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**Movement of Service Suppliers and India:
A Case Study of the IT and Health Sectors**

by

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Abstract

This paper examines the significance of cross-border movement of service suppliers in the Indian economy, with specific focus on the information technology and health care sectors. It examines the nature of labour flows in these two sectors, the facilitating and constraining factors, the role of government policies, and the sectoral as well as wider macroeconomic impact and human development implications of such labour flows. The paper suggests various domestic policies that could enhance the benefits of cross border movement of labour in these two sectors and mitigate some of the associated negative consequences. It also highlights negotiating strategies that could be pursued in the WTO negotiations on movement of natural persons under the framework of the General Agreement on Trade in Services.

Movement of Service Suppliers and India: A Case Study of the IT and Health Sectors

1. Introduction

Economic migration of workers from less developed to developed countries is a long-standing phenomenon. It is but natural for people to move in search of higher wages, better opportunities, and higher living standards. Countries such as India, Philippines, Sri Lanka, and South Africa have sizeable diaspora, which continue to play a role in their home economies through remittances, investments, and various political and economic channels.

The economic literature is replete with analysis of migration, its associated costs and benefits, and discussion of appropriate government policies in this regard. Most of this analysis has, however, concentrated on permanent migration. But in recent years, economic migration is increasingly being viewed as a continuous and open-ended phenomenon. There are three main reasons for this change in perspective. Firstly, return migration is on the rise in many developing economies, in response to improved economic conditions and opportunities in many source countries, in the wake of globalization. Secondly, given possibilities for continued contact and networking due to ease of travel and advances in information and communication technologies, the skills of permanent migrants are no longer perceived as being lost forever to the source economy. Finally, and most importantly, temporary immigration is on the rise, making migration a much more fluid and dynamic phenomenon than ever before. Today, temporary movement of workers across countries is an integral part of international trade, investment, and production for a wide range of sectors and activities.

Evidence from various countries, attests to the growing importance of temporary immigration. For instance, while the entry of permanent workers into the US declined from little over 100,000 to about 70,000 between 1992 and 1998, entry of temporary workers increased over this same period from about 100,000 to nearly 400,000. Similarly, in the case of Australia, permanent immigration declined from about 50,000 to about 25,00 between 1992 and 1998 while temporary immigration rose from about 40,000 to nearly 100,000 over this same period. The importance of temporary migration is also evident from the fact that many countries have changed their regulations to encourage such immigration, particularly for skilled workers. For instance, Singapore has changed its regulations on the issuance of work permits to encourage larger numbers of foreign entrepreneurs and foreign skilled workers. Germany introduced a policy to hire 20,000 information technology specialists for a period of five years in August 2000. For the year 1999-2000, Australia issued an extra quota of 5,000 places in addition to the 35,000 places already designated for skilled workers. The US increased the number of H-1B visas from 65,000 to 115,000 and further to 200,000 during the 1990s. And, even a nontraditional host market like Japan recently altered its policy for qualified skilled workers by extending the initial duration of stay from six months to one year. Overall, the stock of temporary workers in overseas markets has increased significantly in recent years.¹ The bulk of these flows are from developing countries with large pools of skilled labour to developed countries facing shortages of labour. The value of the service rendered by the temporary worker constitutes a form of exports by the source country of the migrant to the host country.

The service sector has played an important role in fuelling this trend in temporary migration. Rapid expansion of the service sector, particularly knowledge-intensive and information technology (IT) services, coupled with rising demand for cheap and efficient support services, outsourcing of many services by firms, and increased reliance on imported labour

¹ OECD (2002) and SOPEMI-OECD (2001).

services in developed countries due to declining fertility rates, have contributed to this phenomenon. Today, services are increasingly being traded in this manner by workers of all skill levels, and across a wide range of services, from construction, engineering, repair and maintenance services to health, education, legal, and accountancy services. For instance, the rising demand for on-site software services by developed country firms has fuelled cross border movement of software programmers and database analysts from countries like India to the US. Shortages of nurses and technicians in the Middle East and in several developed countries have led to regulatory changes and contractual arrangements between source and host countries to facilitate the temporary entry of foreign medical and paramedical personnel into the latter's markets. Unskilled persons such as construction workers and domestics and semi-skilled persons such as technicians and maintenance workers from developing countries have been going overseas for decades to render services that are in short supply in those markets. