DIAPORAS AND ECONOMIC DEVELOPMENT:

STATE OF KNOWLEDGE

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by

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EXECUTIVE SUMMARY

There has been an increasing awareness in the past handful of years that there are several ways in which diasporas can stimulate economic development in their homelands. Still, a focus on their role in economic development is recent and the state of knowledge is far from systematic. This paper reviews the literature and the evidence on diasporas and the major mechanisms or channels whereby they foster economic development.

There is a range of disapora mechanisms identified in the literature. Orozco provides one of the broadest descriptions of diaspora impacts on economic development listing five "Ts" associated with diasporas: tourism, transportation, telecommunications, trade (nostalgic), and the transmission of monetary remittances. Kapur and McHale differentiate between a diaspora's direct and indirect effects, the latter having to do with expatriates' role as intermediaries between the sending and receiving countries. Lucas identifies transnational social networks as, perhaps, the most powerful diaspora mechanism. Johnson and Sedaca categorize diaspora mechanisms under remittances, business investment, investment instruments, and knowledge transfer. Barré et al. offer an overview of highly skilled scientific and technological diasporas.

BRAIN STRAIN AND OPTIMAL BRAIN DRAIN

An estimated one in ten tertiary educated adults born in the developing world resides in the developed world. And an estimated 30 to 50 percent of the developing world's population of persons trained in science and technology live in the developed world. Yet, one recent econometric analysis by Beine et al. supports the theory of optimal brain drain: 21 of 50 countries with tertiary emigration rates over 20 percent, and already low levels of education, would benefit from reduced emigration. At the same time, nine large countries with low levels of adult education and low emigration rates would benefit from increased skilled emigration. However, there is practically no quantitative research on offsetting or diaspora feedback mechanisms that stimulate economic development.

RETURN MIGRATION

The return of expatriates to their home country is widely perceived as being beneficial. For example, favorable impacts have been attributed to returning scientists and engineers in Korea and China. Certainly, skilled returnees offer benefits that are often overlooked when foreign advisors or businesspersons are used in their stead. Some of the factors contributing to a reluctance to return include physical security and long-term commitments in the receiving country. Workers, however, are more likely to return if investment and employment climates improve. Policies that foster strong R&D environments and infrastructure are attractive. Examples include government programs, such as China's industrial parks, that are aimed at attracting back entrepreneurs.

FINANCIAL INSTRUMENTS

Remittances are the best known flow of monies from the diaspora to its homeland, but there are other financial instruments. Foreign currency accounts and bonds are designed to attract migrants' monies. In India and Pakistan interest rates are maintained on these accounts at levels that are higher than on domestic or Euro-currency deposits. Other practices include special duty and tax breaks on equipment and investments made in export processing zones or

underdeveloped regions. Preferential access to capital goods and raw materials may be given to return migrants. Remittance backed bonds have proven to be a viable means of raising funds and are particularly targeted at a diaspora's middle-to-upper income members.

ENTREPRENEURIAL INVESTMENT

Expatriates are in a good position to invest in their homeland because they have specialized knowledge. On the other hand, a lack of capital and managerial expertise in the home country limits the effectiveness of investments. There is a substantial amount of evidence of entrepreneurship and investment by the highly skilled. One of the best known cases in the past decade is that of immigrants in America's high-tech Silicon Valley. Half of the foreign-born entrepreneurs in Silicon Valley have business relations in their countries of origin. Regardless, solid data do not exist on the extent of diaspora business investment, but it is reasonable that expatriates avoid high-risk emerging markets even when they happen to be in an expatriate's homeland.

HOMETOWN ASSOCIATIONS

Hometown associations (HTA) consist of members from the same town or state in the migrant-sending country. The 1990s witnessed an increasing number of HTAs; in line with what some observers assert are a growing number of various types of Transnational Migrant Organizations. The HTAs are best known for sending "collective remittances" primarily for infrastructure and community-building efforts. But a sample of Mexicans in the United States found that not quite 5 percent of Mexicans remit for collective purposes through HTAs. However favorable, HTAs likely have little nationwide impacts.

IMMIGRATION AND TRADE

Research finds that diasporas have a substantial impact on trade flows. So-called nostalgic trade is simply a first-order creation. The trade stimulating function that expatriates play includes that of leader/reputation builder, middleman, or enforcer. Research by the OECD on immigrants in three key receiving nations and their leading source countries found a long-term increase in exports and imports between them over the 1980s. One example of a diaspora's involvement in the homeland is that of the Indian diaspora in the United States and their role in American subcontracting or outsourcing in the information technology (IT) sector.

PROFESSIONAL DIASPORA NETWORKS

The expansion of networks and the transfer of knowledge are often cited as very important outcomes of diasporas. We update research from 1999 on 41 internet diaspora organizations adding 20 additional organizations. The inactivity rate in our sample is 34 percent (21 out of 61), defined either as lack of online information or as a website not updated in the past two years. Of the networks and organizations established with government support, four are either no longer locatable or have not been updated for several years, yielding a failure rate of 27 percent (4 of 15). While the diaspora can offer substantial advantages to the development of its country of origin, the diaspora as a development alternative also has some important limitations.

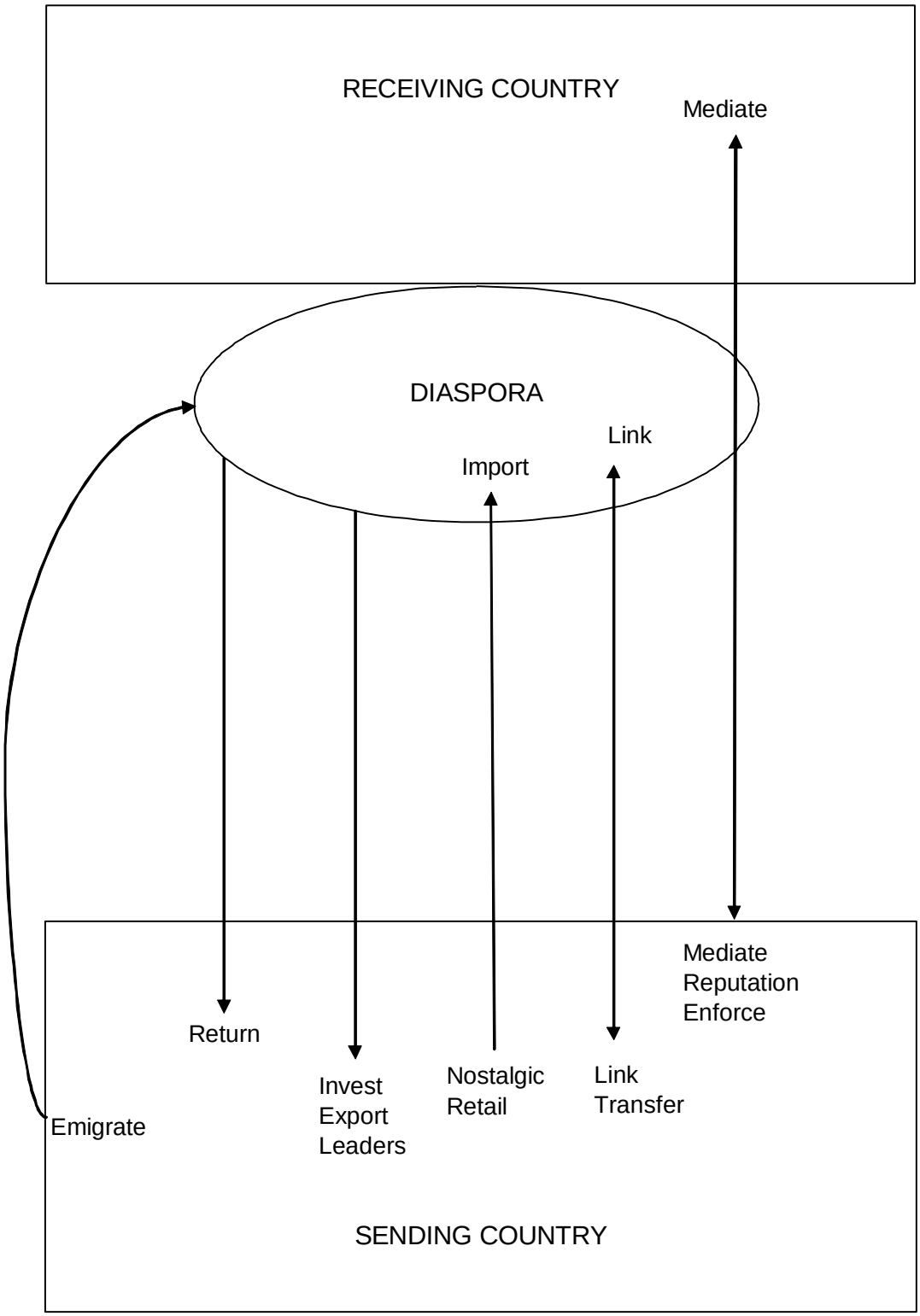
INTRODUCTION

> A diaspora is "that part of a people, dispersed in one or more countries other than its homeland, that maintains a feeling of transnational community among a people and its homeland" (Chander, 2001, p. 1020).
>
> "….the mobilization of knowledge and skills of these expatriate professionals can play an even more effective role [in] facilitating economic development in their countries of origin [than individual or collective remittances]" (Johnson and Sedaca, 2004, p. 73).

There has been an increasing awareness in the past handful of years that there are several ways in which diasporas can stimulate economic development in their homelands. At first, the diasporas were rediscovered as the formerly forgotten actors who are the source of the long-analyzed flow of remittances to families in developing countries (Lowell and de la Garza, 2000). And remittances moved back into the limelight in the latter 1990s as their volume grew into the billions. While one of the most-frequently mentioned diapora impacts, and measuring in the billions, the transmission of remittances is not the focus of this paper. Rather, our interest is in the ways, other than remittances, in which diasporas affect change.

For the renewed focus on remittances has evolved to the closer study of diasporas that has led, in turn, to the recognition of a variety of mechanisms that may favorably stimulate economic development. The new and evolving study of diasporas is progressing beyond their informal and formal role as remitters, to a differentiated study of their many channels of influence. Still, while diasporas have long been studied as independent phenomena, a focus on their role in economic development is recent. Other than the more obvious and general facts of diaspora-generated flows of money and transnational networks, there is little agreed-upon detailing of the mechanisms by which diasporas stimulate development. Figure 1 positions the diaspora between sending and receiving countries and offers a stylized way of thinking about the linkages and mechanisms that foster economic development. However, the state of the literature on diasporas is far from systematic.

