



Diasporas and Development

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“Brain drain”, the permanent emigration of college graduates, is a substantial concern for most emerging countries. Carrington and Detragiache indicate that skilled emigration (defined as emigration after completion of tertiary education) is a substantial phenomenon in most countries. Skilled emigration rates for countries with populations greater than 20 million ranged from 0.6% (Brazil) to 15% (Uganda) in a single year. Lowell shows that skilled emigration is increasing and that most attempts to control and manage emigration by sending countries through prohibition and taxation have failed.

The United States is the major destination for foreign skilled workers; 40% of its foreign-born adult population have tertiary level education. Since the early 1990s, some 900 000 highly skilled professionals, mainly IT workers, from India, China, Russia and a few OECD countries (including Canada, the UK and Germany) have migrated to the United States under the H1B temporary visa program. The United States also takes in 32% of all foreign students studying in the OECD countries. Indeed, higher education is an important channel for US firms recruiting highly skilled migrants; some 25% of H1B visa holders in 1999 were previously students enrolled at US universities (OECD Observer).

The economic effects of skilled emigration for sending countries are unclear (Commander, Lowell, Solimano). Remittance income, the enhanced productivity of returned emigrants and the possible incentives created for increased educational attainment in sending countries offset some of the losses of human capital and taxes from departed citizens. Nonetheless many countries are interested in recovering more of the skills and resources of their skilled emigrants.

Saxenian produced a well publicized study of the role of US expatriates in the economic development of home countries. Analyzing 11, 443 high tech start ups in Silicon Valley between 1980 and 1998, she showed that 25% of them had immigrant ethnic Chinese and Indian immigrants as senior executives. Taiwan became a major beneficiary of this business success. 40% of the companies started in Taiwan’s Hsichinhu Science Based Industrial park were led by returned expatriates. The report highlights the role of international ethnic professional networks in facilitating this process. The typical role of immigrant associations in mutual aid and trust building was extended internationally to facilitate access to capital, marketing skills and markets for Taiwanese start ups. The educated immigrants were “uniquely positioned because their language skills and technical and cultural know allowed them to function effectively in the business culture of their home countries”.

Saxenian notes but neglects the extraordinary role played by the Taiwanese government in this process. "Taiwan's efforts have focused more on a "reverse brain drain" model i.e. physical relocation and networking than on trying to encourage investments from their diasporas (given their high savings rates, this is perhaps not surprising). Taiwan set up a government agency to coordinate efforts at encouraging return, the National Youth Commission (NYC, Chang 1992)... The programs... entailed substantial efforts in easing reentry of which financial subsidies (travel subsidies, business loans) were an important but not dominant component. The National Youth Commission of Taiwan (ROC) runs job placement programs which refers applicants to potential employer organizations, and acts as an information clearinghouse on returning scholars seeking employment as well as potential employers and an annual report of employment needs in Taiwan that is distributed abroad... The National Science Council can also make temporary (one year) research appointments to scholars waiting for suitable employment. A visiting professor/expert programs (sweetened by high salaries) allow the countries to tap valuable expertise of those who are unwilling or uncertain regarding re-emigration offer appointments... (Taiwan has) intensive recruiting programs that search and try to attract older professionals and scholars, by offering salaries competitive with overseas incomes, improved working conditions (research facilities, equipment, organizational autonomy), as well as housing facilities/financing, and help with children's' schooling. During the 1990s ...(they) have also sought to create spatial high technology clusters such as science-parks, that provide one-stop plug-in business facilities"(Kapur)

Nonetheless, the study was one of the first indications of the potential for mitigating brain drain through "brain exchange" (or brain circulation) whereby many countries, even if they cannot motivate repatriation, can accelerate development through expatriate skills transfer and investment. Devan & Tewari, reviewing China and India's apparent success in mobilizing diaspora resources, recommend the approach to all countries. "Most developing countries have done little to leverage their expatriate talent. A development strategy that... encourages the participation of emigrants in the economic development of their home country can mitigate the effects of today's brain drain".

