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Sharing The Spoils: Taxing International Human Capital Flows

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Abstract

This paper argues that cross-border human capital flows from developing countries to developed countries over the next half-century will demand a new set of policy responses from developing countries. The paper examines the forces that are making immigration policies more skill-focused, the effect of both flows (emigration) and stocks (diasporas) on the source countries, and the range of taxation instruments available to source countries to manage the consequences of those flows. This paper emphasizes the example of India, a large source country for human capital flows, and the United States, an important destination for these human capital flows and an example of how a country can tax its citizens abroad. In combination, these examples point to the significant advantage to developing countries of potential tax schemes for managing the flows and stocks of citizens who reside abroad. Finally, this paper concludes with a research agenda for the many questions raised by the prospect of large flows of skilled workers and the policy alternatives, including tax instruments, available to source countries.

Keywords:

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Au: Pls. provide keywords and JEL code.

1. Introduction

Cross-border financial capital flows have transformed the global economic and political landscape over the last 50 years. As financial capital mobility has increased, the ability to attract foreign capital and manage its impact on domestic structures has emerged as a central concern for policymakers in developed and developing countries. The premise of this paper is that cross-border flows of human capital are likely to play an equally influential role in shaping the political and economic landscape over the next 50 years. While developed countries have begun to consider the consequences of such immigration, the consequences for source countries, largely developing countries, may be much more profound and have received scant attention. This paper addresses the impact of those outflows on source countries and examines the fiscal alternatives available to source countries in managing those outflows.

The growing importance of international migration will be driven by structural factors, both demographic and technological, in both developing and developed countries. Increasing life-spans and declining fertility will result in a major shift in the size and structure of populations in most industrialized countries over the next half century. Without an influx of new workers, social security systems in industrialized countries will become increasingly fragile. Reductions in benefits or increases in payroll taxes are politically difficult, suggesting that immigration may be the most promising solution for industrialized countries. Storesletten (2000), for example, argues that fiscal problems associated with the aging of the baby boom generation in the U.S. can be resolved through selective immigration policies alone.

There is a substantial body of literature on the economic and political consequence of immigration for the destination countries.[1] Surprisingly, the consequences of the potentially large cross-border flows of human capital on the source countries have received very little attention. The theoretical work of Jagdish Bhagwati and others beginning in the mid-1970s on the effects of the "brain drain" is a notable exception. While largely neglected since then, this paper revisits some of those ideas with an increased emphasis on future projected flows, the actual policy instruments available to source countries and a wider consideration of the consequences of these human capital flows for the source countries.

The evidence of the scope and scale of these cross-border human capital flows and their impact on source countries is beginning to surface. Moreover, this evidence stretches beyond the archetypal images of Mexican farm labor or Indian software professionals coming to the U.S. While India is known as a global source of IT professionals, it is emerging as a source of human capital more broadly. For instance, Proctor and Gamble has begun sourcing managers worldwide from India, and school districts from the U.S. are now directly recruiting in India for K-12 teachers through placement agencies. The flight of human capital appears particularly pronounced in countries suffering from civil conflict and economic stagnation where human capital is scarce. The International Organization for Migration (1999) estimates that for 40 percent of African countries, more than 35 percent of citizens with college education reside abroad.

The premise of this paper is that these large flows of human capital from the developing world to the developed world will demand a more comprehensive set of policy responses from these source countries. In particular, the paper examines the determinants of the structural demand for these flows, the effect of both flows (emigration) and stocks (diasporas) on the source countries and the range of taxation instruments available to source countries to manage the consequences of these flows. By emphasizing taxation instruments, the paper revisits the work of Bhagwati in attempting to assess so-called "brain-drain" taxes. Rather than emphasizing the theoretical consequences of such taxes, this paper stresses the actual experience of alternative tax regimes and their potential impact on source countries.

In order to advance these arguments, two examples are stressed throughout the paper. First, India is highlighted in order to examine both the impact of emigration and the possible consequences of fiscal instruments designed to manage those flows for a representative, and significant, source country. Second, the recent experience of the United States is employed to illustrate the shifting demands of developed countries that serve as destinations for human capital flows and to demonstrate the feasibility and consequences of fiscal regimes targeted at citizens who reside abroad. Section 2 of the paper surveys the determinants of

immigration policy in developed countries and speculates on the changes that will shape such immigration policies in the next 50 years. Section 3 of the paper considers the consequences of such large emigrations and diasporas for developing countries. Section 4 elaborates the alternative taxation regimes for source countries facing large potential outflows. Section 5 is the conclusion.

2. The Evolution of Developed Country Immigration Policies

Although international migration, as noted by Bhagwati (1984), has typically been "characterized by disincentives rather than incentives," several developed countries have begun placing much more emphasis on sorting potential immigrants on skills and attracting disproportionate shares of skilled immigrants. Among the so-called "traditional" immigration countries,[2] Canada has actively sought to attract skilled workers since the late 1960s under its points-based Independent Immigrant class. Australia reserves more than half the places in its points-based Migration Program for highly educated and skilled immigrants, and New Zealand applies a points system to select skilled workers under its General Skills category. These countries with a traditional skill focus are continuing to develop their systems to further ease the quantitative limits and costs of immigrating to better compete for skilled workers. The fraction of immigrants entering Canada via the points system has increased from less than 15 percent in the mid-1980s to almost two thirds in 1999.[3] In its immigration plan for 2001, the Australian government has instructed its immigration service to give priority to IT professionals over all other occupations and removed the labor market test for its Long Stay Temporary Business Visa class. The New Zealand government recently announced a 60 percent increase in its target for "skilled and business" immigrants.

These efforts to explicitly attract skilled workers have now begun to surface in awkward ways in countries where immigration policy has not been explicitly skill-friendly. A prime example of these developments, and of the sometimes-ambivalent response by governments, is the U.S. experience with the H-1B non-immigrant visa program during the 1990s.[4] In 1952, the U.S. created a new class of non-immigrant visas (H-1) to assist U.S. employers needing workers temporarily. The Immigration Act of 1990 capped the number of such workers, removed the provision that applicants had to express an intent to return to their home country and authorized the creation of the so-called H-1B visa program allowing U.S. firms to recruit foreign professionals to work in the country for a maximum of six years. Through a series of short-term increases that are designed to revert to original levels, the original cap of 65,000 had tripled by the end of the decade.[5] The remarkable growth in the H-1B program is demonstrated in the annual levels provided in Figure 1 and by an estimated stock of H-1B holders in the U.S. of more than 400,000 individuals.

The population allowed in through the H-1B visa program is distinctive in many ways.[6] According to recent surveys, workers approved for H-1B visas during the late 1990s had a median age of 28.3 years, a median salary of $50,000 and 83 percent of them were below the age of 34. Educationally, 57 percent of them had only a bachelor degree with the remainder having attained more advanced degrees by the time of application. While data from the early 1990s is limited, the occupational distribution of H-1B workers has changed dramatically over the 1990s. In 1989, 28 percent of H-1 visas were involved in healthcare with only 11

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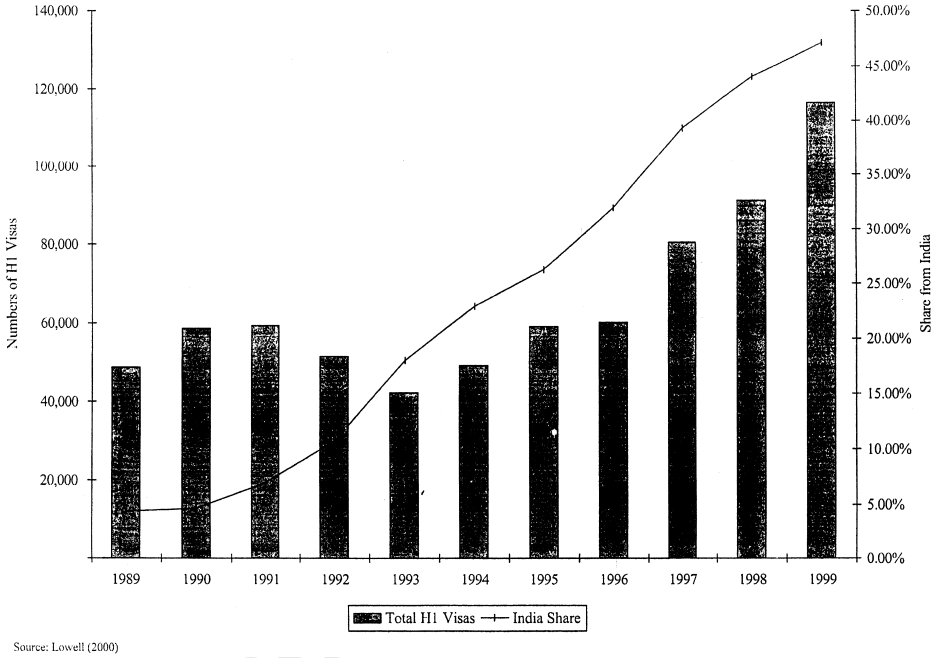

Figure 1. H1 visas issued by the U.S. by country of origin, 1989–1999.

percent involved in IT fields. By 1999, upwards of 60 percent of H-1B visas were in IT related fields. The most elite U.S. technology companies dominate the hiring of H-1B applicants with several firms hiring over 300 H-1B applicants *each* over only a five-month window.[7]

The success of the U.S. IT sector in the 1990s, and the perceived importance of immigrants and workers targeted by the H-1B program as an important factor shaping this outcome has played an important role in putting corresponding pressures on European countries to change immigration policies as well.[8] Germany has begun to change its immigration policies, introducing separate flexible quotas (based on a Canadian-style point system) for economic immigrants based on the needs of the labor market even as it is clamping down on asylum seekers, a traditional source of immigration. In introducing the bill, Germany's Interior Minister Otto Schily argued that "There's competition among the industrialized countries for the best minds. That's why we have to direct our immigration law more strongly toward our own economic interests."[9] According to the new policy, an immigrant can stay up to five years provided he or she has adequate IT competence. The United Kingdom has made it easier for information technology specialists and others in "shortage occupations" to get work permits, and Ireland has put a fast track system in place to meet labor shortages in a number of occupations.