Figure 1. Disapora Relations Between Sending and Receiving Countries



Orozco (2003) provides one of the broadest descriptions of diaspora impacts on economic development. He lists five "Ts" associated with diasporas, arguably relevant anywhere in the world, but drawing upon his research in Latin America and the Caribbean:

- Tourism
- Transportation
- Telecommunications
- Trade (nostalgic)
- Transmission of monetary remittances

Each of these is an important avenue of impact in its own right. Tourism is a major money earner in these developing economies and the diaspora is a significant part of the tourist population. In the first place, the regular movement of diaspora for family visits generates domestic buying, but the diaspora also takes vacations in the same way as non-nationals. The diaspora often creates the demand for services that, in turn, are able to attract non-nationals. Transportation is important too, with 70 percent of the passengers on airlines like *Grupo Taca*, servicing Central America, being of Central American origin. The U.S. airlines also benefit from this demand, but so too do the airports, taxis, buses, and all the other elements of the transportation infrastructure. And when not traveling, the volume of transnational phone calls has bolstered the installation of communications infrastructure throughout Latin America. The disapora's ability to talk regularly with family members, or potential business partners, has a further unmeasured but evident impact on the formation of consumer and social values. Of course, a diaspora will retain a taste for the foodstuffs, the household items, etc., that it grew up with. Examples of diaspora-induced imports abound and are on display with a stroll through the aisles of any major U.S. or European grocery store or its ethnic-store counterpart. Larger examples like Mexico's Corona, currently the 9th best selling beer in the United States, represent a cross-over from the diaspora to the native-born domestic marketplace.

Kapur and McHale (2004) differentiate between a diaspora's direct and indirect effects, the latter having to do with expatriates' role as intermediaries between the sending and receiving countries. Indirect impacts through the intermediary role are played out when expatriates are leaders in creating a demand for goods and services or by creating a tangible reputational basis for transactions. Businessmen in the receiving country may have little knowledge about either the existing products or the characteristics of workers in sending countries. Expatriates have demonstration value in that regard; as employees, they signal the potential productivity of others from the same origin. As consumers and business actors, expatriates help map out the potential for businesses opportunities in the sending country. Furthermore, and to the degree to which expatriates are intermediaries on business transactions, they can reduce risk for non-nationals by enforcing transactions. Either expatriates can screen for good actors or they can sanction bad

behaviors by blacklisting. Direct impacts include the first-order impact of expatriates' absence or emigration in the first place and/or the impact of their return. The nature of the migration process may play a key role in such direct impacts, selecting either for highly or less productive individuals with subsequent impacts on the labor market and the downstream indirect effects of the diaspora. The nature and strength of disapora networks are very important in this regard. Kapur and McHale (2004) argue that networks may be most important not for making available otherwise scarce information, but rather for winnowing out important information from signal overload. Further, the winnowing nature of networks may be differentiated in terms of skill levels, local/regional origins, and spatial concentration (think information technology centers or business parks).

Lucas (2004) identifies transnational social networks as, perhaps, the most powerful mechanism of diasporas. He argues that network density, or the frequency and quality of inter-personal relationships, shapes the ability of diasporas to generate the transfer of knowledge and business opportunities. He places additional weight on the skill level or educational characteristics of disapora networks and the potential for different types of relationships and outcomes. An increased opportunity for trade in goods and services is one key result of diasporas. Active networks can facilitate the knowledge of possibilities and, perhaps more importantly and as argued by Kapur and McHale (2004), expatriates establish a reputation for same-origin workers and products. They can be leaders in making opportunities apparent to non-nationals interested in investing or offshoring in the sending country and, in the process, generate trade in goods and services. Expatriates' unique knowledge is seen as important, although here Lucas (2004) seems to have in mind the more traditional idea of the generation of information rather than the winnowing of information overload.

Johnson and Sedaca (2004) provide an in-depth review of the literature along with case study examples of diaspora mechanisms which they categorize under remittances, business investment, investment instruments, and knowledge transfer. Their review of the remittance literature focuses on the cost of remitting and mobilizing remittances towards the use of financial services and enterprise development. They consider the remittances of the organized diaspora or hometown associations. Like other observers, they are optimistic about the role that the diaspora can play in generating trade, especially through their role as "first movers" who catalyze growth opportunities. Expatriates are best situated to stimulate trade through organized diaspora business networks and when involved in promotion activities on the part of government or the private sector. Johnson and Sedaca (2004) go on to discuss specific financial instruments, more typically used by highly skilled expatriates, such as investment funds or sovereign diaspora bonds. Also on the high-skilled end, they discuss the role of professional diaspora networks in fostering knowledge transfer, as well as "virtual training" and migrant return for consultancies. These

authors focus on the mechanisms and exemplars that policymakers might use to benefit from diasporas.

Barré et al. (2004) offer a broad, synthetic overview of the growth of diasporas in the past couple of decades, their various organizational strengths, and their untapped potential as tools that policymakers might use in fostering economic development. Most of their analysis is targeted toward the highly skilled scientific and technological (S&T) diasporas living in the North. A goodly part of their goal is to map the extent of the northward movement which they conclude, based on good evidence, is a "massive phenomenon," with most expatriates involved in research and development activities. Students lead the wave northward, but otherwise detailed statistics are lacking particularly for Africa. While the scale of the emigration loss can collapse the research endeavors of the most at-risk sending nations, S&T diasporas can also generate possibilities for co-development and expanded technical cooperation. Most diasporas are spontaneously or informally organized and there is a role for more government involvement in capitalizing on diasporas whose motivations run beyond the philanthropic and include an economic interest in their homeland. Diaspora organizations typically provide newsletters, assistance/hospitality to members in the receiving country, communications between members on the internet, building collaborative scientific networks, and contributing to the S&T infrastructure of their homeland. Ultimately, the focus here is on the large scientific diaspora and its possible role in the co-development activities of European governments.

So there is clearly a range of disapora mechanisms identified in the literature, but little identification of which mechanisms are most important. Neither does the literature make much of a distinction by expatriates' education, although this is an obvious delineation in much of the literature that either explicitly or implicitly focuses just on low- or high-skilled diaspora mechanisms. For example, Orozco's (2003) list of five "Ts" likely applies to either low- or high-skilled diasporas, but as he presents it, the schema misses mechanisms unique to the highly skilled. Barré et al. (2004), in contrast, explicitly focus just on the highly skilled and on various mechanisms of knowledge transfer and investment. Meyer (2001) argues that transnational networks are the key organizing element of the skilled diasporas' transfer of knowledge to, as well as the creation of investment and employment opportunities in, the homeland. However, as noted by the other authors above, there are a number of such direct mechanisms and also indirect mechanisms like skilled expatriates' role as intermediaries, leaders, or reputation builders (Lucas, 2004; Kapur and McHale, 2004). Indeed, such mechanisms seem primarily if not solely those of the highly skilled expatriates of a nation's diasporas. But, once again, there is little differentiation made in the literature as to which mechanisms are primarily those of low- versus high-skilled diasporas, much less which common mechanisms may exist.

In the balance of this paper, we review the literature and the evidence, which is somewhat thin at this juncture, in the evolution of interest in the topic, on diasporas and the major mechanisms or channels whereby they foster economic development.[1] Because remittances are not the focus of this paper, many of the mechanisms described here are those primarily of highly skilled expatriates. We start with a very brief discussion of the recent literature on "brain drain" or emigration effects because it is undeniably a first-order impact. The related demographic impact of return migration is discussed next, which, while also playing an important role in the case of low-skilled workers, is most studied in the context of highly skilled migrants. Next, we discuss two extra-remitting financial flows, again primarily carried out by skilled expatriates, namely the use of financial instruments and entrepreneurial investment. The role of immigrants in fostering trade is then discussed; and the role of organizations and networks in transferring knowledge.

BRAIN STRAIN AND OPTIMAL BRAIN DRAIN

While highly skilled migrants from the developing world may only form a small portion of all international migrants, the scale of brain drain in the context of the relatively small numbers of highly skilled people in developing countries can be significant. An estimated one in ten tertiary educated adults born in the developing world resided in North America, Australia or Western Europe in 2001 (Lowell et al., 2004). About five percent of the developing world's emigrants with secondary education live in advanced nations. These averages are similar to the emigration rates estimated by other researchers in this field (Adams, 2003; Carrington and Detragiache, 1998). However, these estimates are of all tertiary educated persons and the figures for the upper echelons are yet higher. It is estimated that 30 to 50 percent of the developing world's population of persons trained in science and technology live in the developed world (Meyer & Brown 1999, Barré et al., 2004).

There is a long history of concern with the economic impacts on sending countries. Economic models in the 1960s assumed perfectly competitive markets and no public subsidy for education. Unsurprisingly, later modifications of these models suggested a loss of welfare if externalities led to a loss of scarce skills. If the social marginal product of a highly skilled emigrant is greater than their own personal marginal product, then the remaining population loses out. Source governments lose both their initial educational investment, as well as their downstream taxes (Bhagwati and Hamada, 1976). By the 1990s, endogenous growth theory focused on human capital, albeit its central tenet—that better educated workers increase productivity—has generated some uncertain empirical findings (Pritchett, 2004). However, the theory has the force of a self-evident relationship and one study found that a one-year increase in average education increases national output per worker between 5 and 15 percent (Topel, 1998). Recent research

[1] See also Rauch (2002) for a review of the relationship between trade and "trade diasporas."

corrects for national differences in the quality of education, introduces new variables, and finds that human capital matters (Wossmann, 2002; Mauro, 2003). In turn, an empirical analysis of skilled emigration to Germany finds direct, adverse impacts on Eastern Europe (Straubhaar and Wolburg, 1999).

Somewhat in contrast, a theoretical variant of this line of thought hypothesizes that there is an optimal level of emigration that induces increasing accumulation of human capital (Beine et al., 1999; Mountford, 1997). Because workers can expect higher earnings when they are permitted to seek employment abroad, they are motivated to pursue education. As long as not all of these persons emigrate, which is highly unlikely, there is an increasing level of education or human capital available to developing countries. This, as endogenous growth theory specifies, spurs economic development so that a 'well-controlled restrictive' migration policy is in the best interests of developing countries (Stark, 2003).

One recent econometric analysis supports the theory of optimal brain drain (Beine et al., 2003). It finds that skilled emigration stimulates education, but the impact on economic development is not always favorable. Twenty-one of 50 countries in their sample with tertiary emigration rates over 20 percent, and already low levels of education, would benefit from reduced emigration. Some such countries would benefit from a complete cessation of skilled emigration. At the same time, nine countries with low levels of adult education and low emigration rates would benefit from increased skilled emigration; these tend to be large countries such as China or Brazil.

Commander et al. (2002) introduce other issues in an extensive review of the literature. Economic geographers note that innovation thrives with the agglomeration of specialists and skilled emigration; if isolated from skilled immigration, this may reduce such a concentration. Global cities in both developing and developed countries thrive on sustaining high levels of brain circulation, but outside this context there is a risk of net skill loss through emigration (Findlay, 2001b). Commander et al. (2002) also mention the importance of favorable feedback effects like return migration and diaspora effects such as remittances, technology transfer, and investment. Hence their conclusions are guarded noting on the one hand that "there is clearly a possibility that the brain drain is beneficial to the residents left behind in the home countries," while on the other hand "there are reasons – some of them of recent origin – to be suspicious of that conclusion" (Commander et al., 2002: 27).

RETURN MIGRATION

The return of expatriates to their home country is widely perceived as being beneficial (Ellerman, 2003). Yet, most studies address less-skilled returnees but place little attention on the productivity and selectivity effects of these returnees. There is a need for more research

(Ammassari and Black, 2001). But there may be a clearer case, albeit one still in need of further bolstering, for arguing that skilled returnees positively affect economic development. Favorable impacts have been attributed to returning scientists and engineers in Korea and China (Cervantes and Guellec, 2002). China encouraged its students to seek education abroad and now seeks to reap the rewards of their return. Taiwan's leapfrog advancement is in no small degree attributed to returning scientists and may well have served as one model for India's current information technology boom (Saxenian, 2001).