Weidenbaum, focusing on the 50 million Chinese diaspora, supports the concept that they are advantaged and logical pioneer investors. The diaspora was well positioned to do business with China because of its widespread entrepreneurial experience, specialized knowledge and relationships which allow them to overcome language, cultural and legal barriers which frustrate non diaspora investors. Their non financial motivation to reconnect with their homeland is also seen as an important stimulus for early stage investment . They are certainly experienced investors. Kao shows that Chinese entrepreneurs were the first or second most significant source of foreign investment in Thailand, the Philippines and Vietnam. Their ethnic networks were strong. 39% of Kao's sample reported that their international working relationships were with other Chinese.

These international networks seem to exist for many nations. Portes describes how declining real communications and transportation costs have stimulated the emergence of small scale transnational entrepreneurs (ie individuals conducting

business in native countries while residing in the US) among the skilled expatriates of El Salvador, the Dominican Republic and Ecuador.

Brown discovered 41 expatriate organizations with internet sites which could be developed as channels for identifying and motivating native country assistance and investment.

There seems to be widespread interest in using these networks. A survey by Saxenian of more than 1,500 first-generation Indian and Chinese migrants found that 50% go back at least once a year to their home country on business, and 5% return at least five times a year. Even more telling, 74% of Indian respondents and 53% of Chinese ones said they hoped to start a business back home (Economist).

Gillespie surveyed 572 US based first and second generation immigrants, from the investment deficient economies of Armenia, Cuba, Iran and Palestine. They reported substantial interest in investing in their native countries in situations where their ethnicity would confer an advantage, either in understanding opportunities or conducting business. The major obstacles to conducting business successfully were not seen as deterrents. This interest has not produced any significant expatriate investment in these countries yet.

China, India and Israel have all experienced investment and/or technology booms over the past decade and there are reports of expatriate leadership in all three.

However, there are striking dissimilarities in the roles played by expatriates in these countries which suggest significant limitations on the potential of diasporas as a development resource.

Israel

Israel experienced remarkable growth in its high tech industries in the 1990s. From a negligible base in 1990 venture capital investment increased to nearly US\$ 3 billion by 2000. Foreign direct investment increased from less than \$100 million to \$ 9 billion at its peak in 2000. Thousands of high tech companies were started and hundreds had accomplished initial public offerings. The major immigration of Russian Jewish scientists allowed Israel to have the largest per capita concentration of engineers in the world (Nitzen and Bichler indicate however that the full absorption of this largely one time immigration also poses a distinct limit to Israel's technology growth potential).

However, the Jewish diaspora community were not the leaders of this phenomenon. Although the diaspora, particularly in the United States, has been famously generous to Israel and critical to its foundation and success the community has not ever been major business investors in Israel, either in technology or generally. Direct diaspora investment and stock purchases have averaged only 6% of domestic gross capital formation (Kleiman) over Israel's history. He speculates on the reasons including security fears, regulations that are complex but corruptible (ie avoidable), the need to employ unproductive,

political employees and even the desire to avoid tainting one's philanthropy with profit seeking activity.

The stimulus for Israel's technology growth was defense R&D and government support. Zuckerman indicates that the boom was initiated with the commercialization of Israeli defense technology, which had been financed by the US and Israeli governments. The Israeli Defense Force's capabilities in communications network security and management proved central to the development and support of the internet. Many technology pioneers were veterans of the elite intelligence services.

The Yozma program is regarded as the critical first step in the Israeli venture capital industry(de Fontenay). A US\$100 million fund of funds begun in 1993 and operated by the government Office of the Chief Scientist, it stimulated 10 funds with US\$200 million in capital by 1996. While the diaspora was represented as investors and managers in these funds, they also attracted many non diaspora investors such as Daimler Benz of Germany and Kyocera of Japan.

Traditional venture capital did not arrive until the boom was well underway in 1995. The diaspora community did support the remarkable acceleration of the technology industry. In its full development the Israeli venture capital and technology were closely integrated with the US technology community. But it was government R&D and government venture capital which got it underway.