While there is large variation in the nature of immigration policies and their attention to skills, the preceding brief review shows that even those countries that don't explicitly account for skills through a points system appear to be shifting toward recognizing the importance of attracting skilled migrants as they compete in the international market for migrants. This

nascent targeting of skilled migrants by developed countries will likely accelerate over the next half century for several reasons, including: the fiscal impact demographic shifts on public pension provision, chronic manpower shortages in public-sector dominated health sectors in the face of ever-expanding possibilities for care, and skill-biased technical change in the context of growing concern for national competitive advantage in leading-edge industries.

2.1. Some Unpleasant Pension Cost Arithmetic

The first panel in Table 1 shows United Nations projections for the elderly dependency rate (i.e., the population 65 and over divided by the working age population, 15 to 64) for a number of industrial countries under the assumption of zero net migration. This dependency rate roughly doubles for most countries by 2050 and almost triples for Japan. The second panel shows the tax rate on wage earnings needed to fund benefits on a pure pay-as-you-go (PAYG) basis, assuming relative benefit generosity—i.e., the ratio of average benefits to average wages—is maintained at its 1995 level. The PAYG tax rate (often called the cost rate) can conveniently be decomposed as the product of the benefit generosity rate and the elderly dependency rate.[10] This decomposition makes it clear that a rise in the number of elderly relative to the working age population dictates that either the PAYG tax rate must rise or the relative transfer to the elderly must be cut.[11]

The required increases in PAYG tax rates are very large for most countries. In Japan, for example, the tax rate rises from around 10 percent in the late 1990s to 26 percent by 2050. The implications of aging are even more severe for Italy because of the present generosity of its state pension system. If this generosity were maintained, the implied PAYG tax rate would rise from 26 percent in 1995 to almost 70 percent by 2050. The final panel shows what happens to the benefit generosity rate if the tax rate is kept at its 1995 level. No surprisingly, the generosity of state pensions decrease substantially. Absent other alternatives, the most likely course is a painful mix of large benefit cuts and tax increases.

One obvious response—aside from benefit cuts and tax increases is greater immigration. The first panel in Table 2 shows the required annual flows of net migration needed to keep the PAYG tax rate *and* the benefit rate constant assuming *permanent* migration. Given the tax rate formula, this figure is equivalent to the net flows required to keep the elderly dependency rate constant.[12] The implied flows show that permanent flows of migrants are a mixed blessing as non-elderly immigrants eventually reach age 65, necessitating even more immigration to keep the elderly dependency rate constant. Focusing on the necessary flows for the U.S., the projected flows are prohibitively large, with the required annual net inflow reaching almost 18 million between 2020 and 2025. To put this in context, immigration is estimated to have been below 1 million in the U.S. in the late 1990s. Moreover, all six countries in the table display potentially disruptive cycles. The required annual net inflows into the U.S. actually falls to under 6 million a year between 2035 and 2040 and then rises to an improbable 30.14 million between 2045 and 2050 as earlier immigrants reach retirement age.

The second panel calculates instead the net stock of *temporary* migrants (as a fraction of the working age population in the absence of migration) required to maintain the tax

Table 1. Hard choices: Population aging and state retirement income systems.

	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
A. Projected elderly dependency rates (pop65+/pop15-64) with zero post-1995 net migration												
United States	0.19	0.19	0.19	0.20	0.23	0.27	0.32	0.37	0.39	0.39	0.38	0.39
Japan	0.21	0.25	0.29	0.34	0.40	0.44	0.45	0.46	0.49	0.54	0.57	0.58
Germany	0.23	0.24	0.28	0.31	0.32	0.36	0.41	0.49	0.57	0.58	0.57	0.57
United Kingdom	0.24	0.25	0.25	0.26	0.29	0.31	0.34	0.38	0.41	0.42	0.42	0.42
France	0.23	0.24	0.25	0.25	0.29	0.32	0.36	0.39	0.41	0.43	0.44	0.44
Italy	0.25	0.27	0.30	0.31	0.34	0.37	0.42	0.49	0.57	0.65	0.67	0.66
B. Projected PAYG tax rate (assuming constant 1995 benefit generosity rate and zero post-1995 net migration)												
	1995 benefit generosity rate											
United States	0.48	0.09	0.09	0.09	0.10	0.11	0.13	0.16	0.18	0.19	0.19	0.18	0.19
Japan	0.44	0.09	0.11	0.13	0.15	0.18	0.19	0.20	0.20	0.21	0.24	0.25	0.26
Germany	0.83	0.19	0.20	0.24	0.26	0.27	0.30	0.34	0.41	0.47	0.48	0.47	0.47
United Kingdom	0.48	0.12	0.12	0.12	0.12	0.14	0.15	0.16	0.18	0.20	0.20	0.20	0.20
France	0.84	0.19	0.20	0.21	0.21	0.24	0.27	0.30	0.32	0.35	0.36	0.37	0.37
Italy	1.05	0.26	0.28	0.31	0.33	0.36	0.39	0.44	0.51	0.60	0.68	0.70	0.69
C. Projected benefit generosity rate (assuming constant 1995 tax rate and zero post-1995 net migration)												
	1995 tax rate											
United States	0.09	0.48	0.48	0.48	0.46	0.40	0.34	0.28	0.25	0.24	0.24	0.24	0.24
Japan	0.09	0.44	0.37	0.32	0.27	0.23	0.21	0.21	0.20	0.19	0.17	0.16	0.16
Germany	0.19	0.83	0.77	0.66	0.61	0.58	0.53	0.46	0.38	0.33	0.32	0.33	0.33
United Kingdom	0.12	0.48	0.48	0.48	0.46	0.41	0.38	0.34	0.31	0.28	0.28	0.28	0.28
France	0.19	0.84	0.79	0.77	0.76	0.67	0.60	0.54	0.50	0.47	0.45	0.44	0.44
Italy	0.26	1.05	0.96	0.87	0.82	0.75	0.69	0.62	0.53	0.45	0.40	0.39	0.39

Notes.

1. The benefit generosity rate, b, is the ratio of the average benefit (total benefits/elderly population) to the average wage (total wages/working age population).

2. The PAYG tax rate, t, is the ratio of total (retirement income) taxes to total wages. This is the tax rate required if retirement benefits are funded on a purely pay-as-you-go basis: $t = b * d$, where d is the elderly dependency rate.

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rate and the benefit rate constant at their 1995 levels. It is easy to show that this calculation is equivalent to the proportionate increase in the dependency rate between 1995 and the year in question.[13] Again, the implied scale of migration is prohibitively large. By 2050, the *net stock* of temporary migrants in the United States would have to be as large as the working age population in the absence of migration. For Germany, Japan and Italy, the net stock would need to be more than *one-and-a-half* times the working age population in the absence of migration.

Table 2. Net migration required to keep benefit generosity rates *and* tax rates constant (millions).

Case I: Flows of Permanent Migration, United Nations Population Division Estimates of Average Annual Net Migration Required to keep Benefit *and* Tax Rates Constant

	1995–2000	2000–2005	2005–2010	2010–2015	2015–2020	2020–2025	2025–2030	2030–2035	2035–2040	2040–2045	2045–2050
United States	0.04	−0.01	3.62	10.74	14.87	17.75	14.72	7.37	5.75	13.57	30.14
Japan	5.99	5.67	6.22	7.83	3.85	2.34	5.90	12.77	20.54	20.78	18.81
Germany	1.40	3.25	1.88	0.81	2.08	3.35	5.65	6.46	4.72	4.02	4.10
United Kingdom	0.01	0.06	0.56	1.53	1.16	1.42	1.77	1.37	0.76	1.08	2.24
France	0.84	0.33	0.22	1.93	1.99	1.94	2.00	2.05	2.20	2.06	3.20
Italy	1.26	1.40	0.76	1.36	1.15	1.89	3.27	3.89	4.13	2.74	2.09

Assumptions:
1. Migration is permanent.
2. Migrant streams have the same age and sex structure as the average structure of streams into Australia, Canada and the United States.
3. Conditional on age and sex, inward migrants have the same fertility and mortality as the native population.
4. The average wage of the stock of working age inward migrants is the same as the average wage of the native population.
5. The average benefit of the stock of elderly inward migrants is the same as the average benefit of the native population.

Case II: Required Stock of Temporary Migrants as a Share of the Working Age Population Without Migration, Temporary Migrants Required to Keep Both the Tax and Benefit Rates Constant at there 1995 Levels

	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
United States	0.00	0.00	0.00	0.05	0.20	0.42	0.69	0.92	1.02	1.02	1.00	1.03
Japan	0.00	0.20	0.38	0.61	0.93	1.09	1.13	1.20	1.33	1.59	1.74	1.79
Germany	0.00	0.07	0.25	0.37	0.42	0.57	0.80	1.16	1.51	1.56	1.52	1.52
United Kingdom	0.00	0.00	0.01	0.05	0.17	0.27	0.40	0.56	0.70	0.73	0.73	0.73
France	0.00	0.06	0.08	0.10	0.25	0.40	0.55	0.68	0.80	0.89	0.91	0.93
Italy	0.00	0.10	0.21	0.28	0.41	0.52	0.70	1.00	1.32	1.63	1.72	1.68

Assumptions:
1. All migrants return to their home country before reaching age sixty-five.
2. The average wage of the stock of temporary inward migrants is the same as the average wage of the native population.

The calculations in Table 2 are made with the simplifying assumption that migration does not affect average wages or average benefits in the country. This assumption implies that migrants are very similar to natives. However, the net fiscal impact of immigrants depends very much on their characteristics, including their skill level, their age at arrival and how long they stay, as demonstrated in Smith and Edmonston (1997). Under their baseline assumptions, they calculated an average net present fiscal value of a (permanent)

immigrant with *less* than a high school education as −$13,000 versus +$198,000 for an immigrant with *more* than a high school education. Storesletten (2000) addresses the question of whether a selective immigration policy would solve the fiscal problems associated with an aging population for the U.S. with plausible net inflows. Using a calibrated general equilibrium overlapping generations model, he estimates that a policy of admitting 1.6 million high-skilled immigrants aged from 40 to 44 per annum would allow the U.S. to avoid future benefit cuts and tax hikes.