Skilled returnees' newly accrued skills, taste for innovation, and networks can be advantageous. Johnson and Sedaca (2004) identify three specific advantages, namely that (1) the use of volunteer return of expatriate professionals can free up substantial resources for other development needs; (2) the transfer of knowledge occurs faster because less adjustment time is needed; and (3) expatriates' connections and interest in the homeland foster the creation of networks and follow-up mechanisms. Certainly, skilled returnees offer benefits that are often overlooked when foreign advisors or businesspersons are used in their stead (Haque and Kahn, 1997). By retaining contacts at home and being familiar with the cultures of origin, members of the diaspora most effectively bridge the gap between the developing and the developed worlds.

High rates of return generate the most direct and significant developmental impact. Still, permanent return may be limited if receiving countries' policies do not encourage return. Once again, the U.S. has good data on this that indicate that only 50 percent of overseas graduate students in the U.S. return on average, and just 20 percent of Indian and Chinese students (Johnson and Regets, 1998). What is more, the rate of return has declined over the past decade, despite the growing volume of immigration to the United States. Or consider that the Afghan diaspora in Western countries, an affluent, well-educated segment of society, is reluctant to go back to Afghanistan (Jazayery, 2002). Some of the factors contributing to such reluctance include physical security, long-term commitments in the receiving country such as mortgages, education and job prospects, and fear of being unable to leave. In many instances, however, the emotional attachment to the homeland and the long period of practical inability to return may stimulate many expatriates to return at least temporarily, if not permanently.

Indeed, because temporary return is easier to implement and less dramatic for the returnees, many recent initiatives have focused on temporary return.[2] The International Organization for

[2] For young persons who study abroad, a number of governments, sometimes in partnership with the private sector, fund programs that encourage return (Angel-Urdinola et al., nd). Mexico's Consejo Nacional de Ciencia y Tecnologia program repatriates recent Ph.D. scientists coupled to an initiative that increases the pay of productive academics to, in part, encourage retention. During the 1990s, 2093 researchers were repatriated at a cost of US$56.95 million. Colombia's COLFUTURO program awards stipends to students who return home after completing their studies. These programs are similar to U.S. Fulbright grants awarded to students who return home for at least two years following completion of their degrees.

Migration's (IOM) *Return for Qualified Afghans Program*, co-funded by the European Commission, offers comprehensive packages to qualified Afghans residing in the EU who would like to re-establish residency and address often acute skill shortages. The United Nations Development Program (UNDP) runs a program for the *Transfer of Knowledge through Expatriate Nationals* (TOKTEN) that aims to persuade migrants established abroad to return at least temporarily. Assignments generally last from three weeks to three months, but some expatriates have returned permanently. The *Migration for Development in Africa* (MIDA) program provides a range of activities by which migrants contribute to economic development including using IT to transfer skills, short or sequenced visits, or permanent relocation. Critics of such programs point that, despite being rather expensive to run, programs often offer low compensation packages and involve rather few individuals (Jazayery, 2002). Nonetheless, supporters argue that they generate significant benefits.

While short-term return is certainly easier to commit to, permanent return is by no means inconceivable. The existence of transnational professional networks is deemed crucial for facilitating return (Vertovec, 2002). Half of the foreign-born professionals in America's Silicon Valley report returning to their country of origin at least once a year, many of them more often, which in turn helps explain the substantial exchange of information within immigrant professional networks, including about technology, jobs and business opportunities. In turn, 40 percent of Silicon Valley's foreign-born professionals report that they would consider returning home permanently—a phenomenon positively correlated with age (Saxenian, 2002).

Skilled workers, however, are more likely to return if the investment and employment climates in their home country improve (Ratha, 2003). It has been suggested that for return migration policies to be successful there need to be incentives and the potential for prosperity after return. For example, Thailand and Ireland have reverse brain drain programs that offer generous research funding and monetary incentives, as well as services and assistance to attract medical professionals. Policies that foster strong R&D environments and infrastructure are attractive and, in the case of Korea, once in place, lure back migrants who have been abroad for many years (Cervantes and Guellec, 2002). Other examples include government programs, such as China's industrial parks, that are aimed at attracting back entrepreneurs. It is essential that technological and scientific development be rooted in the local community (Pellegrino, 2002).

A cautionary note, both permanent and temporary return may be politically unpopular either in receiving or sending countries.[3] Many policymakers in receiving countries believe it unethical to

[3] And what if the best emigrants are the least likely to return? There is considerable debate on the nature of return selectivity. Lien (1987) assumes that the quality of a university should signal employers about the quality of workers who graduate from it. But source country employers do not know how to evaluate the quality of their nation's emigrants. Therefore, returnees may be paid less than their full value and the highest ability emigrants face the

encourage return deeming that it is unfair to the migrant, or contrary to integration goals, or difficult to enforce, or a loss in terms of newly accrued skilled workers. Sending countries, at the same time, may see returnees as competitors for the domestic labor market who are especially unwelcome if there is significant unemployment. For example, research suggests that Mexican workers in the U.S. increase the wages of workers remaining in Mexico, so a reasonable assumption is that returnees would increase supply and depress wages (Mishra, 2004).[4] In addition, the return, especially of skilled expatriates with exposure to Western democracies, may well increase the demand for domestic political, legal and economic reforms, thereby presenting challenges, as well as opportunities (Gevorkyan and Grigorian, 2003).

RETURN MIGRATION: A CLOSER LOOK AT SOME EXAMPLES

In most, if not all of the migration literature, there is an implicit assumption that return migration is unconditionally good because it offsets brain drain, but there is no systematic assessment of the economic and developmental impact of large numbers of returnees as have been experienced. There is too little research, however, to conclusively argue that return is unconditionally good; and far too little is known about the various mechanisms that may foster successful development in the wake of returning migrants. A study of the available literature on a few nations illustrates what is known and how much needs yet to be known.

Taiwan is one of many countries that have been making concerted efforts to bring scientists and researchers back home. Its Hsinchu Science-Based Industrial Park, for example, a government-led initiative to attract Taiwanese R&D professionals back in Taiwan, had 2,563 returnees in 1996—a number that more than doubled by 2000, reaching 5,025 (Lucas, 2004). As a result of the active involvement of several government agencies, the return of skilled workers has been a success story in Taiwan. By 2000, over half of the companies in the Hsinchu Industrial Park had been started by expatriates returning from Silicon Valley (Saxenian, 2000). While many question the self-selection bias in such examples of return, it is safe to say that government initiatives do play an important role in attracting (particularly skilled) migrants. (The net productivity gains associated with switching from the private to the public sector, however, remain a gray area.)

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steepest wage penalties and would be least likely to return. This model suggests that return migrants may not be of as high a quality as those who remain abroad. This type of "creaming" of the best who stay abroad means that the effect of return migration is attenuated.

[4] Mishra (2004) finds rather sizable wage elasticities for the cross-border input effects of Mexican workers in Mexico and the United States. Nonetheless, Gevorkyan and Grigorian (2003) argue, based on their review of the research findings of rather small cross-elasticities of different labor groups within the United States, that the impact of returning supply of workers would be rather small. Ultimately, while there is theory and some research on the effect of the absence of skilled workers on domestic markets, there is really nothing in the way on the impact of returnees. And, arguably, only in Ireland has the return of skilled expatriates been substantial enough to notably increase the domestic skilled labor force (Arora and Gambardella, 2004).

The People's Republic of China (PRC) is another global player with a desire for diaspora-induced growth. In the early 1990s, the PRC introduced a package of incentives for people to return and complemented it with penalties for not returning. An evaluation of these sticks and carrots in the early 2000s; however, reveals that the Chinese government's efforts have been rather unsuccessful and have not induced many expatriates to return (Lucas, 2004). Thus, while government incentives may be important, the general political and economic climate in the home country may prove to be the determining force in migrants' decision-making process. Nevertheless, it should be noted that massive out migration from China started only in the 1990s, much later than it did in India or Taiwan. There has been relatively little time for government policies to have a strong effect and for Chinese entrepreneurs to take the initiative to bridge the gap between mainland China and the diaspora (Saxenian, 2000).

Indian entrepreneurs often choose not to go back to their home country because of the heavy administrative burden of doing business there (Saxenian, 1999). This points to another unexplored peculiarity of return—the rates or return for a given country may be substantially different across industries due to the different bureaucratic premium associated with return. Consequently, not only should specific government programs to facilitate return be considered, but also government efforts to reduce red tape. On the other hand, in the 1980s when investment in India was considered risky, it was expatriate Indians in high-level engineering positions in Silicon Valley who convinced the senior management of their companies to invest in India (Saxenian, 2000). Thus, in addition to governments, skilled migrants also act as conduits of transnational linkages between their homeland and country of residence. Finally, research lacks on the relative impact of skilled migrants as expatriate links in transnational networks, or on their direct impact as returnees in the home country.

Ireland too has been widely cited for its policies to encourage return migration. Yet, little is known about the impacts of returning Irish migrants, although some research has paid attention to the individual migrant's experience and their motivation for returning (Corcoran 2002). A survey by Walter et al. (2002) generates a socio-economic profile of Irish-born returning migrants and finds that 31.7 percent of the returning migrants had completed post-secondary education compared with 16.8 percent of non-migrants. Yet, the authors do not even pose the question of whether these migrants have a positive or negative impact on Ireland's overall development. Scattered references to the effect of returning migrants exist mostly in sector-specific literature. For example, Arora and Gambardella (2004) maintain that the return of highly skilled Irish migrants was one of the factors of paramount importance behind the fast and successful development of the Irish IT industry.

While China, India, Mexico and Ireland have all had some degree of success in utilizing their significant expatriate communities, there are numerous examples to the contrary. Armenia and

Afghanistan are two countries that have not been that fortunate. They are similar to the extent that both have extensive, well educated and largely successful diasporas whose potential remains underutilized. What they differ in is the time frame for diaspora involvement – given Afghanistan's recent overthrow of the restrictive Taliban regime; it may be too soon to draw any meaningful conclusions about the involvement of Afghan expatriates.

In Armenia, while many diaspora-led organizations have been established in the years since independence in 1991, most of them have humanitarian objectives rather than development of the private sector (examples include the Fund for Armenian Relief, the United Armenian Fund, the Lincy Foundation and others). According to Freinkman (2002), their disengagement from the daily Armenian political and economic reality precludes their effective contribution to Armenia's development. Indeed, there are no projects analogous to UNDP's TOKTEN programs targeted directly at bringing members of the diaspora back even in a short-term consulting capacity. Gevorkyan and Grigorian (2003) maintain that the barriers to flows of foreign direct investment, imperfect contract enforcement, and the reluctance of the government to change the legal and regulatory regime deter a more active diaspora involvement. Finally, and most likely with the help of the same political leadership, there isn't even the intent to seriously evaluate the achievements of international assistance over the past decade, reinforced by the fact that giving itself is more important than the results (Freinkman, 2002).