China

China has experienced one of the most remarkable investment booms in history over the past 2 decades and has become an explicit model for many emerging countries. Foreign direct investment increased from US\$600 million in 1983 to \$40 billion in 2000. China had become the second largest recipient of FDI in the world.

The Chinese diaspora has been prominent in this development. Devan estimates that 70% of China's recent foreign investment has been provided by diaspora members. However, China had several unique circumstances which may suggest limited relevance as a general model.

Naughton shows that the diaspora investing in China were not the broad 50 million with guanxi but overwhelmingly the 6 million nearby Hong Kong Chinese.

This doorstep diaspora had unique motivations to invest in China. Labor costs made manufacturing in the colony increasingly uncompetitive. Between 1985 and 1995 Hong Kong manufacturing employment decreased by two thirds or 700,000 jobs. The need to move manufacturing to lower wage countries occurred just as China was opening up. Naughton call this "the ordinary process of growth of a metropolitan economic region, expanding outward in roughly concentric circles". Thus it may have limited international economic development significance, particularly for distant expatriates.

Naughton further indicates that the choice of China was influenced by anxiety about China's policy intentions towards its soon to be reabsorbed territory. Investment in China was a way to earn favor with the new government and buy protection for existing Hong Kong assets.

Naughton hypothesized that Hong Kong's trade volumes would decrease as production moved to mainland China. Instead they increased during this period. His explanation is that Hong Kong was a convenient vehicle for "property rights arbitrage" where officials' control of public goods could be converted into private assets. Naughton claims that a substantial part of Hong Kong trade and investment was actually this process.

These conditions do not exist for any other nation's diaspora community.

Diaspora investment in China, as extensive as it was, was basically limited to low wage manufacturing operations. Huang shows that it was unusually diversified and small scale. . In China expatriates invested in a wide variety of manufacturing sectors at very small scale, averaging US\$2.4 million in 1997. The average Hong Kong based corporate investor was itself quite small, averaging 81 employees at headquarters, less than the average for Hong Kong companies.

Expatriate investment has notably not yet been a force for high technology business development in China. In part this may be due to the relatively recent arrival of large numbers of Chinese science and engineering graduate students in the United States (National Science Foundation). If, as occurred with Taiwan and India, these graduates become the core expatriate high tech executives and entrepreneurs, then an expatriate led technology boom may occur in China in the next one or two decades.

India

India is the only country where distant expatriates played a substantial role in high technology development, focused almost entirely on the software industry. India may also be of great relevance to other developing countries because its software industry grew at a time when its infrastructure was poor, its regulatory and legal environment was murky and there was no government established government policy for high technology investment and diaspora participation.

India's software exports grew from US\$52 million in 1988 to \$7.7 billion in 2001, representing 2% of India's GDP and 14% of exports. Exports grew from 41% to 76% of total software production. Employment of software professionals grew from 56,000 to 360,000 over the period. India now has the deepest software labor pool in the world, graduating 130,000 new IT professionals and engineers a year.

However, India has been compared unfavorably to China for its software focus. Saxenian criticizes the focus of Indian technology development. "The developmental potential of this trajectory is quite limited. The provision of routine software services for export may be profitable for individual companies, but

provides few opportunities for long term technological learning and industrial upgrading. Meanwhile the advantage provided by low cost labor is disappearing fast: wages for software professionals in India have risen 20% in the past decade, surpassing competing low wage, human capital rich regions like Philippines and China “

Information technology develops very quickly. By 2000 Saxenian acknowledged that rather than being a dead end, low end software development had been a building block for the high end software development which was taking place. “This ferment is beginning to transform technology regions like Bangalore and Hyderabad. No longer simply sources of abundant low-cost labor, they are poised to become centers of design and engineering skill -- following Taiwan, only a decade later, and in software rather than hardware. Foreign companies are now using Indian programmers for sophisticated programming tasks, a far cry from the "body shopping" or low-level code-writing and Y2K work of the past. And homegrown companies are also doing increasingly complex design as well, for leading corporations around the world.”