What are the consequences of these demographic changes and consequent fiscal stresses for immigration policy in developed countries? The following modest predictions seem defensible:

- Developed countries will allow a *greater magnitude* of immigration to ease the fiscal pressures of aging societies. At a minimum, such flows will mitigate the severe increases in tax rates or benefit reductions required over the next 50 years.
- Developed countries will become increasingly *selective* about the immigrants they seek to attract and admit, with a focus on attracting skilled workers likely to have a positive fiscal impact.[14]
- Developed countries will increasingly encourage *temporary* immigration, especially where the temporary migrants do not establish any benefit entitlements. Given the high demand for skilled workers and their desire to have the option of migrating permanently, it is likely that countries will begin matching permitted duration with skill levels thereby creating classes of permanent-skilled and temporary-unskilled migrants.

2.2. Manpower Shortages in the Health Sector: A Chronic Condition?

A number of rich countries have a tradition of "importing" doctors and nurses to relieve manpower shortages in their health care systems. Although past shortages tended to be cyclical rather than chronic, the international scope and severity of today's shortages suggests that deficiencies of skilled health care professionals are becoming more pervasive. These shortages are especially severe in nursing, with widespread reports of unfilled vacancies in the United States, Canada, the United Kingdom, Ireland and Australia, among other countries. On the demand side, population aging and ever-expanding technical possibilities for delivering valuable but costly care are putting pressure on providers across a wide range of health care systems. On the supply side, improving opportunities for careers outside the health sector (especially for women) and under investment in training by fiscally strapped governments are straining the domestic labor pool. As such, health workers could become a significant component of future human capital flows and representative of the implications for immigration policy.

These shortages will intensify as population aging becomes pronounced starting around 2010 as older people tend to be relatively heavy consumers of health care. The OECD (1996) has estimated that the average spending of persons 65 and over was more than four times as great as the average spending on the non-elderly in the early 1990s. That same ratio ranged from five in Japan to just over two and a half in Germany.[15] In addition, ever-expanding technical possibilities for care are causing rapid cost inflation for all age groups.

The consequent pressures to ease immigration restrictions for health workers are already causing changes in immigration policies. A number of countries have recently selectively relaxed immigration restrictions on health professionals and are stepping up international recruitment efforts. The United States introduced a new class of H-1C visas starting in 2000 for foreign trained nurses working in under-served areas, although the number of visas have so far been restricted to a miniscule 500 per year.[16] Australia has included a wide range of health professionals on its "Migration Occupations in Demand List," which gives workers in these occupations extra points in its skilled-based migration system. Ireland has put in place a fast-track system of working visas and work authorizations to attract professionals in a short list of occupations that includes registered nurses. The United Kingdom now includes a wide range of health professionals on its "shortage occupations" list, which makes it easier for would-be migrants in these occupations to obtain a work permit.

2.3. Rapid Skill-Biased Technological Change and National Competitive Advantage

There is substantial evidence that the last two decades have been characterized by the phenomenon of skill-biased technological change. Focusing on the U.S., the period from the mid-1970s to the mid-1990s was one of slow average productivity growth and rising income inequality driven by rising skill price differentials (Freeman and Katz, 1994).[17] The second half of the 1990s saw fast productivity growth, driven in part by rapid technological progress in the information and communication technology sectors. How might these trends affect immigration? First, the high demand for knowledge workers has created severe manpower problems in some high tech industries, leading to lobbying to relax restrictions. Opposition has been muted by a number of factors, including strong wage gains for domestic workers, the fact that knowledge workers have fewer direct substitutes (and thus skilled immigrants are more likely to be complementary to domestic workers) and low union density in high tech sectors.[18]

Second, governments are more willing to allow immigration when they are concerned about creating a national competitive advantage in an industry that faces a shortage of workers with specialized skills. For example, in 2000, the heads of the EU governments set the goal at their Lisbon Summit to make the EU the most competitive, dynamic and socially inclusive knowledge economy in the world by the end of the decade. A recent report by Canada's citizenship and immigration service describes Canada as "competing in a global marketplace where demand for skilled immigrants is swiftly increasing."[19] In a related vein, the United States, not known for the skill-focus of its immigration policy, entitled the legislation authorizing a substantial increase in the allotment of H-1B visas through the "American Competitiveness in the 21st Century Act of 2000." Even Germany, not typically considered a country friendly to immigration, has introduced proposals to liberalize procedures to attract skilled foreign workers.[20]

Third, two decades of rising wage differentials in the U.S. and employment rate differentials in Europe have made governments more willing to tilt immigration policy in favor of skill workers. Although the empirical evidence does not speak with one voice, it appears that the major cause of the increase in wage inequality in the U.S. is skill-biased technical change rather than greater "internationalization" (see Collins, 1998; Freeman and

Katz, 1994). Nevertheless, deterioration in the wage and employment prospects of the less skilled increases the pressure of governments to limit less-skilled immigrant flows, making immigration policy *relatively* more skill focused.

Finally, expected responses from the domestic labor supply to invest in more skills may take longer than expected. The recent dramatic expansion of the skilled component of the U.S. workforce, for example, is expected to plateau markedly. The last two decades witnessed a large increase in the prime age work force and a significant increase in the skilled fraction of that workforce. However, the slowdown in educational attainment from the 1970s to the early 1990s is likely to result in a reduction in the growth rate of the educational level of the workforce (Card and Lemieux, 2000). In surveying the labor force for the U.S. over the next 20 years. Ellwood (2001) concludes that "if the demand for skills continues to grow as in the past, the nation can almost certainly expect a much more severe skill shortage than in the past. . . ."

3. Consequences of International Human Capital Flows

After surveying evidence on the scope of the brain drain, this section considers the consequences—positive and negative—of such flows for source countries. Using the specific example of India, this section establishes that these consequences go beyond traditional metrics, such as the loss of talent and the remittance of foreign earnings.

3.1. The Scope of the "Brain Drain"

The pioneering work of Bhagwati shed much theoretical light on the welfare implications of human capital flows from poor to rich countries. Empirical work, however, lagged. For a variety of reasons data on characteristics of international migrants is still limited and cross-national comparisons are particularly problematic. Carrington and Detragiache (1998) endeavor to quantify the migration rates to the U.S. and the OECD by educational level and source country. The migration rates for individuals with tertiary education are especially high for small countries in the Caribbean, Central America and Africa where the losses of this highly-skilled group exceed a third.[21] The figures are also substantial in relative terms in Asian countries, such as Iran (between 25.6 and 34.4 percent), Korea (between 14.9 and 17.6 percent), Taiwan (between 8.4 and 9.2 percent) and the Philippines (between 9.0 and 9.9 percent). Turkey also has a very high migration rate estimated between 46.2 and 86 percent. The problem is perhaps most acute in the case of Africa, both because of the relative scarcity of human capital in that region as well as the high levels of migration. In 1990, the number of individuals with tertiary education from Africa in the U.S. was 95,000 (Carrington and Detragiache, 1998). The severity of the loss of human capital in African countries is illustrated in Table 3 where the International Organization for Migration estimates that for 40 percent of African countries, more than 35 percent of college graduates reside abroad.

For India, migration rates for individuals with tertiary education as estimated by Carrington and Detragiache (1998) are relatively lower (between 2.6 and 2.7 percent).

Table 3. Estimated extent of brain drain from Africa.

Percentage of nationals with university education living abroad	Country
Greater than 35%	Algeria, Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Morocco, Nigeria, Senegal, Sierra Leone, Somalia, Sudan, Togo, Tunisia, Western Sahara.
Between 5% and 35%	Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Lesotho, Malawi, South Africa, Swaziland, Tanzania, Uganda, Zambia.
Less than 5%	Angola, Botswana, Burundi, Cameroon, Central African Republic, Chad, Comoros, Congo, DRC (formerly Zaire), Equatorial Guinea, Gabon, Sao Tome and Principe, Libya, Madagascar, Mozambique, Namibia, Niger, Rwanda, Seychelles, Zimbabwe.

Source. IOM (1999).

These figures, however, may be underestimated both because they exclude the substantial numbers of South Asian professionals working in the Gulf countries as well as those on non-immigrant visas in OECD countries. While there is limited evidence on the scope of migrants on non-immigrant visas, available data in the case of the U.S. and the H-1B program sheds some light on these flows and the role of India in such flows. As noted previously, the H-1B program features young, highly-qualified, high-earning professionals that are increasingly heading toward the IT sector. India's share of those migrants to the U.S. has expanded steadily as the program has expanded as illustrated by Figure 1. The U.S. General Accounting Office (2000) estimates that 48 percent of overall H-1B visas in fiscal year 1999 were born in India and that nearly three-quarters of those workers approved for the IT sector were born in India. As such, India has become the dominant source of human capital inflows for the IT sector in the U.S.[22] While other countries do not provide as comprehensive data, the underlying dominance of India as a source country seems likely.[23] These figures suggest that nearly 60,000 H-1B visas were provided to Indians involved in IT industries in 1999 alone. While not directly comparable, a recent NASSCOM survey suggested that there were 340,000 software professionals within India in 2000. Comparing this annual flow to one destination country to the overall stock within India suggests that a significant fraction of those trained within India in IT are flowing directly abroad.

3.2. Remittances

Discussions on the brain-drain issue have generally pitted the loss of a scarce factor that is critical for development—human capital—against the gains of another scarce factor, financial resources, in the form of remittances. The latter, as evident from Table 4(a), are particularly important for low and lower middle income countries. While remittances are only 0.8 percent of GDP for high-income countries, they are 4.4 percent of GDP for lower to middle income countries and 2.3 percent GDP for lower income countries.

The total volume of remittances in 1998 was $52.4 billion—approximately the same as net Official Development Assistance (ODA) in 1998. New estimates for Latin America show remittance flows in 2000 at $20 billion—exceeding ODA and equivalent to a third

Table 4(a). The magnitude of remittances, by income grouping.

Remittances as a percentage of (annual average, 1991–1998)	Imports (%)	GDP (%)
Low income	11.6	2.3
Lower-middle income	16.5	4.4
Upper-middle income	4.2	1.6
High income	2.6	0.8

Table 4(b). The magnitude of remittances for India, 1991–1998.