The Armenia SME Investment Fund provides a telling example of the difficulty of achieving diaspora engagement in productive investment activity back home. The Fund, approved in June 2002, was conceived as a vehicle for providing otherwise unavailable long-term capital. The International Finance Corporation (IFC) was to provide $5 million to the Fund, and $15 million were to be raised from the Armenian diaspora. According to Johnson and Sedaca (2004), from its inception until the beginning of 2004, the Fund has not been able to raise the required $15 million. This emphasizes the reluctance of the Armenian diaspora to participate in its home country's reconstruction and development, and points to the limitations of international programs that aim to utilize the diaspora for their development objectives.

The Armenian government appears to pay only lip service to the great role that the diaspora can play in the country's transition. Freinkman (2002) argues that the post-communist elite has retained many communist bureaucrats and people suspicious of change, who in turn view the diaspora largely as a source of potential competition, both economically and politically. Yet, expatriate IT professionals are crucial in attracting investment in the Armenian IT industry; 60 percent of the newly established IT enterprises have received support from Armenian IT professionals abroad. Still, the Government's recent ICT Master Strategy does not list the involvement of the diaspora as a condition for the successful development of the Armenian IT

industry (United Nations, 2002). This example highlights both the limiting role of political leadership, albeit a tacit one, and the sectoral segmentation of expatriates' involvement.

In Afghanistan, in contrast, international organizations have rushed to establish programs targeting the diaspora such as IOM's Return of Qualified Afghans (RQA). No assessment of the number of actual returnees or of the effectiveness of the program exists to date. Jazayery (2002) criticizes the RQA program for the low salaries offered to returning expatriates, but fails to provide any empirical evidence as to whether the salaries are really too low, much less the number of expatriates who have returned or the number of those willing but unable to return for financial reasons. According to IOM statistics, of the 554 applicants since 2001, 497 (89.7%) have been placed with an employer, 20 (3.6%) are still in process, and 37 offers (6.7%) have been rejected by the candidate. While the placement rate is rather high, the actual number of applicants is insignificant when compared to the estimate of one million middle-class Afghan expatriates around the world. In addition, no evaluation of the economic impact of these returnees has been conducted to date.

Indeed, Lucas (2004) concludes that, at a general and broad level, the efficacy of government efforts to encourage return has simply not been studied. Clearly, there are problems that are often overlooked. Resentment at home toward those who return from abroad is an often-cited phenomenon in the literature (Saxenian, 1999; Lucas, 2002; Gevorkyan and Grigorian, 2003).[5] And technology transfers from the diaspora depend primarily on the state of the home economy rather than on the skill level or geographical location of the diaspora community (Lucas, 2004). Rather obviously, infrastructure, the business climate, and prevailing political and legal rights strongly condition the desirability of return and the possibility of success. For example, Lucas (2004) asserts that China and India have gained considerably less from their respective diasporas than have more advanced countries such as Ireland, Israel, Korea and Taiwan.
On the other hand, China has attracted a lot more foreign direct investment (FDI) of ethnic origin than India. During the 1990s, 48 percent of the $318-billion FDI stream going into China came from enterprises funded by entrepreneurs from Hong Kong, Macao and Taiwan, while during the same period only 15 percent of the $17-billion FDI going into India was by non-resident Indians (Lucas, 2004). Diasporas impact their countries through various channels and a meaningful comparison can be attained only if a thorough analysis is undertaken of particular sectors and the receptivity of the host country. There is a need for a great deal of research before conclusive arguments can be made for or against encouraging return programs (particularly government-sponsored).

[5] To our knowledge, only Ireland has made an explicit effort to assert that the Irish abroad are an integral part of Ireland and that identity rather than territorial residence is the determining factor of Irish nationality (Cowen, 2002). One can argue that the lack of ambiguity as to the status of the Irish who reside outside of Ireland, alongside the active government role in promoting return, has had a positive influence on many migrants' decision to return.

FINANCIAL INSTRUMENTS

Remittances are the best known flow of monies from the diaspora to its homeland, but there are other instruments that can capture some of these monies as well. Foreign currency accounts and bonds are designed to specifically to attract the migrants' monies. Some Asian countries offer migrant workers foreign-currency accounts in domestic banks that are not subject to foreign exchange regulations (Puri and Ritzema, 1999). In India and Pakistan interest rates on these accounts are maintained at levels that are higher than on domestic or Euro-currency deposits. Premium exchange rates may be offered. Foreign currency bonds have been around at least for as long as remittance bonds, but once again are targeted to migrant workers abroad. The bonds are denominated in a foreign currency and bearer certificates are issued, permitting the holder to redeem them for cash anonymously. High interest rates and premium exchange rates are given. These schemes are thought to attract remittances into formal banking, although they may be most attractive to professional and higher-income migrants.

Another set of practices aims to influence how remittances are used and, like the approaches just discussed, targets the individual migrant / remitter. Primarily, such programs are oriented toward stimulating migrants abroad to spend remittances on job-creating investments, or to counsel or train return migrants in ways that increase their contributions to their country of origin (Puri and Ritzema, 1999). The former programs include reduced tariffs given to migrants abroad (or return migrants) on the importation of machinery and equipment to establish manufacturing enterprises. Variations on the theme include special duty and tax breaks on equipment and investments made in export processing zones or underdeveloped regions. Preferential access to capital goods and raw materials may be given to return migrants.

Remittance backed bonds have proven to be a viable means of raising funds and are particularly targeted at a diaspora's middle-to-upper income members. Expatriate communities can provide a viable alternative to borrowing in international capital markets. Traditionally, the securitization of loans has been backed by hard currency receivables such as oil revenue or other export commodities. Given today's volume, remittance flows can be used as a security instrument that permits impoverished countries to upgrade their creditworthiness (Guarnizo, 2003). Still, for the period 1987-1999, only 5 percent of the total issuance of securitized debt has been backed by remittances (Ketkar and Ratha, 2001). But if this figure is rather small, it is not insignificant in countries that do not have a big export base, and it is moreover likely to increase as the flow of remittances increases.

There have been a number of successful remittance-backed bond offerings (Chander, 2001). Some of the first bonds were the State of Israel Bonds issued in 1951. They have had a rather

positive track record; Israel has raised almost $18 billion in this fashion. Other countries have issued similar bonds as well: the Chinese Liberty Bonds sold through Chinese Benevolent Associations in the United States in the 1930s, or bonds sold through the Japanese Patriotic Bond Subscription Society. There have been a series of bond offerings throughout Latin America (UNDP, 2003). Banamex or Banco Nacional de Mexico issued a $300-million remittance-backed certificate in 1998, Banco Cuscatlan of El Slavador issued remittance-backed certificates in November 1999, Banco do Brasil issued $300 million worth of bonds in 2001, and Peru's Banco de Crédito del Perú raised $100 million in 2001. India is widely recognized as a leader. The India Development Bonds issued in 1991 raised $2 billion in 1992-93 alone. The government issued the Resurgent India Bonds in 1998 for $4.2 billion and the India Millennium Bonds in 2000 for $5.51 billion (High Level Committee on the Indian Diaspora, 2001).

While the actual percentage of investors who are expatriates is not always known, at least in the case of the Indian bonds, we know that the U.S. and other expatriate communities were directly marketed. And while the rationale for issuing these bonds is fairly straight-forward, it is less clear why the diaspora is willing to invest at lower rates of return and higher risk. It may be that the diaspora has a better and more objective assessment of the risks of investing in the homeland than others. More likely, however, it is the emotional or altruistic ties of the diaspora that generate such "irrational" behavior and that other investors will avoid such investments. Conversely, the bonds are issued with a "diasporic or patriotic discount" (Chander, 2001; Gevorkyan and Grigorian, 2003). In effect, diaspora bonds may be limited as an option only to large countries with substantial expatriates abroad. See Ketkar and Rath (2001) for a discussion of best practices.

ENTREPRENEURIAL INVESTMENT

On the one hand, expatriates are in a good position to invest in their homeland because they have specialized knowledge and they may have savings from their generally higher earnings in an industrial economy. On the other hand, a lack of capital and managerial expertise in the home country limit the effectiveness of investments in business creation and can undermine government programs intended to stimulate diaspora investment. Nonetheless, there is some evidence that expatriates do invest in businesses in their homeland and that their leadership can generate a more favorable climate for others to invest as well. Transnational activity is not necessarily dominated by multinational corporations and may be substantially helped by the interests, activities and knowledge of expatriates.

There is some disagreement about whether or not low- or high-skilled emigrants are most likely to be involved in business ventures in sending countries. Arguably, transnational entrepreneurship is not reserved for their more educated compatriots. Indeed, well educated

emigrants may be more likely to capitalize on their skills to pursue upward mobility in well-paying jobs in the receiving country. In turn, educated expatriates may be more likely to make philanthropic contributions to their hometown or university (High Level Committee on the Indian Diaspora, 2001). But for the unskilled or semi-skilled, migrant entrepreneurship can provide an alternative to low-paid labor. Business income can provide an income for family members and for migrants who return home and, thus, the choice to invest in businesses may be more important for low-skilled and/or temporary migrants (Guarnizo, 2003).

There is, however, a substantial amount of evidence of entrepreneurship and investment by the highly skilled. One of the best known cases in the past decade is that of immigrants in America's high-tech Silicon Valley. Saxenian's (2002) survey finds that 73 percent of entrepreneurs in Silicon Valley report being likely to do business in their home country. In fact, half of the foreign-born entrepreneurs in Silicon Valley have business relations in their countries of origin, mostly concentrated in rapidly expanding urban centers. On the investment side, 18 percent of the surveyed foreign-born professionals in Silicon Valley have invested or currently invest in start-ups or venture funds in their homeland, dominated by Indians (22 percent), followed by Taiwanese (17 percent) and then by mainland Chinese (10 percent).

Regardless, solid data do not exist on the extent of diaspora business investment, much less on the propensity to invest according to expatriates' skill level. One survey in the United States found notable variation in expressions of interest in investment—45 percent of the Armenians, 18 percent of Cubans, 22 percent of Palestinians, and 23 percent of Iranians expressed no interest in investing in their homeland (Gillespie et al., 1999; Gevorkyan and Grigorian, 2003).[6] Country-specific factors may account for a part of this difference along with issues such as (perceived) lack of investment opportunities, undeveloped infrastructure, and high risk. Even a devoted diaspora group is not ready to throw away its money in vain or out of pure love for the homeland. An investor's decisions are typically made by the soundness of an investment and it is reasonable to avoid high-risk emerging markets, even when these markets happen to be in his/her homeland.

One of the main investment challenges is rooted in often unstable political and economic climates in the home country, which, along with the lack of sufficient protection mechanisms, does not often induce migrants to invest. So the investment context may be a deciding factor in the diaspora's investment activities in their homeland. In fact, the institutional mechanisms that enable and stimulate expatriates to invest may be more significant than the availability of a large and well-off expatriate network. This is why generating interest in the homeland and momentum

[6] This sample by Gillespie et al. (1999) is problematic both because its sampling frame is based on ethnic organization membership lists and because of low response rates. It is, nonetheless, one of the only comparative and statistical studies of expatriate investment.

for investment among diaspora communities are of particular significance for engaging a broad base of expatriates. Expatriate investors can attract other investors by taking a leadership role when others are reluctant to invest. This is the role of the "first movers" who succeed and create a climate of confidence that invites others to invest (Gevorkyan and Grigorian, 2003).