Dhune and Saxenian also criticize the “meager” investment by Indian expatriates who preferred to act as middlemen brokering deals between Indian companies and US partners. “Most do little more than promote India as a viable location for software development”. Dhune estimates that the Indian diaspora has provided only 3% of India’s foreign direct investment.

This may have more to do with the economics of the software industry than with the motivation of Indian expatriates. Software services, especially for export, are highly profitable with good cash flows. Fixed asset investment is typically less than 25% of revenues (Ghemawat). Most have been funded without external capital (Ashish). But the expatriate role was critical. “Expatriates provided valuable links with foreign markets, helped Indian ... firms to absorb technical and managerial practices and establish contacts with foreign customers. For instance, some Indians who had emigrated to work for US firms in the 1980s have helped US buyers find suppliers in India. Field interviews with US customers revealed that in a couple of cases, the initial impetus for out sourcing to India came from employees of Indian origin... Most, if not all, US subsidiaries in India are headed or staffed by employees of Indian origin.” 71 of the 75 multinational corporations which located in the Bangalor Technology Park had expatriate managers.

It does not seem to matter if the process starts with the establishment of a US subsidiary or a start up with a US out sourcing contract. All generate jobs and support virtuous cycle of improved capabilities and valued added.

The Silicon Valley Model

The belief persists that many countries should duplicate the culture and conditions of Silicon Valley to produce successful high tech industries (Kantis).

The emergence of high tech start ups in Silicon Valley and Wadi Valley, which so many countries seek to emulate, are a feature of mature technology industries, not incipient ones. The primary driver is the commercialization of decades of government funded R&D. The first formal venture capital fund, ARD founded by Georges Doriot, had as its explicit objective the commercialization of US defense technology developed in World War II. The late 20th century US technology boom was directly stimulated by the Bayh-Dole bill, which relaxed patent controls on government funded research. Israel's boom was built on government funded defense technology. Thus it is not surprising that Silicon Valley cannot be duplicated where there is not a rich research base as the stimulus for innovation.

Even if it were possible, the Silicon Valley/venture capital system might not be appropriate for emerging economies. Despite their recent prominence, start ups are not a substantial part of high technology investment. Martin shows that even in the US, technology companies account for only .46% of small businesses start ups.

Most high tech start ups fail and the majority of the remainder are acquired by larger corporations. This has been demonstrated in Israel where many of the start ups of the 1990s have ended up as US subsidiaries.

Even the independent survivors may not stay. "Innovative and dynamic firms that do emerge in follower countries face powerful pressures to relocate to locations where discerning venture capitalists, lead users and sophisticated suppliers are more abundant". (Ashish)

Venture capital is also a mirage for most emerging countries. Formal venture capital, as shown in Israel and India, is a lagging indicator of investment growth and is increasingly focused on later stage investments, to suit the institutional investors who provide most of the funds (Gompers). This is especially true of venture capital investment in emerging countries where most funds look for investments in companies with existing revenues of \$50 million or more. With a fixed investment horizon of 5 years or less, face large, unmanageable exchange rate risks in most emerging countries which further discourages investment.(Stein)

The better model may be to imitate and adapt established technologies.

The Outsourcing Model

Bresnahan identifies several successful "nascent clusters of technology based innovative activity" around the world and pronounces them young Silicon Valleys. The successes include Ireland, India, Scandinavia, Taiwan and Israel. In the case of India this seems mistaken. Arora looks at the Indian and Irish clusters but emphasizes the differences from Silicon Valley. "Much of software related work in Ireland and especially India is non-innovative and involves activities such as offshore development and testing, 'localisation' and on line technical support." They are essentially out sourcing centers rather than the innovation centers of Silicon Valley and Silicon Wadi.

This realization is actually a hopeful sign for other countries hoping to duplicate India's (or Ireland's) success. India has demonstrated that investing in low end technology niches can be a productive building block for the development of higher value services and products.

This may be generally true. Zheng, in a study of 50 developing countries, has indicated that imitation and regional adaptation rather than primary innovation can be the best development strategy. Productivity growth in the sample depends on imports of foreign machinery and borrowing of foreign technology rather than on innovation.