	1991	1992	1993	1994	1995	1996	1997	1998
Remittances as a percentage of GDP	1.21	1.06	1.24	1.80	1.68	2.20	2.47	2.21

Notes. Remittances data from IMF balance of Payments Yearbook, 1999; Exports, Imports, and GDP from IFS CD, June 2000. Country groupings are as defined by World Development Indicators, World Bank, 2000.

of FDI flows. With a growing immigrant population outside the region, both in the U.S. and in the EU, estimates for remittance flows in the region in the next decade exceed $300 billion (Inter-American Development Bank, 2001). The trend in remittances for India is documented in Table 4b. These figures also suggest the degree to which citizens residing abroad have increased and the degree to which their earning power has increased.

Remittances have important economic implications for a country. These remittances finance consumption and housing, alleviate liquidity constraints and fund philanthropy. Finally, they are an important source of social insurance in lower income countries both at the household level and the national level, allowing for consumption smoothening when there are external shocks. Diasporic remittances typically increase following natural disasters in the country of origin such as Hurricane Mitch in Central America and the earthquake in Gujarat, India. They also appear to be an important source of insurance after economic and political shocks when foreign investors and tourists are particularly cautious. For example, 500,000 individuals, or 4 percent of the population emigrated from Ecuador following recent economic and political turmoil. At the same time, 1999 remittances were $1.25 billion and accounted for 10 percent of GDP (Inter-American Development Bank, 2001).

There are, however, two potential problematic consequences of remittances. The macroeconomic consequences may include 'Dutch disease'-like effects on exchange rates with corresponding negative incentives for the export sectors. Politically, remittances may fuel ethnic conflicts such as the early support for Fenianism in Northern Ireland to ongoing movements in many poor countries. Indeed, Collier (2000) finds that an important variable explaining civil conflict is the size of the overseas diaspora in rich countries.

3.3. Network Effects

Flows of emigrants accumulate over time in the form of diasporas, and these diasporas can constitute important networks for the source country. The importance of these diasporas

has received limited attention outside of the area of international trade. Recent studies have attempted to isolate the impact of immigrants on bilateral trade.[24] While the effects traced above relate to the trade of goods, diasporic networks may act as important reputational intermediaries and as credibility enhancing mechanisms in services contracting and hiring. These networks may be particularly important where knowledge, especially *ex ante* knowledge of quality, is tacit. For example, the Indian diaspora's success in Silicon Valley appears to be influencing the global image of India, reflecting the reputational spillover effects of success in a leading sector in a leading country. It has created a "brand-name," where an "Indian" software programmer sends an *ex ante* signal of quality much as "made in Japan" sends an *ex ante* signal of quality in consumer electronics. India's IT talent is being courted not just in the U.S. but in other countries of the EU where Indian emigration had slowed to a tricke (UK) or had been very small to begin with (Germany, Finland, Japan and South Korea). The important role of trust and reputation in determining software contracting and lending has been analyzed in Banerjee and Duflo (2001) and McMillan and Woodruff (1999), respectively. These micro studies on the role of trust and reputation presumably result in aggregate effects for countries with large stocks of emigrants abroad.

In part, the role of these diasporas in creating spillovers for the source country is reflected in the attitude of Indian IT firms to the increases in the H-1B cap. Given the size and dominance of Indian IT professions in the H1-B quotas, the Indian IT industry might have been expected to oppose the cap increases. Surprisingly, the Indian IT sector has been an enthusiastic supporter. Ten of the largest 25 companies hiring foreign nations with H-1B visas are IT firms based in India or U.S. IT firms run by Indian nationals.[25] The availability of this labor pool has played a vital role in the expansion of Indian-owned and Indian-run firms operating in the United States that have private information on IT workers from their country of origin. This also suggests that in addition to indirect effects through referrals, direct hiring is also important. The Indian software example suggests that the brain drain may actually be stimulating trade in services and investment for source countries through these network effects.[26]

3.4. Fiscal Effects

The potential fiscal effects for source countries of lost migrants are difficult to quantify due to required assumptions on the permanent component of migratory flows and the uncertain duration of temporary migratory flows. Nonetheless, it is possible to conjecture conservatively, using the example of India and the recent H-1B migrants, on the fiscal impact of large flows of skilled migrants from developing countries. As discussed above, the estimated stock of H-1B immigrants in 2000 is over 400,000 and close to half of those immigrants are from India. Moreover, another 150,000 H-1B visas are projected to be awarded to Indians from 2001 to 2003.[27] Using the median annual salary of those workers of $50,000, a translation of those earnings into an annual Indian salary of $10,000,[28] and an average tax rate in India of 20 percent yields an annual tax revenue loss to India of $700 milion. This revenue loss for migrants to only one country and through only one program of $700 million compares with annual tax receipts from individual income taxation for India in fiscal year 1999–2000 of $5.84 billion. This loss of 12.0 percent of the

income tax base for India stems from a limited channel of migration for only one destination country.

It is frequently argued that the negative consequences of the brain drain are offset by remittances. There are several problems with this argument. Professionals who constitute the brain drain are largely drawn from the upper decile of the income distribution rather than the middle. Their households are in less need of remittances. However, even with this group remittances are likely to be greater if the migration is viewed as temporary (as the case with H1-B workers in the U.S.). Moreover, while tax losses adversely affect government revenues, remittance inflows directly benefit individual households with indirect tax effects based on their expenditure decisions. In 1994 (when the H1-B visa program became significant) remittances to India totaled $5.86 billion. Between 1999–2001 they averaged around $10 billion.[29] Assuming that three-fourths of this increase came from remittances resulting from the increase in high skilled migration to the U.S., the total tax yield the total (direct and indirect) tax yield from remittances is estimated around $300 million (based on India's tax to GDP ratio of just under 10 percent).

In addition to these direct losses of revenue, the outflow of highly skilled workers alters the overall tax base in distinct ways. Like other developing countries, India has historically relied on indirect taxes with 65.6 percent of tax revenues coming from indirect taxes. The outflow of highly skilled workers makes direct taxation more difficult and increases the reliance on indirect taxes. In a related vein, the pressure to reduce top marginal rates on highly skilled would-be immigrants reduces the potential progressivity of the income tax schedule increasing the burden on lower income earners and the reliance on an indirect tax base. As such, large potential migration of skilled workers can effect fiscal policy by changing the nature of the tax base and the progressivity of the tax schedule.[30]

In addition to these effects on the income tax system, as temporary migration of skilled workers from developing countries increases in importance, the role of payroll taxes and treaties between developing countries and developed countries will likely grow in importance. In the U.S. context, temporary migration under the H-1B program is based solely on skills while the conversion to a permanent immigrant status is based on nationality quotas. Procedural complexities, funding deficits in the adjudication of applications and congressional mandates have all served to double the time to acquire permanent residency from two to three years to nearly six. A recent study suggests that less than 25 percent of the current H-1B workforce will obtain a Green Card within the six-year limit of their temporary visas (Lowell, 1999). This number is, however, unequally distributed across nationalities, and as a result, developing country nationals are much more likely to be rejected for permanent migration.[31] As a consequence, the losses of social security payments are the greatest for immigrants from these developing countries.[32]

While mechanisms for segregating pension provisions to temporary workers and making them portable would seem like a politically difficult outcome, a proposal by Senator Phil Gramm for Mexican workers in the U.S. suggests that such an outcome is possible. The Gramm proposal would allow guest workers from Mexico to work in the United States on an annual or seasonal basis, with enrollment flexibly adjusted to economic conditions in the U.S. Recognizing that "the current 15.3 percent payroll tax paid by illegal aliens and their employers produces no benefits for the illegal workers," the proposal's new guest

worker program would allow that the 15.3 percent payroll tax would be used to fund emergency medical care for the temporary migrants and an IRA account owned by the individual worker, which could be withdrawn only when the worker leaves the program and returns to Mexico.[33] The Gramm proposal portends the importance of reconciling the social security needs of temporary migrants from developing countries with the domestic payroll tax provisions of developed countries.

3.5. Institutional Effects

Despite the emphasis on institutions—legal regimes, educational institutions, political traditions—as the *sina qua non* of development, there is still little understanding on how successful institutions actually develop. A critical mass of individuals with high levels of human capital seems like a likely minimal condition for their development and sustenance. With reservation wages being set globally for the elite within developing countries, the maintenance of such a critical mass is increasingly difficult—both because of fiscal pressures on government finances and fears of exacerbating inequality—which could well undermine efforts toward institutional development.[34]

The effect of the recent outflow of skilled migrants on educational institutions in India exemplifies these phenomena. The production of human capital in a country the size of India requires a large infrastructure of human capital and in turn a large and growing faculty—the human capital that mans these institutions. While the overall annual output of IT professions from India exceeds that of the U.S., the average quality is weaker, hamstrung by high faculty:student ratios (1:45) and poorly trained faculty. Moreover, increasing the output of engineers requires substantially more well-qualified faculty. Even though the overall annual output of IT professionals in India is greater than in the U.S. the numbers gloss over a looming problem. India's output of master's and Ph.D. students is barely three percent that of the U.S., and more than 60 percent of post-graduate seats in engineering colleges are vacant. The consequent low output of postgraduates has serious implications for training of future generations, given that India's technical education system already suffers from about 10,000 teaching vacancies.[35] Can India "free ride" on foreign educational systems?[36] In 1999–2000, there were 42,337 students from India in the US, 72 percent graduate. We estimate that the costs of purchasing education services for these students to be around half billion dollars.[37] While we do have data on return rates, NSF surveys of foreign Ph.D. students found that while 85 percent of students from India (66 percent for science and engineering) had plans to stay behind in the US in 1990, this had increased to 89 percent in 1999 (90 percent for science and engineering).[38] Neither figure is encouraging. The problems facing educational institutions arising from the brain-drain are not confined to tertiary education. Given the low level of literacy in parts of India, the sourcing of K-12 teachers by American and British schools in India suggests that there may be adverse consequences for educational institutions at lower levels as well.

4. Alternative Worldwide Regimes for Individual Income Taxation

Several alternative regimes are available to countries for taxing individuals participating in global labor markets. The United States, as described below, stands out as the country with

the most expansive and detailed rules on taxing citizens residing abroad as well as the only country with detailed data on those efforts. After discussing the American experience, the relative merits of these alternative regimes are assessed for a developing country faced with the prospect of mobile citizens and a disappearing tax base.