Governments may have a difficult time stimulating diaspora involvement, even though they play a central role in establishing a favorable investment climate. Among low-skill expatriates Puri and Ritzema (1999) argue that a more realistic alternative to trying to "incubate" entrepreneurs is to develop financial intermediaries such as microfinance institutions that can collect and channel remittances and capital into existing successful enterprises. Of course, much rides on the stability of microfinance institutions. On the high-skilled end, one alternative is to establish grassroots organizations within the diaspora itself to promote entrepreneurship. An example is the Indian TiE, a professional network whose mission is to foster entrepreneurship through venture capital funding (High Level Committee on the Indian Diaspora, 2001). Based in the U.S. and with local chapters in India, it is better positioned to selectively support entrepreneurial activity among the diaspora than a government agency.

HOMETOWN ASSOCIATIONS

Hometown associations (HTA) consist of members from the same town or state in the migrant-sending country. Their first purpose is typically to organize soccer clubs or host dinners, dances, and other social events where people can mingle; and the membership of such organizations tends to draw on migrants with less than college education. The 1990s witnessed an increasing number of HTAs; in line with what some observers assert are a growing number of various types of Transnational Migrant Organizations (Levitt, 1997). The HTAs are best known for sending "collective remittances" to their home communities primarily for infrastructure and community-building efforts (Lowell and de la Garza, 2000; Orozco and Lapointe, 2004). For example, the Salvadoran "United Community of Chinameca," founded after the peace accords of 1992, discovered that their war-ravaged hometown needed reconstruction and they began with small donations to the local parish. Their first largesse was a grant for $5,000 to build a school. After that contribution the association constructed a water septic tank worth $10,000. Later they built a Red Cross clinic at a cost of $43,000, and bought an ambulance worth $32,000 in cooperation with a sister organization in Los Angeles.

While HTAs or similar organizations exist in all receiving countries (Puri and Ritzema, 1999), Mexican hometown associations have the longest history and are the best known of the HTAs. Motivated by both the initiatives of local immigrant leaders and the Mexican government through its consular offices, a large number of small hometown associations have emerged in recent years. It is estimated that there are more than 2,000 Mexican-based HTAs operating today

in the United States. Job-generating ventures and collective investment in microenterprises occurs to a lesser degree, although matching funds by the Mexican government have received international attention. Nevertheless, recent research finds that productively invested remittances of the HTA sort foster positive economic development, while remittances that typically flow through family members increase inflation and may reinforce dependency on migration and remittances (Hinojosa-Ojeda, 2003). Unfortunately, little is really known about HTAs as organizations or about the macroeconomic impact of their economic remittances or job-creation efforts. But a sample of Mexicans in the United States found that just 31 percent remitted for community projects; and just 14 percent of these reported making community remittances through organizations like and HTA (Cortina and de la Garza, 2004). That means that not quite 5 percent of Mexicans remit for collective purposes through HTAs. Hence, however favorable the impact of HTAs may be, it is likely to be small.

IMMIGRATION AND TRADE

The role of immigrants in stimulating international trade has received research attention with most of it indicating a substantial impact on trade flows. In the first place, immigrants can stimulate imports to their new country of residence by purchasing goods from their homeland. So-called nostalgic trade is simply a first-order creation. Service imports may be stimulated when employees of receiving-country corporations demonstrate that they and, by extension or reputation, their homeland compatriots have relevant skills. Immigrants can, at the same time, foster export opportunities to their homelands through the creation of export-businesses and/or by helping receiving-country businesses identify and target exporting markets. The functions that expatriates play are variously referred to as reputational, middlemen, or enforcers; or a set of functions that reduce transaction costs (Lucas, 2004; Saxenian, 1999).

A few econometric models support the expectation that immigrant ties are associated with trade ties between countries (see Rauch, 2003). Rauch and Trindade (2002) estimate a global bilateral trade model for 1980 and 1990 with the cross-product of population shares in pairs of trading countries. They argue, and their findings support, the expectation that immigrants' role as information intermediaries is more important in heterogeneous trade flows, while their role as enforcers is more important in trade of homogenous goods. The magnitude of estimated effects, however, is large enough to lead to speculation that they are capturing other unmeasured effects as well (Lucas, 2004). Head and Reis (1998) estimate the impact of immigration on Canadian trade, finding that a 10-percent increase in the number of immigrants increases exports by 1 percent and imports by 3 percent. They also conclude that highly skilled migrants have a greater trade impact than low-skilled migrants. Gould (1994) also finds that the stock of the immigrants increases U.S. trade, although more so for exports than imports. While not finding a correlation between immigration and year-to-year changes in exports or imports, research by the OECD on

immigrants in three key receiving nations and their leading source countries found a long-term increase in exports and imports between them over the 1980s (Stalker, 2000).

One example of a diaspora's involvement in the homeland is that of the Indian diaspora in the United States. American subcontracting or outsourcing in the information technology sector has helped to bring multinational companies to India to engage in collaborative projects—a type of involvement which is commensurate with the professional status of the diaspora itself. While the Indian diaspora might not be investing directly in India, it has indirectly brought important investments to India, including in R&D with companies such as Intel, Oracle, Texas Instruments, Sun Microsystems and IBM (High Level Committee on the Indian Diaspora, 2001). In the long run, this may be more significant from a developmental perspective than direct diaspora investment because creating high-skilled jobs at home helps to retain a high-skilled workforce that is otherwise likely to immigrate. The emergence and growth of the Indian software industry has become "the basis for the growth of a new entrepreneurial model, which has in turn had spillovers for related activities, such as business services and even some types of R&D tasks" (Arora and Gambardella, 2004, p. 21). The success of an export-oriented industry such as IT creates domestic confidence as well. In Ireland, for example, this was confidence that Irish high tech firms can be globally competitive, and in India it was confidence that wealth can be created honestly and legally.

Ironically, during the recent "jobless" recovery in the United States, immigrants have been vilified by some not as the beneficial locus of economic development abroad, but rather as first leaders in moving U.S. jobs offshore. In particular, the evolution of IT is often compared to world changing technologies like railways or automobiles. But while these, and other technologies, experienced rapid growth, they did not require the high level of specialized training and education seen in IT. And more recent innovations in, say, aerospace or biology have not generated the same amount of labor demand. In recent years, the IT sector has undergone significant restructuring. Observers of the business cycle believe that IT is becoming a commodity with a corresponding switch in labor demand for software and services.

For IT workers, the biggest development during the recession has been the acceleration of the trend toward the outsourcing of IT services. The U.S. Department of Commerce reports that IT transactions grew from under $300 million in 1995 to over $1.2 billion in 2001. McKinsey & Company estimate that projected software and service exports to the U.S. in 2003-04 are expected to come in at $8.5 billion just from India alone. And a well known Gartner, Inc. study claims that 10 percent of all U.S. professional jobs in IT services firms will be transferred overseas by the end of 2004, along with five percent of the IT positions in other types of organizations. And "information services provided overseas to U.S. businesses are expected to

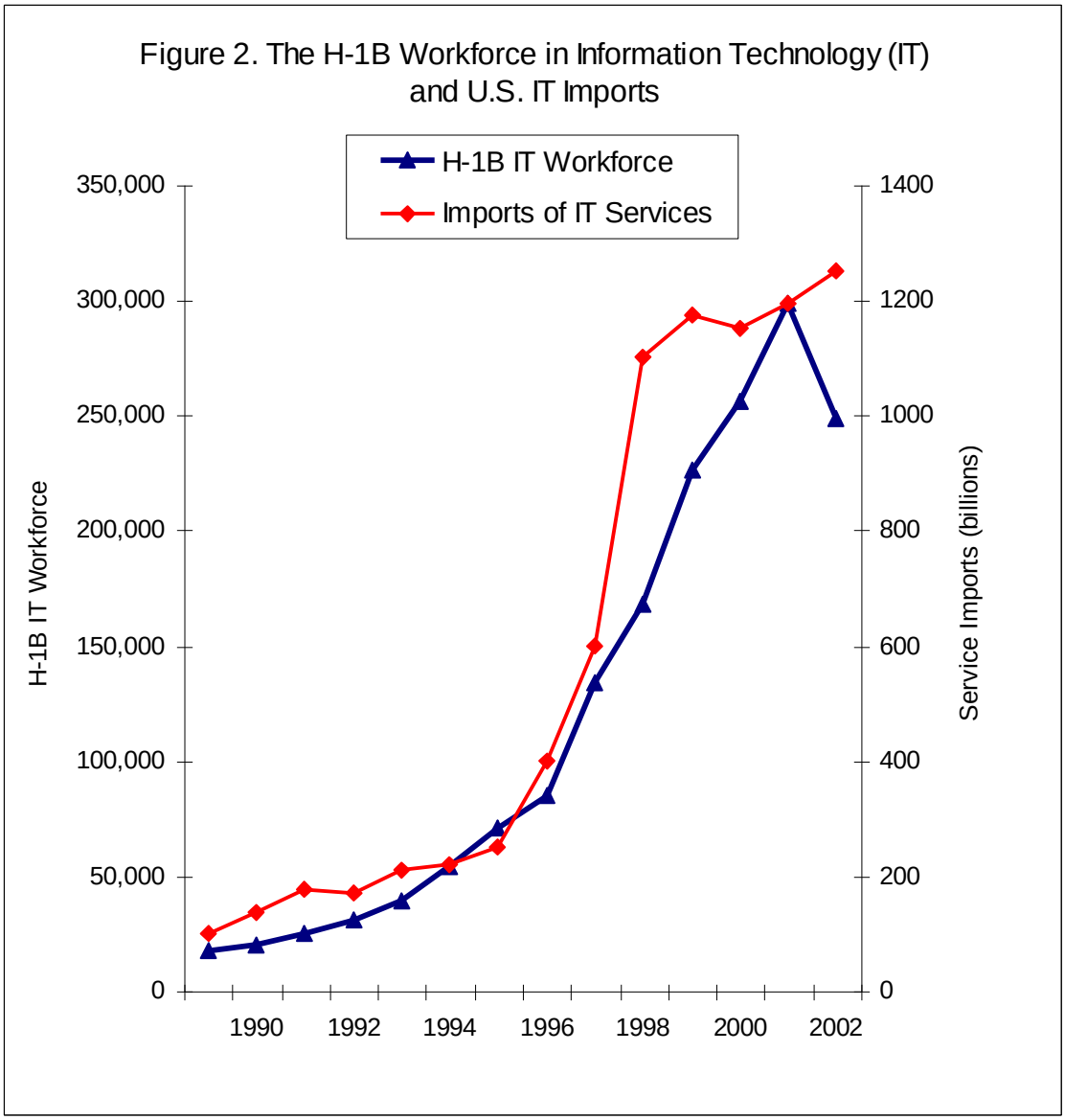
double in 2004 to $16 billion and reach $46 billion by 2007" (U.S. News & World Report, 2004).

America has led the competition for skilled workers on the international IT market and, perhaps, the best-known work program around the world is the H-1B that has been largely a visa for information technology workers. Originally, the H-1B visa had no numerical limitations; this changed in 1990 when a yearly numerical cap of 65,000 was imposed. But as employer petitions for H-1B workers increased rapidly in the later 1990s, Congress legislated temporary increases in the cap and the numbers issued grew from 60,000 in 1996 to 191,000 at the peak in 2001 (Lowell, 2004). The majority of H-1Bs at the peak of the program came from India and almost all of these worked in information technology.

