www.dfid.gov.uk/)), commissioned a series of country studies of PTK migration between developing and developed countries. This appendix summarizes the findings of these studies.

- There was massive PTK migration from Argentina and Uruguay in the 1970s and 1980s for political and economic reasons; despite modest return-of-talent programs, Argentina and Uruguay continue to be countries losing PTK workers.
- In Bulgaria and other Eastern European countries, the collapse of Communism in the early 1990s triggered mass emigration of those who could get jobs abroad, such as PTKs employed in universities and research institutions.
- India became a major source of IT professionals for foreign jobs in the 1990s, and new schools developed to meet the demand of students for the training needed to emigrate. PTK workers are 25 to 35 per cent of Sri Lankan emigrants, they tend to remit little, and there is a sense that many intend to stay abroad.
- Jamaica is a net exporter of PTKs, with some English-speaking Jamaican nurses who emigrate replaced by Spanish-speaking Cuban nurses. Jamaican nurses have migrated for decades, first to the UK and, after the 1970s, to the US and Canada. The number of nursing emigrants was so high that the number of Jamaican nurses fell from 3,000 to 1,000 by the late 1980s, prompting the turn to Cubans. Many Jamaicans believe that emigration is necessary for success ("emigration fever"), remittances are used mainly for housing, and returned migrants include a high percentage of retirees.
- Mexico and the Philippines are among the world's largest labor exporters, and both countries export significant numbers of PTK workers. A third of Mexico's scientific and engineering graduates were believed to be abroad in 1990, and most studies suggest that they remit less than unskilled Mexicans, suggesting permanent settlement in the US with families. The Philippines demonstrates how quickly student preferences change in response to the changing global labor market. In addition to doctors, nurses and seamen, the rise of the global IT market in the 1990s led to more IT schools and students.
- South Africa has been losing scientific PTKs via emigration, but much of the increase in higher education enrollments in the 1990s was in non-scientific fields, suggesting a potential mis-match between graduates and jobs. Some 800,000 SA residents, many of whom are PTKs, hold British passports.