4.1. A Taxonomy for International Tax Rules

In designing an individual income tax when its citizens are mobile, a country has several choices on which individuals to tax, what kinds of income to tax, and what instruments to use. Typically, those choices center on how to alter taxation when a citizen chooses to reside and earn income abroad (emigrate) or when a citizen chooses to give up citizenship (expatriate). Countries either assert tax liabilities for individuals on the basis of citizenship or residence. The vast majority of countries orient their tax rules on residence rather than citizenship by taxing the worldwide income of their residents and only that income derived from domestic source for non-resident citizens and aliens. In contrast, three countries—the United States, the Philippines, and Eritrea—use citizenship as the basis of ongoing taxation.[39] These countries tax their citizens on their worldwide income regardless of their residence although distinct rules are typically in place for the foreign-source earned income of citizens.

In addition to distinguishing which individuals a country has the right to tax, countries can also choose to create a tax event when a resident leaves or when a citizen expatriates. Unsurprisingly, those systems that use residency as the basis of their tax systems are those countries that sometimes create tax events when an individual gives up residency, and those systems that use citizenship sometimes create tax events upon expatriation. Such so-called departure taxes typically take the form of either a lump-sum tax at the time of emigration or expatriation or an effort to exert tax jurisdiction for a defined period of time after emigration or expatriation.[40] Given the emphasis of these rules on wealthy individuals, such departure taxes typically center on the treatment of accumulated gains in financial and business assets rather than a concern for the ongoing labor income of former residents. Several countries, aside from the U.S., impose such departure taxes upon the relinquishment of residency or citizenship, although their enforcement is apparently limited.[41]

4.2. The American Example

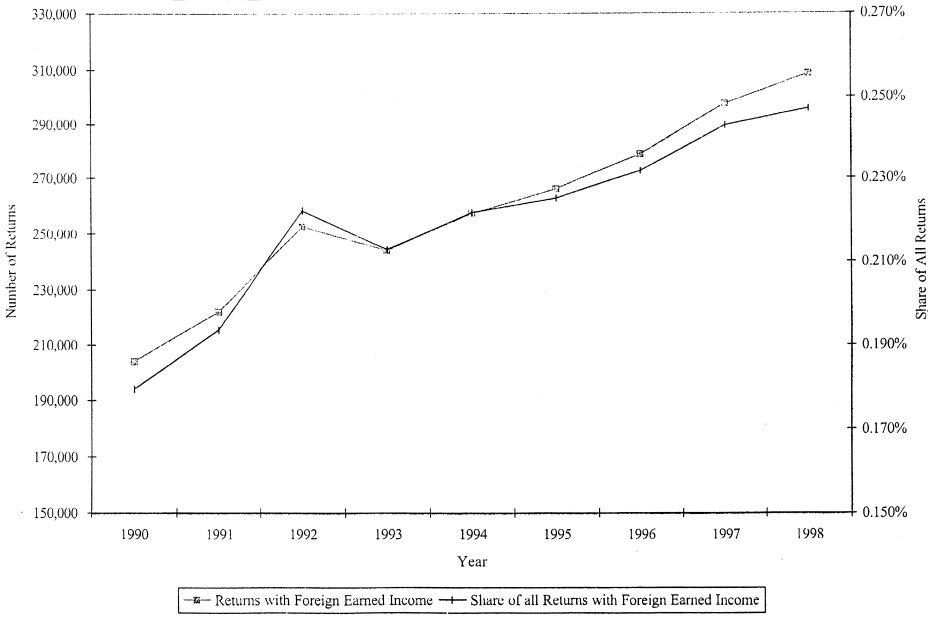
By most metrics, the United States has the most expansive, detailed and best-enforced efforts to tax the worldwide income of citizens and former citizens. As such, the American example can be used to delineate the potential of a citizenship-based system for a developing country. The American system can be divided between the treatment of citizens with foreign-earned income and the tax treatment of the act of expatriation.

While American citizens and permanent residents that reside and earn income abroad are required to file tax returns in the United States, several provisions exist that mitigate the effects of double taxation of their income. In particular, American citizens can choose to employ the exclusions provided in Section 911 of the Internal Revenue Code and the foreign tax credit provisions of section 901 of the Code. Under the exclusion provisions, a

qualifying citizen or permanent resident can exclude up to $80,000 of his or her foreign-earned income from gross income.[42] In addition, certain housing costs that exceed base levels can be either excluded or deducted.[43]

Additionally, a taxpayer can employ foreign tax credits whereby credits are granted to the taxpayers in the amount of foreign taxes paid. As in the case with foreign tax credits for corporations operating abroad, these credits are limited to the U.S. tax rate so that foreign tax credits cannot be used to reduce domestic taxes on domestic-earned income. While the exclusions are typically more generous, Americans earning income in high-tax countries abroad may find it beneficial to generate excess foreign tax credits and later use them to shield earned income from low-tax countries, as such credits can be carried back two years and forward five years.[44]

The recent experience of the United States in enforcing these provisions and raising revenue from citizens and residents working abroad is illustrated in Figure 2 and Table 5.[45] Figure 2 details the numbers of returns filed with foreign-earned income and the share of all returns they represent from 1990 to 1998. In 1998, more than 300,000 returns, or 0.25 percent of all returns, featured foreign-earned income.[46] The rapid increase in returns with foreign-earned income during the 1990s likely represents the growing importance of Americans working abroad as well as the ongoing initiatives to increase compliance including the initiation of alternative, shorter forms in 1992.[47] In contrast, government and private estimates of U.S. citizens residing abroad, excluding U.S. government employees or their dependents, are between 2.5 and 3.1 million.[48]



Source: Annual SOI publications on individual income tax returns from 1990 to 1998.

Figure 2. U.S. taxpayers with foreign earned income.

Table 5. The recent U.S. experience with taxing foreign earned income.

	Returns			Total foreign earned income			1040 Income Tax			
	1996 number	1996 share (%)	% change 1991–1996	1996 $ Thousand	1996 share (%)	Real % change 1991–1996	1996 returns	1996 share (%)	1996 Income Tax $ Thousand	1996 share (%)
By Country										
United Kingdom	23,426	8.4	1.8	2,705,533	12.8	4.0	14,667	11.1	492,547	22.7
Canada	23,333	8.3	13.7	1,305,384	6.2	−4.7	7,419	5.6	80,635	3.7
Germany	22,802	8.2	−10.2	1,236,579	5.9	6.7	13,928	10.5	94,113	4.3
Japan	20,456	7.3	2.3	1,649,367	7.8	9.2	9,701	7.3	154,407	7.1
Hong Kong	12,564	4.5	110.9	1,687,824	8.0	147.1	6,572	5.0	223,240	10.3
Saudi Arabia	11,033	3.9	−16.1	851,479	4.0	−13.2	6,996	5.3	67,090	3.1
France	8,553	3.1	−2.6	692,880	3.3	−9.5	4,448	3.4	94,937	4.4
Switzerland	6,674	2.4	18.9	645,362	3.1	20.1	3,162	2.4	73,069	3.4
Israel	6,640	2.4	30.4	332,454	1.6	28.9	1,528	1.2	19,137	0.9
Taiwan	6,070	2.2	25.2	471,315	2.2	20.4	2,011	1.5	30,432	1.4
Mexico	5,645	2.0	13.8	415,925	2.0	21.7	2,756	2.1	24,631	1.1
Singapore	5,049	1.8	65.2	809,346	3.8	109.9	3,699	2.8	100,956	4.7
South Korea	4,979	1.8	40.6	272,201	1.3	19.7	2,221	1.7	18,657	0.9
China	4,561	1.6	197.7	529,850	2.5	381.0	2,938	2.2	40,902	1.9
Total	279,758	100.0	26.7	21,116,034	100.0	33.3	132,257	100.0	2,169,847	100.0
By adjusted gross income										
Under $100,000	239,878	85.7	20.8	12,129,127	57.4	na	92,742	70.1	324,635	15.0
$100,000 under $200,000	23,370	8.4	70.7	3,568,031	16.9	na	23,316	17.6	373,927	17.2
$200,000 under $500,000	12,756	4.6	95.5	3,348,869	15.9	na	12,721	9.6	507,043	23.4
$500,000 under $1,000,000	2,632	0.9	158.0	1,111,922	5.3	na	2,628	2.0	308,676	14.2
$1,000,000 or more	1,122	0.4	179.1	958,086	4.5	na	1,121	0.8	655,564	30.2
Total	279,758	100.0	26.7	21,116,034	100.0	33.3	132,257	100.0	2,169,847	100.0

Source. Curry, Kahr and Nutter (2000) and calculations provided by the IRS.

Table 5 provides greater detail on the recent U.S. experience of taxing foreign-earned income from 1996 and the early 1990s by country and by adjusted gross income (AGI). From 1991 to 1996, the number of returns with foreign-earned income grew 26.7 percent, and the total foreign-earned income grew 33.3 percent in real terms to $21.1 billion. These high growth rates reflect considerable geographic heterogeneity as rapidly growing Asian countries, including Hong Kong, Singapore and China, experienced very high growth rates. Nonetheless, 35 percent of returns and 41 percent of all foreign-earned income comes from the top five countries, suggesting considerable concentration of overseas activity of U.S. citizens. The geographic destination of foreign-earned income appears to mirror the overseas activities of U.S. multinational firms and banks.

Of the 279,758 returns with foreign-earned income, only 132,257 had U.S. tax obligations resulting in the payment of U.S. tax of $2.2 billion in 1996. From 1991 to 1996, the payment of U.S. taxes on foreign-earned income nearly doubled in constant dollar terms. The share of U.S. taxes paid relative to the share of overall returns with foreign-earned income reflects the considerable heterogeneity in salary levels abroad. For example, individuals in Hong Kong are the source of 4.5 percent of all returns with foreign-earned income but contributed 10.3 percent of the U.S. tax revenue raised by taxing foreign-earned income.[49]

Given the exclusions discussed above, the rules on foreign-earned income affect high-income earners disproportionately. While those taxpayers with AGI less that $100,000 comprise 85.7 percent of returns with foreign-earned income, they contribute only 15 percent of revenue associated with taxing foreign-earned income. Similarly, individuals with AGI over $500,000 comprise 1.3 percent of returns but provide for 44.4 percent of the revenue associated with taxing foreign-earned income. The progressivity embedded in these rules appears to be more and more important as those taxpayers with AGIs over $500,000 that field for the foreign-earned income exclusion more than doubled from 1991 to 1996.