Figure 2 plots the growth in the H-1B workforce in information technology, as well as the volume of U.S. imports of IT services.[7] The relationship between the pattern of growth of the two time series does not lend itself to speculation as to which precedes which, i.e., it is not clear that the booming number of H-1B workers in the United States proceeded a subsequent growth in the importing of IT services (or visa versa). However, it is fairly apparent that the employment of H-1Bs in the United States and the U.S. import of IT services are highly correlated, both increasing in parallel. In fact, it is somewhat beside the point to argue that immigration precedes imports (outsourcing) as there are so many other impinging factors such as product cycle, marketing strategies, and immigration polices. But it appears to be the case that there is good reason to expect that trade and immigration can be complementary phenomena. The U.S. IT industry and the H-1B migration program are one good example.[8]

[7] The H-1B workforce is estimated by updating the figures and using the methods described in Lowell (2000), while the IT portion of that workforce is estimated by interpolating the growth of visas issued to Indian H-1Bs between 1989 and 2002 samples of the H-1B workforce. The IT import data are from Private Services Trade by Type, 1986-2001, Bureau of Economic Analysis, U.S. Department of Commerce (TAB02 at http://www.bea.gov/bea/di/1001serv/ntlserv.htm).

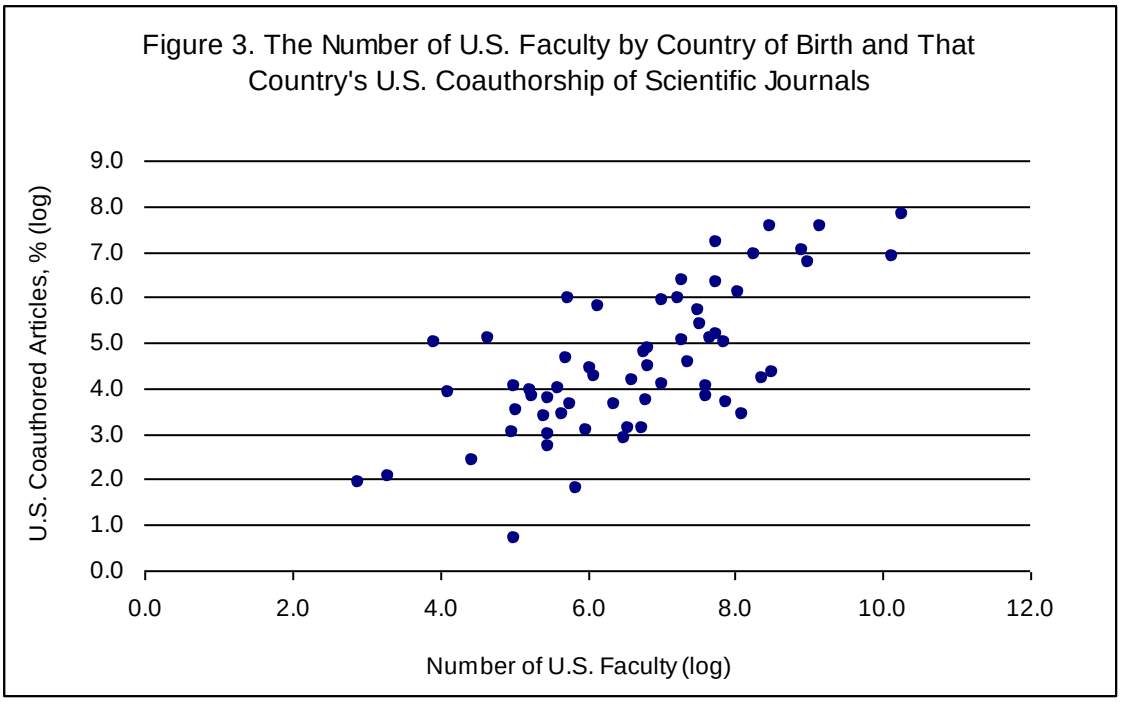
[8] Nonetheless, Kapur (2002) argues that, perhaps, most of India's success in the growth of its software industry is endogenous with its diaspora being simply an additional, facilitating element.



PROFESSIONAL DIASPORA NETWORKS

The expansion of networks and the transfer of knowledge are often cited as very important outcomes of diasporas. The transnational sharing of knowledge is captured, in part, in research by Agrawal et al. (2003) who find that patent citations are most likely to be filed not only in an inventor's country of current residence (U.S. and Canada), but also in their prior place of residence. So it may be that knowledge is fairly well located geographically, but that the migration of inventors arbitrages their knowledge across geographic areas, at least in North America. Certainly, it seems common sense that knowledge would flow across international boundaries along with networks. Regets (2001), for example, finds a strong positive correlation between the numbers of foreign students awarded Ph.D.s in the U.S. and the degree to which

scientific articles authored in their sending countries include a U.S. author. Foreign students in the United States, however, are at least one step removed from active scientific authorship and it difficult to interpret this correlation. A somewhat cleaner relationship is shown in Figure 3 that plots the relationship between the country of birth of U.S. college faculty and the percent of scientific articles originating in their countries that have U.S. co-authorship. This, too, is a strong, positive correlation (r = 0.69) and provides some intuitive and quantitative support for the observation that diaspora networks can stimulate collaboration and the exchange of knowledge.



There are formal embodiments of diasporas that make these linkages, potentially, more concrete. While diaspora organizations have long served to help newcomers adjust to the receiving society, the development of modern communications and the internet have led to border-spanning organizations that include information sharing as one of their central missions. In a well-known and often cited report, Meyer and Brown (1999) identify 41 internet-based expatriate networks. These networks are often, at least originally, organizations that serve to sustain national identity. They are also seen as modern hubs and conduits for the circulation of knowledge, capital, skills, and information (Vertovec, 2002). Using the internet allows for the transfer of skills and knowledge remotely and holds the promise of increasing the transfer of business, manufacturing, and finance opportunities (Johnson and Sedaca, 2004).

Brown (2000) calls these networks "Expatriate Knowledge Networks" and identifies five distinct categories among them: student/scholarly networks, local associations of skilled expatriates, expert assistance such as the UNDP's program for expatriate nationals (TOKTEN), developing

intellectual/scientific diaspora networks, and intellectual/scientific diaspora networks. The distinction between some of these categories is blurry, and a network may exhibit characteristics of more than one category. Further, networks are often formed along ethnic or cultural lines and/or specific emigrant sending regions. Whatever their scope and profile, the sheer number and diversity of diaspora groups seemingly attests to their increasing importance as nodes of activity connected to their homeland.[9]

Appendix Table 1 updates Meyer and Brown's (1999) list of 41 web-based diaspora networks and adds 20 additional organization, as well as assesses the level of activity and involvement that a particular organization or network maintains. Most of the literature examining diaspora-related issues simply cites Meyer and Brown's study as an example of the great role played by the development of modern communication technologies, most prominently the internet, in fostering linkages between expatriates and the homeland. Further examination of these networks, however, gives some reason for pause.

As Appendix Table 1 shows, since 1999, only 5 new networks—9 if counting the ones established in 1999—have been established, which does not suggest a proliferation of expatriate organizations and communities. And of those networks listed, 20 percent (12 out of the 61) do not have a website, suggesting a high rate of underutilization of available technology. In addition, many diaspora organizations are formed sporadically or on an ad-hoc basis. The inactivity rate in our sample is 34 percent (21 out of 61), defined either as lack of a website or any online information about the network, or as a website not updated in the past two years. Only 44 percent (27 out of 61) of the networks we examined are updated regularly, while just 56 percent (34 out of 61) have been updated recently within the last year. About 25 percent (15 out of 61) of the diaspora organizations are either government sponsored or have been established with government help, indicating a strong formal interest in active dialogue with diasporas.[10] Of the networks and organizations established with government support, four are either no longer locatable or have not been updated for several years, yielding a failure rate of 27 percent (4 out of 15).

The way in which these samples have been collected should give most researchers pause in strongly touting them as evidence of success, although it should be admitted that neither is such a

[9] There are several examples of such networks in India, such as: the Federation of Kerala Associations in North America (FOKANA), the Federation of Gujarati Associations in North America (FOGANA), the Tegulu Association of North America (TANA), and the Bengali Association of North America (BANA) (High Level Committee on the Indian Diaspora, 2001). Still, professional expatriate organizations tend to be more inclusive and heterogeneous such as the IndUS Entrepreneurs (TIE), the Indo-American Chamber of Commerce, and the Network of Indian Professionals (Netsap). There are professionally specific magazines targeting a concrete diaspora group. Examples include SiliconIndia and TechMantra—magazines targeting explicitly the high-tech Indian community.
[10] This includes all the TOKTEN programs, which may be skewing the sample somewhat.

sample conclusive evidence of a lack of success. Nevertheless, it appears that very few diaspora networks remain stable and manage to serve the needs of their membership or the home country for long periods of time. However reasonable it may be for optimism when evidence for diaspora networks is confirmed, especially as it corroborates loosely framed expectations about transnational activities, the evidence on their activity does not inspire the same confidence as to their effectiveness or impact.

While the diaspora can offer substantial advantages to the development of its country of origin, the diaspora as a development alternative also has some important limitations. Institutional capacity is one of them: mechanisms for transferring knowledge and skills require often significant technical and financial resources (Johnson and Sedaca, 2004). In addition, the usefulness of diaspora volunteers is dependent upon their ability and willingness to provide their services, especially on a volunteer basis.[11] And some influential diaspora groups choose to contribute in a way that does not necessarily benefit the country as a whole but rather benefits smaller segments of society. One example is the IIT (India Institute of Technology) alumni associations of the Indian diaspora in the U.S. that donate predominantly to their universities rather than to education at large (High Level Committee on the Indian Diaspora, 2001). The extent to which a diaspora group chooses to be involved in its country of origin also depends on the infrastructure and institutions in the homeland—these are the prerequisite for successful investment, entrepreneurial activity, and even philanthropy.[12] Yet another limitation results from ineffective follow-up mechanisms (Gevorkyan and Grigorian, 2003). While providing assistance and money to the country of origin is important, it is equally important that this assistance be utilized properly.

Striking the right balance between a sending country's engagement in making use of its expatriate communities and the wishes and needs of such communities has yet to be found. Government mechanisms such as the South African Network of Skills Abroad (SANSA) are criticized by expatriates as being foreign to their needs and ill positioned to make good use of their resources (Goodman, 2003). Others, on the other hand, such as the Moroccan Association of Researchers and Scholars Abroad (MARS) find it difficult to realize their potential in the absence of government or institutional support (Goodman, 2003). The High Level Committee on the Indian Diaspora (2001) recommends the establishment of a single point-of-contact agency to facilitate communications between the diaspora and its country of origin. However, even such an

[11] It is another question all together as to whether or not the second-generation of an expatriate community will continue to have the same impact on its "home" country as the first (Gundel, 2002). As the strength of ties to the homeland diminish with successive generations born abroad, a diaspora is likely to play a diminishing role in the development of its homeland, especially in countries in which return has been practically impossible for many years due to civil unrest and strife.