Technology development which begins with low end out sourcing has several benefits. It begins a cycle of low risk trust building with the out sourcing partner which can result in an improved quality reputation and higher end out sourcing assignments. The OECD out sourcing partner provides market access and marketing skills which are initially lacking in most emerging economies.

Rather than limit development options, out sourcing networks may lead to higher growth. Llisteri in an analysis of 1271 Asian and Latin American start ups identifies a correlation between the substantially higher growth of the Asian start ups and their greater tendency to have stable out sourcing or contract relationships with larger companies.

IT Enabled Services

India's success may be helpful to other emerging economies in other ways. No country can duplicate the depth of India's engineering and computer science labor resources which powered its software industry. However, India's success as an IT out sourcing center has stimulated the emergence of an IT enabled services industry, with substantially lower technological requirements. These are services that can be provided over telecommunications or data networks. India has proven the viability of Indian based third party provision of services as varied as accounts receivable processing, medical transcription and airline ticket processing. This sector is growing at 40% a year and is expected to total \$142 billion in 2008 (Kennedy). India alone expects to employ 1.1 million people in this sector by 2008.

These services do not require extensive engineering and science skills. The requirements are a critical mass of educated English speakers and a reliable telecommunications infrastructure which many emerging countries possess. This sector has the same building block potential of the software industry. The process can start with low risk out sourcing of routine back office processes and move up with increasing capabilities to expert services like research and data analysis.

The Role of Diasporas

Diaspora members are not likely to be pioneer investors in the high technology industries of their native countries. Roberts shows that even in the highly

developed US angel investment community (a major source of early stage investment) most investors prefer investments located within 4-5 hours of their home so that they can easily supervise their progress. "Only about one investor in twenty seriously contemplated investing in an emerging market" (Stein).

Foreign direct investment is very much a big company game. Huang reports that US foreign investors tend to be the largest firms in their respective industries. Their technology, proprietary assets, scale economies and managerial skills allow them to succeed in unfamiliar environments. Their investment horizons have no necessary limit so they can make the long term commitments often necessary for success.

Instead, the Indian experience has shown that expatriates may be advantaged facilitators who can accelerate and leverage the international success of domestic entrepreneurs and companies. They can be critical influencers in building awareness of and confidence in investment opportunities among OECD corporations who are the usual providers of foreign direct investment, partnerships and out sourcing contracts.

"Companies like Yahoo, Hewlett Packard and General Electric have opened R&D centers in India largely because of the confidence engendered by the presence of many Indians working in their U.S. operations. This points to the cognitive effects arising from the projection of a coherent, appealing, and progressive identity on the part of the diaspora which signals an image of prosperity and progress to potential investors and consumers"(Kapur).

This suggests that expatriate mobilization efforts for investment might best be focused not on mass mobilization (the alumni model) or even politically active or wealthy philanthropic members of the diaspora community. The key players are expatriates who have become senior executives in relevant companies. Since most major corporations are now considering international out sourcing of internet enabled business services, the key role for these well placed expatriates is to build awareness in their corporations of their native countries as out sourcing partner candidates.

This is both an opportunity and a problem. The candidate facilitators can be easily identified and contacted. The process is considerably more efficient than the mass diaspora mobilization networks which several countries are attempting (Lowell).

However, many countries with educated diasporas may have few candidates. Expatriates who are doctors, lawyers or scientists, however sympathetic they are to their native countries, are not likely to have the credibility to influence corporate investment or out sourcing decisions. Of course, there are many other contributions these professionals can make. The large Indian American community is beginning to take part in improving the quality of Indian hospitals (through sabbatical residencies) and the emergence of an Indian medical testing industry (Aggarwal). Certainly the astonishing generosity of the American Jewish community towards Israel (\$330 per capita per annum - UJA) suggests the philanthropic potential of these increasingly prosperous communities.

However, major business investment is likely to come through the efforts of a small number of well placed expatriate executives. To the extent possible, developing countries should encourage their skilled emigrants towards these strategically valuable careers.

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