A citizenship-centric system of individual taxation often raises concern over compliance costs. Indeed, the U.S. tax rules described above appear complex and onerous enough such that they may create significant compliance costs for individual taxpayers and a barrier to employment overseas. Multinational firms, however, have largely internalized these compliance costs and leave their employees insulated from this tax treatment. The vast majority of U.S. firms employ either *tax equalization* or *tax protection* for these purposes. Under both methods, a hypothetical tax obligation for an employee is calculated as if they were to remain at home. Under tax protection, employees bear the administrative costs of complying with host and home tax rules but can receive a windfall gain if actual taxes paid are below hypothetical tax levels. Under tax equalization, firms bear the administrative costs of compliance, and employees receive after-tax compensation based on their hypothetical tax calculations.

According to a recent survey, tax equalization is employed by more than 82.6 percent of U.S. firms with employees abroad and is used for U.S. citizens as well as citizens of other countries. Tax protection is employed by 8.1 percent of firms surveyed, and only 2.7 percent of firms surveyed leave these matters to their employees completely. Moreover, these hypothetical tax calculations have evolved to incorporate the complexities of incentive compensation, stock option plans, state taxes, city taxes, outside investment income and even spousal income.[50] As such, the actual administrative burden on individuals imposed by the taxation of foreign-earned income appears limited.

In addition to the taxation of citizens who have earned income abroad, the U.S. taxes the act of expatriation under Section 877 of the Internal Revenue Code. Under these provisions, a citizen who expatriates or a permanent resident giving up residency is presumed to have been motivated by tax avoidance if they meet specified levels of net worth or historic tax liability.[51] If their decision to expatriate is deemed to be tax motivated, the individual faces a distinct set of tax rules on income taxation, estate taxation and gift taxation for the 10 years following expatriation.[52]

In particular, the rates on income and the definition of what constitutes U.S. source income are more onerous than would otherwise apply to similar non-resident aliens. For example, non-resident aliens are taxed at a flat rate of 30 percent on passive U.S. source income and that rate is typically significantly lower as a consequence of tax treaties. For individuals deemed to be expatriating for purposes of tax avoidance, their U.S. source income would feature a more expansive definition of what constitutes U.S. source income, and they would be taxed as if they were still U.S. citizens on that income for the subsequent 10 year period.[53]

From the citizenship-centric definition of the individual income tax to the expatriation tax, the U.S. attempts to cast a wide net on the worldwide income of its citizens, permanent residents, former citizens and former permanent residents. While previous considerations of "brain-drain" taxes have emphasized their theoretical consequences and have usually cited the administrative difficulties associated with such tax instruments,[54] the U.S. experience demonstrates the possibility of an expansive definition of individual taxation in a world characterized by global labor mobility. Moreover, the central role of U.S. firms in bearing the associated compliance costs suggests that implementation of such regimes may be less complicated than previously considered.

4.3. Implications and Alternative Tax Systems for Developing Countries

Given the heightened forecasts for temporary migrants from developing countries to developed countries in the following 50 years, what can the foregoing discussion of alternative tax regimes suggest for policy makers in developing countries? This section outlines several alternative taxation regimes—the American model, a cooperative regime for tax sharing and an exit tax on accumulated human capital—for consideration by developing countries and comments on their advantages and disadvantage. While many factors are relevant in assessing the desirability of such regimes, the following emphasizes the absence of significant infringements on freedom of movement, the impact on "those-left-behind," the revenue potential and the ability to deal with flows of emigrants and preexisting stocks of previous emigrants abroad. To make our analysis more concrete, this section also emphasizes one example: U.S. H-1B non-immigrant visa holders from India. Indian citizens constituted about half of the outstanding 400,000 H-1Bs in 2000; current indications are that they will constitute a similar ratio for the 300,000 issues expected in over the next three years.[55]

4.3.1. The American Model The most sweeping alternative for a developing country would be to orient their tax system along the lines of the American model described above. Such a change would require altering the basis of taxation from residency to citizenship for most countries and then enforcing a system that would demand compliance from citizens residing abroad.

The American model has several benefits relative to other alternatives. It is the most comprehensive system for taxing the ongoing labor income of high human capital individuals that are globally mobile. Given the obvious possibility of liquidity constraints at the time of emigration, ongoing taxation would allow for the burden of taxation to be better matched with the actual income streams of individuals. Moreover, the use of exclusions and credits would allow for lower human capital types to be effectively exempt from the system. By matching the actual incomes with tax payments and by not creating a barrier at the time of emigration, such a system may also be politically appealing in contrast to one-time departure taxes.

Finally, for countries that already have large stocks of citizens abroad, only the American model offers the potential of tapping into those labor income streams. Effectively enforced, the American model may offer the largest ultimate gains to countries with high human capital emigrants.

Arguments against the American model typically center on the enforcement and compliance costs of this model. For developing countries where managing an individual tax base *domestically* is problematic enough, the thought of enforcing the American model may be unimaginable. While the enforcement and compliance costs of the American model may be higher than for an exit tax, the increased ability provided by technology to track citizens suggests that these costs may not be as overwhelming as previously considered.[56] Moreover, as evidenced by the review of the American experience, firms are sometimes willing to bear the vast majority of compliance costs under the American model. A similar practice could conceivably evolve with emigrants from developing countries where hiring firms would insulate individuals from the tax differences and the compliance costs imposed by such a system. Indeed, many of the multinational firms hiring skilled workers from developing countries are already well-versed in the complexities of the American model.[57]

Other obstacles to applying the American model also arise. First, without more precise estimates of the distribution of earnings for citizens abroad, revenue might be limited by overly generous exemptions or credits. Second, many citizens of rich countries working overseas have the incentive to remain tax compliant because of their intention to return home. The trade-off may be distinct for developing countries resulting in citizens giving up their citizenship if such a system is imposed. As such, the "price of citizenship" could be set too high, resulting in waves of expatriation.

What would be the revenue consequences of instituting the American model in India? Such a thought experiment is made difficult by the limited information on the distribution of earnings of Indians abroad, but some conjectures are worth considering. With its generous exclusions, the American system raises approximately $16,600 for every taxpayer filing that actually pays U.S. tax and approximately $7,900 for every filer overall. While measures of the base of Indian citizens abroad are difficult to obtain, estimates of the number of Indian citizens in the U.S. alone are over one million and is expected to increase as the stock of Indians with H-1Bs rises. Even if only 100,000 Indian citizens are captured in this exercise and if, after exclusions, annual tax payments are only $5,000 per citizen, a $500 million annual revenue stream would result. In the context of a country with an individual income tax base of $5.84 billion and a tertiary education budget of $2.7 billion, such a figure is substantial.

4.3.2. A Cooperative Regime for Tax Sharing Developing countries could begin lobbying for a cooperative regime whereby payroll and income taxes paid by a country's emigrants could be collected by host countries and shared with home countries. For example, a share of payroll taxes contributed by temporary migrants to a host country would be returned to the home country via a governmental transfer. Such a regime has the potential for large and immediate revenue consequences to developing countries. At the same time, incremental administrative costs would be minimized by leveraging the considerable administrative resources of developed countries. Such a regime would also have minimal behavioral repercussions on the labor flows of developing countries and thus would not impinge on the free movement of labor.

Such a regime would, however, require a web of bilateral treaties or the creation of a multilateral institution to manage these transfers. Moreover, it would require developed countries, which will face tremendous fiscal pressures as their populations age, to voluntarily return some of the tax revenue associated with immigration. The difficulties OECD economies have had in reaching an international agreement on dealing with tax havens suggests how difficult tax sharing proposals could be. Two trends, however, make this less improbable in the future. First, it is conceivable that increased competition for the world's supply of skilled labor, combined with an increased reluctance on the part of poor countries to allow their most talented individuals to leave without some form of compensation, will induce pairs of countries to enter into bilateral tax-sharing agreements.[58] Second, as evidenced by the Gramm proposal alluded to previously, the preference of industrialized countries for temporary immigrants means that tax sharing arrangements can serve as an incentive instrument to ensure that migrants return.

4.3.3. An Exit Tax on Accumulated Human Capital Exit taxes on emigration or expatriation currently deployed are almost entirely concerned with wealthy individuals escaping capital gains or estate taxation. In contrast, developing countries are typically concerned with individuals with high human capital who may be otherwise liquidity constrained. Nonetheless, an appropriately administered exit tax might usefully raise significant amounts of revenue with a limited administrative burden.

The implementation of an exit tax on human capital could take several forms. First, and most simply, any emigrant, or possibly the firm hiring that emigrant, could be forced to pay a flat sum to the home country. More complex variations of this mechanism would index that tax payment to some measure of human capital. With expectations of the flow of skilled migrants from India to the U.S. under the H-1B program through 2003 at 50,000 per annum, an exit tax of $10,000 paid by the hiring firms would raise $500 million per annum for India—from just those skilled emigrants to the U.S. under the H-1B program. For an American firm, this tax would be comparable to current headhunter fees and would translate into an after-tax cost to the hiring firm, assuming the deductibility of such payments, of $5,000. The recent legislation increasing the caps on H-1B workers provides another analogue to this fee. As part of the 1998 political compromise associated with increasing the H-1B limits, $500 filing fees, now increased to $1,000, are to be paid by H-1B sponsoring firms, and these fees are to be used for scholarships for low-income individuals and for workforce training. A potential exit tax paid by a sponsoring firm to the source country would have the

same distributional rationale. Again, in the context of a tertiary education budget of $2.7 billion, such gains from an exit tax are enormous.