[12] The Indian diaspora, for example, has expressed its desire to become more involved once "the right mechanisms are put in place" (High Level Committee on the Indian Diaspora, 2001).

evidently simple idea must deal, especially in the case of India, with a diasporas that is found in many different places of the world with diverse needs and interests. It might be just as easy and perhaps more effective to entrust a country's diplomatic missions abroad with such duties.

CONCLUSIONS

Diasporas generate economic development in their homeland through various mechanisms. At this point in time, most of the support for that assertion lies in a handful of case studies, primarily in Asia and more particularly in India, Taiwan, China, and Korea. These case studies document the special value of returning migrants who bring with them newly acquired skills, capital, and relationships with persons in developed nations. Other case studies demonstrate that, along with an increase in diasporas abroad, there is an increase in return tourism, expenditures on transportation and telecommunications, and trade. Beyond case studies are a handful of papers that find econometric evidence of the presence of immigrants in receiving countries and increased trade with sending countries. There are also a couple of persuasive quantitative associations made between transnational networks and patent citations, and scientific co-authorship. Taken together, these diverse sorts of evidence lend credence to a pro-disapora perspective on economic development.

Nonetheless, there remain significant issues yet to be resolved. In the first place, theory on diaspora effects is still somewhat rudimentary, even if particular hypotheses are fairly well motivated. More to the point, the several channels of mechanisms by which diasporas foster development are not yet catalogued in a systematic fashion. Practically all of the literature discourses on the subject in the fashion of a laundry list, as this paper has also done. There are at least two dimensions that need further clarification. First, there are some common mechanisms, but the prevailing skill level of a diaspora generates different types of feedback mechanisms. It is rather obvious that either low- or high-skilled members of a diaspora may engage in entrepreneurial activities; yet, it has been argued that low-skilled expatriates may have a greater propensity for entrepreneurship. At the same time, the nature of the activities engaged in by highly skilled expatriates may generate more capital-intensive enterprises with potentially greater returns to the sending country. And while expatriates of any skill level join organizations that carry out philanthropic activities back to the homeland, the knowledge transferred by highly skilled expatriate organizations hold the promise of fostering technological innovations. Much of the available literature either implicitly ignores these distinctions or explicitly chooses to focus on either end of the skill continuum. Beyond differentiating impacts by expatriate skill levels, the study of diasporas would benefit from a listing of hypotheses on specific relationships.

Second, policymakers and practitioners are, at times, wildly optimistic about diasporas as one more element in the relationship between migration and development. Nevertheless, the

available evidence on the actual impact of diasporas is rather thin. Assertions to the contrary, this review has included fewer than half-a-dozen econometric tests of the relationship between diasporas and, for example, trade. Important as that may be, there is a dearth of quantitative analysis of the impact of diasporas on other aspects of development such as technological innovation, entrepreneurial activity, etc. The most persuasive evidence on such impacts rests primarily on laudatory press reports on, for example, returning migrants and the growth of government-sponsored industrial parks. The few existing case studies, say of Indian IT workers in Silicon Valley, are persuasive but lack sufficient and timely fieldwork to establish a pattern of change that is significant enough to alter trends set in motion by larger, structural forces in given nations and the global community. It is a truism that too many research conclusions end with a call for more research. However, in the case of diasporas and economic development, there is a need to move the field inquiry beyond assertions based on limited information to a body of research that both replicates and expands upon what we know.

REFERENCES

Agrawal, A., I. Cockburn and J. McHale, 2003, "Gone But Not Forgotten: Labor Flows, Knowledge Spillovers and Enduring Social Capital", (National Bureau of Economic Research Working Paper No. 9950)

Arora, Asish and Alfonso Gambardella (2004). "The Globalization of the Software Industry: Perspectives and Opportunities for Developed and Developing Countries." *NBER Working Paper No. w10538*, Cambridge, MA: National Bureau of Economic Research, June 2004.

Barré, Rémi, Valéria Hernandez, Jean-Baptiste Meyer and Dominique Vinck (2003). "Scientific Diasporas: How Can Developing Countries Benefit from Their Expatriate Scientists and Engineers?" Paris, France: Institut de Recherche pour le Développement, IRD Editions.

Beine, Michel, Frederic Docquier, and Hillel Rapoport (1999). "Brain Drain and Economic Growth: Theory and Evidence," Seminar par l' Axe Ethique et development durable du Centre d'Economie et d'Ethique pour l'Environnment et le Developpement, Universite de Versailles St Quentin en Yvelines (http://www.cybercable.tm.fr/~jarmah/public_html/Hrapoport11.htm).

Beine M, Docquier F and H. Rapport H (2003). 'Brain Drain and LDCs' Growth: Winners and Losers' IZA Discussion Paper 819 July; ftp://repec.iza.org/RePEc/Discussionpaper/dp819.pdf

Brown, Mercy (2000). "Using the Intellectual Diaspora to Reverse the Brain Drain: Some Useful Examples," Presented at the Regional Conference on Brain Drain and Capacity Building in Africa, Addis Ababa, South Africa: Economic Commission for Africa, 22-24 February, 2000.

Chander, Anupam (2001). "Diaspora Bonds," *New York University Law Review* 76: 1005-1099.

Cortina, Jeronimo and Rodolfo de la Garza (2004). "Immigrant Remitting Behavior and Its Developmental Consequences for Mexico and El Salvador," Working Paper, New York, NY: Tomás Rivera Policy Institute, Columbia University.

Gevorkyan, Aleksandr V. and David A. Grigorian (2003). "Armenia and Its Diaspora: Is There a Scope for a Stronger Economic Link?" *Armenian Forum* 3 (2): 1-35.

Gillespie, Kate, Liesl Riddle, Edward Sayre, and David Sturges (1999). "Diaspora Interest in Homeland Investment," *Journal of International Business Studies* 30(3): 623–34.

Goodman, Sally (2003). "France Pledges Support for 'Scientific Diasporas,'" *SciDev.Net*, November 21, 2003.

Corcoran, Mary P. (2002). "The Process of Migration and the Reinvention of Self: The Experience of Returning Irish Emigrants." *Eire-Ireland: Journal of Irish Studies*, Spring-Summer 2002.

Cowen, Brian T.D. (2002). "Ireland and the Irish Abroad." Report of the Task Force on Policy regarding Emigrants to the Minister for Foreign Affairs, August 2002. Online at: http://www.irelandemb.org/task_force.html#9.

Freinkman, Lev M. (2002). "Role of the Diasporas in Transition Economies: Lessons from Armenia." Washington, D.C.: Armenian International Policy Research Group, July 18, 2002.

Guarnizo, Luis Eduardo (2003). "The Economics of Transnational Living.," *The International Migration Review*, 37 (3): 666-699.

Gundel, Joakim (2002). "The Migration-Development Nexus: Somalia Case Study," *International Migration*, 40 (5): 255-279.

High Level Committee on the Indian Diaspora (2001). *The Indian Diaspora*, Ministry of External Affairs, Government of India, December 19, 2001, http://indiandiaspora.nic.in/contents.htm.

Hinojosa-Ojeda, Raul (2004). "Transnational Migration, Remittances and Development in North America: Globalization Lessons from the Oaxa-California Transnational Village/Community Modeling Project," Paper presented at a Conference on 'Remittances as a Development Tool in Mexico' organized by the Multilateral Investment Fund of the Inter-American Development Bank, Mexico City, October.

Jazayery, Leila (2002). "The Migration-Development Nexus: Afghanistan Case Study." *International Migration*, 40 (5): 231-252.

Johnson, Brett and Santiago Sedaca (2004). "Diasporas, Émigrés and Development: Economic Linkages and Programmatic Responses," Study conducted under the Trade Enhancement Service Sector (TESS) Project under Contract for the U.S. Agency for International Development, Washington, D.C.: Carana Corporation, January 2004.

Kapur, Devesh and John McHale (2004). *The Global War for Talent: Implications and Policy Responses for Developing Countries,"* forthcoming monograph. Washington, D.C.: Institute for International Economics/Center for Global Development.

Ketkar, Suhas and Dilip Ratha (2001). "Securitization of Future Flow Receivables: A Useful Tool for Developing Countries." *Finance and Development*, March 2001, vol. 38 (1).

Kapur, Devesh (2002). "The Causes and Consequences of India's IT Boom," *India Review*, Vol. 1 (2), pp. 91-110.

Levitt, Peggy (1997). "Transnationalizing Community Development: The Case of Migration Between Boston and the Dominican Republic," *Nonprofit and Voluntary Sector Quarterly*, 26(4): 509-526.

Lowell, B. Lindsay and Rodolfo de la Garaza (2000). *The Developmental Role of Remittances in U.S. Latino Communities and in Latin American Countries*, Report of the Tomás Rivera Policy Institute and the Inter-American Dialogue, Los Angeles and Washington, D.C., http://www.iadialog.org.

Lowell, B. Lindsay, Allan Findlay and Emma Stewart (2004). *Brain Strain: Optimising Highly Skilled Emigration from Developing Countries*, Institute for Public Policy Research, Asylum and Migration Working Paper 3, London.

Lucas, Robert E.B. (2004), "International Migration to the High Income Countries: Some Consequences for Economic Development in the Sending Countries," Washington, D.C.: The World Bank, http://wbln0018.worldbank.org/eurvp/web.nsf/Pages/Paper+by+Lucas/$File/ROBERT+LUCAS.PDF.

Lucas, Robert E. B. (2004). *International Migration Regimes and Economic Development*. Report from the EGDI seminar "International Migration Regimes and Economic Development," Stockholm, Sweden: Executive Group on Development Issues, May 13, 2004. Online at: http://www.egdi.gov.se/seminars6.htm

Meyer, Jean-Baptiste (2001). "Network Approach versus Brain Drain: Lessons from the Diaspora," *International Migration*, 39 (5): 91-110.

Meyer, Jean-Baptiste and Mercy Brown (1999). "Scientific Diasporas: A New Approach to the Brain Drain," Prepared for the World Conference on Science, UNESCO-ICSU, Budapest, Hungary, 26 June – 1 July 1999.

Mishra, Prachi (2004). "Emigration and Wages in Source Countries: Evidence from Mexico," New York, NY: Department of Economics, Columbia University.

Puri, Shivani and Tineke Ritzema (1999). "Migrant Worker Remittances, Micro-finance and the Informal Economy: Prospects and Issues," Working Paper No. 21, Geneva: Enterprise and Cooperative Development Department, Social Finance Unit, International Labor Organization.

Orozco, Manuel (2003). "The Impact of Migration in the Caribbean and Central American Region," Focal Policy Paper FPP-03-03, Ottawa, Ontario: Canadian Foundation for the Americas.

Orozco, Manuel and Michelle Lapointe (2004). "Mexican Hometown Associations and Development Opportunities," *Journal of International Affairs*, 57 (2): 1-21.

Ratha, Dilip. (2003). "Workers' Remittances: An Important and Stable Source of External Development Finance." In, *Global Development Finance: Striving for Stability in Development Finance. Analysis and Statistical Appendix,* The International Bank for Reconstruction and Development and The World Bank, eds.

Rauch, James E. (2003). "Diasporas and Development: Theory, Evidence, and Programmatic Implications," Department of Economics, University of California at San Diego.

Rauch, James E. and Victor Trindale (1999). "Ethnic Chinese Networks in International Trade." *NBER Working Paper No. 7189,* Cambridge, MA: National Bureau of Economic Research, June 1999.