Such an exit tax could be seen as an unacceptable infringement on the freedom of international movement. A politically more palatable alternative would be to replace existing state funding of tertiary education with a system of forgivable loans. The loans would be forgiven on the condition that the individual works in the domestic economy after graduation but would become payable if the individual emigrated. To increase compliance, the issuance and renewal of a passport could be made conditional on loans being in good standing. To increase flexibility, such loans could be indexed to the duration of stay for graduates of institutions of higher learning so that graduates leaving immediately after graduation would pay the full amount while the loan would defease as recent graduates spent more time working in their home countries. Alternatively, more elaborate defeasance schemes could be designed to spur temporary stays abroad and encourage graduates to return, thereby maximizing the gains to the source country of work experience abroad.

While such a conditional exit charge does restrict freedom of movement, advance notice of such an agreement when education was initiated would seem to obviate concerns on restriction of movement. While politically appealing, the implementation problems of such a loan forgiveness scheme may be formidable. The tracking of individuals for repayment of loans to educational institutions could be extremely cumbersome and such conditional charges may be circumvented through political connections.[59] Additionally, human capital flows often are associated with education and not employment so taxing these flows at the initial exit stage could jeopardize a critical mechanism to augment human capital. While seemingly formidable, the recent experience in the U.S. with student loan default rates suggests that greater efforts and increased use of information technology can significantly improve repayment rates suggesting that such schemes are not completely quixotic.[60]

5. Conclusion and Research Agenda

This paper has illustrated the determinants of increased flows of skilled workers from developing countries to developed countries, the consequences of those outflows for developing countries and the possible policy responses available to developing countries, particularly related to tax instruments, that face such large outflows. Demographic shifts and a continued imbalance between the demand and supply of skilled workers in developed countries are likely to loosen the constraints on global migratory flows set by the current restrictive practices of developed countries. The projected shift in immigration policy in developed countries will tilt toward skilled workers and will match skill levels with the allowed duration of migration. The consequent outflows of skilled workers have important consequences for developing countries ranging from the loss of direct tax revenues, the weakening of local institutions and the strengthening of diasporic networks. Several fiscal alternatives available to developing countries in managing these emigratory flows are both feasible—as evinced by the U.S. experience—and can have large revenue consequences.

Analytical work on the three planks of analysis in this paper—the changing nature of immigration policies in developed countries, the impact of increased outflows of skilled

workers on developing countries and the efficacy of fiscal alternatives in dealing with citizens who reside abroad—merit much further work. At a broad level, the economic, social and political determinants and consequences of changing immigration policies must be further examined. At a more mundane level, however, each of these pieces of analysis could benefit considerably from the collection of primary data. There is considerable variation in immigration and citizenship policies with limited systemic analysis of the determinants of these changing policies, their efficacy in changing the scope of human capital flows, and the overall international market in skilled labor. Marrying more detailed analysis of the nature of immigration policies with more detailed data on migratory flows promises to provide analysis of the causes and consequences of these immigration policies.

Much also remains to be done on the actual scope of the brain drain and the consequences of these outflows on source countries. As illustrated by the work of Carrington and Detragiache (1998), non-U.S. sources of immigration data are difficult to analyze. Additionally, the impact of diasporic networks on the economies and politics of source countries has received much speculation but limited rigorous analysis. Much like the recent work on the role of diasporas on trade patterns, much more can be done to understand the role of diasporic networks on source country political and economic outcomes. In particular, why are the economic and political effects of remittances so different across countries, over time and also within countries? How is the combination of large diasporic networks, dual nationality and residence-based systems of taxation affecting the nature of citizenship and in turn, international and domestic political economy? We know much about the political effects of taxation without representation but almost nothing about "representation without taxation."

Finally, the analysis in the paper on the U.S. tax system and the potential effect of tax instruments for developing countries also merits further attention. As the only well-documented example of a citizenship-based system of individual income taxation, the U.S. example can be studied in much greater detail to understand the dynamics of compliance and the responsiveness of firms and individuals to changed tax rates and exclusions. Similarly, the recent changes in the expatriation rules offers the promise of understanding the responsiveness of individuals to changes in the cost of maintaining citizenship. The actions of other countries that have instituted capital gains-based exit taxes in residence-based systems similarly offers the potential of understanding how these taxes change taxpayer behavior. The lessons of these studies can then usefully inform the fiscal policy choices of developing countries facing large outflows of skilled workers.

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Notes

1. See, for example, Carter and Sutch (1997), Borjas (1999), Smith and Edmonston (1997), and O'Rourke and Williamson (1999).
2. These are the countries that were largely built on immigration and include the U.S., Canada, Australia and New Zealand.
3. Out of 165,534 immigrant arrivals in 1999, 105,496 were either skilled workers or business class, 55,269 were family class, and 4,769 were classed as "other". There were also 24,380 refugees. See Bauer, Lofstrom and Zimmerman (2000) and Citizenship and Immigration Canada (2001) for more on these destination countries.
4. For more details on the history and character of the H-1 program, see Lowell (1999) and U.S. General Accounting Office (2000).
5. Originally, 65,000 such H-1B visas were to be made available annually, a cap not reached until 1997. In 1998, in response to the increased demand for high tech professionals, the H-1B visa quota was increased to 115,000 annually for the following two years and to 107,500 for the year after that. In 1998, the annual cap of 65,000 H-1B workers was reached in May, more than four months before the end of the 1998 fiscal year. After much lobbying Congress enacted the American Competitiveness and Workforce Improvement Act which raised the limit to 115,000 for fiscal years 1999 and 2000 and 107,500 for 2001 with a reversion to 65,000 in 2002. However, driven by an overheated IT sector, the cap was reached much before the end of the fiscal year in 1999 and 2000 (which runs from October 1, 1998 to September 30, 1999) leading once again to an intense lobbying effort by the high tech industry. Congress again responded by increasing the limit to 195,000 a year for three years before reverting to the earlier level (65,000 from 2004).
6. This characterization draws on data presented in U.S. Immigration and Naturalization Service (2000) and U.S. General Accounting Office (2000).
7. From October 1999 to February 2000, the top six employers of H-1B visa applicants—Motorola, Oracle, Cisco, Mastech, Intel and Microsoft—accounted for 2,589 H-1B or 3.2% of all approved applicants.
8. Estimates project looming shortages in IT professionals (around 1.9m people currently and estimated to grow to nearly 3.8 million by 2003) with sharply negative impacts on Europe's IT industry (European Information Technology Observatory (2001)). Even if it turns out to be less acute than forecast—and the current economic weakness has certainly taken some of the sting out of the problem—there seems little doubt that companies will have to search hard to find the right people.
9. See "Germany: Schily Proposal" *Migration News*. September, 2001. Vol. 8, No. 9.
10. The benefit generosity rate is the ratio of average benefits (per elderly person) to the average wage (per working age person). The average benefit is calculated as total retirement income benefits excluding survivor benefits as measured in the OECD's comprehensive Social Expenditure Database, divided by the population 65 and over. This average benefit measure could be further decomposed into the product of the average benefit per retired person and the ratio of the number of retirees to the population 65 and over. Thus, the average benefit measure is affected by both the generosity of benefits for those actually retired and the ease of eligibility for retirement benefits, including the ease of eligibility before age 65. The average wage is calculated labor share of income multiplied by GDP divided by the working age population, where an adjustment is made for the output gap in each country in 1995. The PAYG tax rate is the tax rate required to completely fund benefits in any given year. It is straightforward to show that this tax rate is given by the product of the benefit generosity rate and the elderly dependency rate.
11. The pre-funding of state pensions by workers can be thought of as a cut in PAYG benefit generosity. In effect, workers are paying themselves what was to have been paid for by future generations, and thus there is a decrease in the size of the future transfer from young to old.
12. The United Nations (2000) has created these forecasts under a set of plausible assumptions about the age and sex structure of migrants, as well as their fertility and mortality upon arriving in the destination country.
13. These calculations are made on the assumption that all migrants return home before reaching age 65 so that the number of elderly people is equal to the United Nations no-migration scenario.
14. Other economic and social factors—such as the worsening income prospects of low skilled natives and evidence of weaker assimilation among low-skilled immigrants—will probably enhance the trend toward greater selectivity.

15. There are some reasons to believe that the increase in costs due to population aging will be less than an extrapolation based on relative cost ratios would suggest. First, disability rates among the elderly are declining (OECD, 2000b). Thus, the elderly population is healthier on average, despite the fact that there are people now living with chronic and expensive to treat conditions who would previously have not survived. Second, as life expectancies at older ages lengthen, the fraction of persons in any older age group that is in their last year of life declines. Since health expenditures tend to be concentrated in the last year of life, this tends to push down health care costs. Given the complexities of aging on health spending, it is perhaps not surprising that regression evidence using international data shows a very weak relationship between age structure and national health spending. This international evidence, however, is from a period of modest population aging, and the complex changes in the health of the elderly population could have masked the impact of impact of the pure age structure effects. It would be surprising, however, if the dramatic aging of the population that will take place between 2010 and 2030 did not put substantial upward pressure on health care costs.
16. The program replaces the old H-1A program, which expired in 1995. However, significantly more nurses entered under that program than the 500 allowed under the H-1C program.
17. In Europe, an increase in the relative demand for skill has shown up more in rising employment rate differentials between skilled and unskilled workers.
18. There is a large empirical literature that attempts to measure the effect of immigration on local wages (see Borjas, 1994; Friedberg and Hunt, 1995 for surveys). There are three main types of studies: area studies that compare wages across labor markets receiving different numbers of immigrants; natural experiments that look for immigration changes that are independent of developments in local labor markers; and calibration studies that estimate how relative factor supplies affect relative wages for different skill groups and then calculate how immigration with a given skill mix affects relative wages. Advocates of the latter method argue that the first two types of study fail to account for native outflows in response to immigrant inflows. The first two types of studies tend to find small wage effects (see Altonji and Card, 1991, and Card, 1990). The third type of study tends to find larger wage effects (see Borjas et al., 1996). Such adverse domestic wage effects are likely to be particularly trouble some when they involve less skilled workers, as these workers are already being hurt by skill-biased technical change and increased trade with labor abundant developing countries. Although skilled immigration may depress skilled wages, the issue is likely to be less politically sensitive.
19. Excerpted from Citizenship and Immigration Canada (2001).
20. In a recent proposal put forward by the Christian Democratic Union, a point system has been advanced with the rationale that "Germany is a nation of immigration... We need more people to immigrate so Germany will not suffer a decline in living standards." See "Germany: New Immigration System." Migration News. June, 2001. Vol. 8, No. 6.
21. The migration rate is the ratio of immigrants from country "i" with skill level "s" to the number of individuals in country "i" with skill level "s".
22. This evidence on the high human capital types attracted to America from India stands in contrast to the figures provided in Smith and Edmonston (1997), which documents the reduced real earnings of migrants from India to the U.S. from 1977 to 1994. In part, this disparity reflects the distinction between those migrants allowed in through temporary migration programs and permanent migration programs.
23. For instance, following amendments to work permit rules in the U.K. in 2000 to invite more information technology trained foreigners, more than two-thirds of all IT professionals (nearly 20,000) entering Britain were found to be from India (See "Indian IT workers flooding UK" *Hindustan Times*, April 30, 2001). This figure may underestimate the share from India since a substantial fraction of the IT professionals from other major sources (U.S., South Africa and Australia) were also of Indian origin.
24. For example, Gould (1994), using a gravity model, examines the impact of immigrants in U.S. bilateral trade and finds that a 10 percent increase in immigrants in the U.S. increases exports to the country by 4.7 percent and imports by 8.3 percent. Head and Ries (1998) extend the exercise to Canada and find qualitatively similar results with lower elasticities. Rauch and Trindade (2000) use a gravity model to examine the trade effects attributable to the overseas Chinese network and find that the effects are greater for differentiated rather than homogenous products. They note that the informational intensity of international trade is increasing, suggesting that network effects are likely to continue to be important.

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25. The India-based firms are: Wipro, TCS, Infosys and Tata Infotech. U.S. based firms founded and run by Indian nationals with major offshore operations in India are Mastech, Xoriant, Syntel, Intelligroup, Hi Tech Consultants, and Ipex.
26. See Kapur and Ramamurti (2001).
27. The H-1B visa cap was raised to 195,000 annually in September, 2000 for the next three years. Assuming that half of these go unclaimed given the recent economic downturn and that half of those issued continue to go to Indians results in 150,000 H-1Bs awarded to Indians over the next three years.
28. This translation corresponds roughtly to a PPP translation of these income levels.
29. The data is from Dilip Rath of the World Bank.
30. The potential version of tax competition mirrors that has been frequently analyzed with respect to competition over mobile capital. See Janeba and Schjelderup (2002) and Mendoza and Tesar (2003) for theoretical investigations of the economic consequences of increased tax competition (including potential underprovision of public goods) with particular reference to Europe. See Desai (1998) and Desai, Foley and Hines (2003) for empirical evidence on increased tax competition for foreign direct investment.
31. U.S. employment-based immigration law allows 140,000 Green Cards to be issued annually, including spouses and children of H-1B visa holders. The law provides that no more than 7 percent of employment-based immigrants (9,800) can be from a single country, irrespective of the sending country's size or population. Iceland, with a population of 270,000 has the same per country limit on employment-based immigrants as do India and China. As a result, while some countries underuse their quotas, in other cases there is a large backlog. Consequently, the actual number of immigrant visas issued is well under the limit (70,000 in 1997 and 90,000 in 1998). The unused Green Cards cannot be applied to the following year, even if applications for permanent residence are pending, which has fuelled the significant increase in backlogs in the employment-based immigration process.
32. For a person to receive social security benefits in the U.S., he or she is required to work for 40 quarters. For a variety of developed countries, the United States has treaties of reciprocity whereby nationals of those countries can claim social security benefits even if they have worked in the United States for less than 10 years. In addition, the United States also has totalization agreements with 17 countries, such as the United Kingdom, under which U.S. nationals can receive retirement benefits based on their combined work history at home and in the other country. However, developing countries rarely have extensive social security systems and consequently, do not have corresponding agreements with developed countries. As a result, those developing countries, which serve as the source of human capital to the developed countries, are those countries least able to capture any of the gains associated with the provision of pensions in developed countries.
33. See http://www.senate.gov/∼gramm/press/guestprogram.html
34. These conclusions depend, in part, on the complementarity or substitutability of the outflows of human capital with those of residents left behind. More generally, the literature on the social returns to education—as in Acemoglu and Angrist (1999) or Moretti (2000)—suggests another channel for losses from this emigration.
35. See World Bank (2000), Annex 1. para 23.
36. We thank one of the reviewers for raising this question.
37. According to the Institute for International Education, personal and family sources are the primary source of funds for 80 percent of undergraduate and 50 percent of international graduate students. We assume average annual costs of $20,000.
38. Source: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), Survey of Earned Doctorates, unpublished tabulations, 2001, NSF, Science & Engineering Indicators, 2002.
39. See Pomp (1989) for a detailed description of the history behind the Philippines experience. The Philippines distinguishes income by source and uses a schedule with three brackets for foreign-source income (the highest bracket is 3% on income above $20,000) in conjunction with a personal exemption and deductions for foreign taxes paid on foreign source income. For the rules currently in effect in the Philippines, see Joint Committee on Taxation (1995). Until 1981, Mexico also attempted to tax the worldwide income of non-resident citizens. The Eritrean efforts began in 1995 and have met with little success.
40. Such exit taxes have also been widely used to restrict the right of movement by citizens for political motivations. Recent examples of governing forces using exit taxes to restrict movement by individuals include Serbia-Montenegro and the LTTE in Sri Lanka during the 1990s. Through the Jackson-Vanik Amendment, the U.S.

government has explicitly made the use of exit taxes a criteria for restricting trade relations given the implied infringement of human rights.

41. In particular, Joint Committee on Taxation (1995) highlights the efforts of Australia, Canada and Denmark in imposing tax consequences on those residents that give up residency. Additionally, France and South Africa have recently proposed changes to their capital gains tax rules so that individuals giving up residency would be treated as having disposed of their assets. Within these rules, there are typically exceptions for individuals maintaining ties to the country and opportunities for deferral of tax payment until actual realization.
42. As a consequence of 1997 legislation, that exclusion amount was increased $2,000 a year from 1998 to 2002 resulting in an $80,000 exclusion for the year 2002.
43. The base amount for the housing exclusion was $10,171 in 2000 and is indexed to 16% of a U.S. government employee salary at a GS-14, Step 1 grade level.
44. In addition, foreign tax credits are not provide for any income that is excluded under 911.
45. The following discussion emphasizes foreign-earned income as reported in Form 2555 where taxpayers report foreign-earned income if they use the exclusions. As such, the following data does not consider those individuals that employ the foreign tax credit to shield foreign-earned income as that would be reported on Form 1116 and may be included in foreign source gross income.
46. The figures for those reporting foreign source gross income is much higher. In 1998, three million returns were filed for the foreign tax credit representing 2.4% of all returns. The share of returns filing for the foreign tax credit quadrupled over the 1990s.
47. For a discussion of compliance and the launching of the EZ forms, see U.S. Department of the Treasury (1998).
48. The 2.5 million estimate comes from U.S. Foreign Service Post information as reported in Joint Committee on Taxation (1995), and the 3.1 million estimate comes from the lobbying group American Citizens Abroad. To our knowledge, no exhaustive count of U.S. citizens abroad exists. As a final reference point, the Department of Commerce reports the number of U.S. citizens employed by non-bank affiliates of non-bank U.S. parents as part of their benchmark surveys. In 1994, such affiliates reported having 21,500 U.S. citizens as employees.
49. Foreign tax credit systems allow for relative tax rates to play an importance role in the revenue distribution of the U.S. system and the important of Hong Kong presumably reflects that.
50. Organization Resource Counselors (2000) surveyed 150 firms with an average of 162 expatriates working abroad.
51. In 2000, any individual with a net worth over $562,000 or tax liabilities over the last five years exceeding $112,000 is presumed to be tax motivated in their decision to expatriate or give up residency. As GAO (2000b) makes clear, this presumption is sometimes followed up by suits by expatriates resulting in private letter rulings.

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52. Additionally, the Reed Amendment to the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 stipulates that tax-motivated expatriates would be denied a U.S. visa and reentry into the United States. Finally, names of expatriates are published in the Federal Register and expatriates must provide forwarding addresses as well as a balance sheet upon expatriation.
53. Recent proposals (see Joint Committee on Taxation (2000) to revise these rules propose to modify them in two distinct ways. First, the rules would apply regardless of the assessment of the tax avoidance motivation on expatriation given its inherently subjective nature. Second, the rules would simply impose a mark-to-market tax at the time of expatriation with similar deferral opportunities as exist in those countries discussed in footnote 35.
54. See Bhagwati and Wilson (1989).
55. The resulting 350,000 Indians in the U.S. on H-1B visas do not account for the many Indian citizens who are permanent residents and the Indian citizens working in other OECD economies. Nonetheless, consideration of this group alone sheds light on the potential of such schemes.
56. U.S. GAO (1998, 2000b) reviews noncompliance issues for both citizens residing abroad and for expatriates. The U.S. experience suggests that compliance problems are much greater for expatriates than for citizens living abroad.
57. On the other hand, smaller firms hiring immigrant and non-immigrant workers might be less willing to bear the compliance costs. A firm hiring workers from different parts of the world would have to deal with multiple taxing authorities without the informational advantage of having a presence in those countries. Moreover,

many of the firms hiring migrants will be small relative to the multinationals that send nationals overseas and thus might have less administrative capacity to deal with complex international tax issues.

58. This envisions a gradual shift towards a world in which the main constraining factor on skill flows from developing countries is the unwillingness of skilled workers to leave. Given the large backlogs of applications for skill-based visas for such countries as Canada, Australia, and the U.S., we probably many years away from a world in which supply is the binding constraint.
59. The experience of J-1 visas granted by the U.S. to medical graduates with the clause that they must return home is illustrative of this fact. While specific exemptions are required to avoid such a forced return, the braindrain from India's elite medical schools has been comparable to its elite engineering schools, suggesting that rules for individuals with high human capital, who are also likely to be more politically connected, can be circumvented. The figures are 50 percent for All India Institute of Medical Sciences, New Delhi and 57 percent averaged over the Indian Institute of Technology Bombay, Delhi and Madras. The different studies cited in Khadria (1999) cover different time periods and are hence not strictly comparable.
60. See U.S. GAO (2003) for a discussion of improved performance regarding default rates on federal student loans.

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