Regets, Mark C. (2001). "Research and Policy Issues in High-Skilled International Migration: A Perspective with Data from the United States," Washington, D.C., National Science Foundation.

Saxenian, AnnaLee (2002). *Local and Global Networks of Immigrant Professional in Silicon Valley*. San Francisco: Public Policy Institute of California.
Saxenian, AnnaLee (2000). "Brain Drain or Brain Circulation? The Silicon Valley-Asia Connection," lecture at the Modern Asia Series, Harvard University Asia Center, September 29, 2000.

Sriskandarajah, Dhananjayan (2002). "The Migration – Development Nexus: Sri Lanka Case Study," *International Migration,* 40 (5): 283-305.

United Nations (2002). "Towards a Knowledge-Based Economy. Armenia: Country Readiness Assessment Report." New York, NY and Geneva, Switzerland: United Nations Economic Commission for Europe.

UNDP (2003). "Worker Remittance as an Instrument for Development," Panama: United Nations Development Program, http://www.undp.org/surf-panama/docs/ migrant_remittance.doc.

Vertovec, Steven (2002). "Transnational Networks and Skilled Labor Migration" *Working Paper WPTC-02-02*, Presented at the conference Ladenburger Diskurs "Migration," Gottlieb Daimler- und Karl Benz-Stiftung, Ladenburg, 14-15 February 2002.

Walter, Bronwen, Breda Gray, Linda Almeida Dowling and Sarah Morgan (2002). "A Study of the Existing Sources of Information and Analysis about Irish Emigrants and Irish Communities Abroad." Dublin, Ireland: Task Force on Policy Concerning Emigrants, Department of Foreign Affairs. Online at: http://foreignaffairs.gov.ie/policy/taskforcestudy.pdf.

Yoon, In-Jin (2002). "A Comparison of the South and North Korean Policy of Overseas Koreans," Presented at the International Conference on the Korean Diaspora and Strategies of Global Korean Network, Korea University, October 11, 2002.

APPENDIX TABLE 1. SUMMARY OF DIASPORA ORGANIZATIONS AND NETWORKS

Country/ Region	Name of Network	Type	Web	Date	Mbr.	HQ	Activity	Source
Africa	Digital Diaspora Network – Africa (DDNA)		Y	2002		USA	Modest level of activity; updated recently	LG
Arab Countries	Arab Scientists and Technologists Abroad (ASTA)	ISci	Y		fee	USA	Inactive; last updated in 2000	MB
Argentina	Programa para la Vinculacion con Cientificos y Tecnicos Argentinos en el Exterior (Program for the Linkage of Argentine Scientists and Technologists Abroad) (PROCITEXT)	DevSci	N				N/A *	MB
Armenia	ArmenTech – Armenian IT Diaspora Network		Y	2000	20 key; fee	USA	Updated regularly	LG
	Armenian Diaspora		Y				Predominantly an information source	LG
	ArmenianDiaspora.com		Y	1999	6500+	Home	Sponsored by the Ministry of Foreign Affairs of Armenia; updated regularly	LG
China	Chinese Scholars Abroad (CHISA)	Acad	Y				All Chinese language; updated in 2004	MB
	Society of Chinese Bioscientists in America	Local	Y	1984	2500 **	USA	Has organizational structure; local chapters in the U.S. (19), Canada (3), Hong Kong (1), Singapore (1), Taiwan (2), China (2)	MB
	Chinese American Engineers and Scientists Association of Southern California (CESASC)	Local	Y	1962		USA	Has organizational structure; updated in May 2004	MB
	World Huaren Federation		Y	1997		USA	Local chapters in U.S., SE Asia, Europe and Australia; last updated in 2003	LG
Colombia	The Colombian Network of Researchers and Engineers Abroad (Red Caldas)	ISci	Y				All Spanish language; updated in July 2004	MB
El Salvador	Conectandonos al Futuro de El Salvador (Connecting to El Salvodor's Future)	DevSci	Y	1998		Home	Project sponsored by World Bank and El Salvadoran government; updated in May 1999	MB
Ethiopia	Knowledge and Technology Transfer Society (EKTTS)		?			Home	Last mentioned in 2001	LG
	Ethiopian North American Health Professionals Association (ENAHPA)		Y	1999		USA	Updated regularly	LG
	Association for Higher Education and Development (AHEAD)		Y	1999		Canada	Updated regularly	LG
	Ethiopian Information Technology Professionals Association		Y	2002	187; fee	Home	Updated regularly	LG
France	Frognet - French Researcher Organization Network	Acad	N	1992		USA	Inactive; initiative of Embassy of France in Washington, DC and France's Press and Information Service	MB

India	Silicon Valley Indian Professionals Association (SIPA)	Local	Y	1987	2300+	USA	Organizes many events; updated regularly
	Worldwide Indian Network	ISci	Y			USA	Inactive; last updated in 1993
	The International Association of Scientists and Engineers and Technologists of Bharatiya Origin	DevSci	N				N/A *
	Interface for Non Resident Indian Scientists and Technologists Programme (INRIST)	DevSci	N			Home	N/A *
	Transfer of Knowledge and Technology to Assam	TOK	?	1994		USA	Last information dated 1997
	Indian Investment Centre		Y			Home	A government agency directly promoting investment of NRIs/PIOs
	Indian Diaspora Initiative		Y			Home	Government-sponsored; not much additional information
Iran	Iranian Scholars Scientific Information Network	ISci	N	1996		Home	Established by Iran's Ministry of Culture and Higher Education as "Office of National and Expatriate Iranian Scholars Scientific Information Network (ONEIS-INF)"
	Stanford Zoroastrian Group	Acad	Y	1996		USA	Last updated in 1997
Ireland	The Irish Research Scientists' Association (IRSA)	ISci	Y	1993	~700	Home	Not explicitly targeting diaspora; only 10% overseas membership
Japan	Japanese American Network (JA*Net)	Acad	Y			USA	Partnership of Japanese American organizations in Los Angeles; updated in January 2002
Kenya	Kenyan Community Abroad (KCA)	DevSci	Y	1997	fee	USA	Chapters in 6 U.S. states, France, Canada, Germany, Russia, the Seychelles and Botswana
Korea	Korean-American Scientists and Engineers Association	Local	Y	1971	fee	USA	56 local chapters across the U.S.; updated regularly
	The Global Korean Network	ISci	Y	1995	fee	USA	Many web features currently being updated; last updated in December 2003
Latin America	Association Iattino-americaine de Scientifiques (Latin American Association of Scientists) (ALAS)	ISci	N				N/A *
	Digital Diaspora Network – Latin America and the Caribbean (DDN-LAC)		Y	2003	~1000	USA	Launched recently; not much information available yet
Lebanon	TOKTEN for Lebanon	TOK	Y	1995	40	Home	Sponsored by UNDP and Lebanese government; not updated recently
	Lebanon Business Network		Y	2000		Home	Joint program between Indevco Foundation and InfoPro; last updated in 2003
Morocco	Moroccan Association of Researchers and Scholars Abroad (MARS)	Acad	N				N/A *
Nigeria	Association of Nigerians Abroad (ANA)	ISci	Y			USA	Has organizational structure; membership in multiple countries; last updated in 2003

Norway	Association of Norwegian Students Abroad (ANSA)	Acad	Y	1956		Home	Support network for Norwegian students studying abroad; updated regularly	MB
Pakistan	Return of Qualified Expatriate Nationals to Pakistan	TOK	Y	1980	283 ***	Home	Sponsored by UNDP and Ministry of Labour, Manpower and Overseas Pakistanis; updated regularly	MB
Palestine	Programme of Assistance to the Palestine People	TOK	Y	1988	350+	Home	Sponsored by UNDP and the Palestinian Authority; updated regularly	MB
Peru	Red Cientifica Peruana (Peruvian Scientific Network)	DevSci	Y				All Spanish language; updated regularly	MB
Philippines	Brain Gain Network (BGN)	ISci	Y	1992		Home	Updated in 2004	MB
Poland	The Polish Scientists Abroad	ISci	?			Home	All Polish language; last updated in 1999	MB
	Friends of the Polish Library in Washington	Local	Y	1991	fee	USA	Organizational structure; updated regularly	LG
	American Center of Polish Culture	Local	Y	1989		USA	Organizational structure; updated regularly	LG
	Polish American Congress	Local	Y	1944	10 mln	USA	Umbrella organization with 41 chapters; updated regularly	LG
	Polish American Arts Association of Washington, DC	Local	Y	1966	200+; fee	USA	Web site does not have much information; updated regularly	LG
Romania	The Forum for Science and Reform (FORS)	DevSci	Y			Home	No information found; web site does not work	MB
South Africa	The South African Network of Skills Abroad (SANSA)	ISci	Y			Home	Government-sponsored; updated regularly	MB
Syria	Tokten in Syria	TOK	Y	1977		Home	Sponsored by UNDP and the Syrian government	LG
Thailand	The Reverse Brain Drain Project(RBD)	DevSci	Y	1997		Misc	Sponsored by the Thai National Science and Technology Development Agency; 10-yr budget; updated regularly	MB
	Association of Thai Professionals in America and Canada (ATPAC)	ISci	Y	1991	fee	USA	Has executed over 100 collaborative projects in Thailand; updated regularly	MB
	The Association of Thai Professionals in Europe (ATPER)	ISci	N				N/A *	MB
	The Association of Thai Professionals in Japan (ATPIJ)	ISci	Y	1991		Japan	Inactive; initially sponsored by the Ministry of Science, Technology and Environment of Thailand	MB
Tunisia	The Tunisian Scientific Society (TSS)	ISci	Y	1986	2000+	Canada	Last updated in 1996	MB
Turkey	Transfer of Knowledge Through Expatriate Nationals	TOK	Y	1976		Home	Sponsored by UNDP and the Government of Turkey	LG

Uruguay	Red Academica Uruguaya (Uruguayan Academic Network)	DevSci	Y	1988			All Spanish language; last updated in 2002	MB
Venezuela	In Contact with Venezuela	DevSci	N				N/A *	MB
	El Programa Talento Venezolano en el Exterior (Program of Venezuelan Talents Abroad) (TALVEN)		Y	1995		Home	Sponsored by UNESCO; last updated in 1999	MB
Vietnam	TOKTEN in Vietnam	TOK	Y	1989	varied	Home	Sponsored by UNDP and the Government of Vietnam	LG
Miscellaneous	Digital Partners		Y		500+	USA	Chapters in 4 U.S. states, Ghana and India; initiatives in South Asia, Africa, Latin America & Caribbean; updated regularly	LG

Notes by column:

Type - ISci = Intellectual/Scientific, DevSci = Developing Intellectual/Scientific, TOK = TOKTEN Program, Local = Local Association of Expatriates, Acad = Student/Scholar

Web - Y = yes has a network, N = no network found, ? = current references but no URL found

Date - Year of founding/incorporation

Mbr. - Membership base; fee = fee-based membership

HQ - Headquarters

Activiry - Level of activity, most recent update if web site exists

Source - MB = Meyer & Brown (1999); LG = Lowell & Gerova (2004)

* - for networks without a web site, the level of activity cannot be established precisely

** - latest membership figure available is from 1997

*** - number of experts in database; actual involvement might be higher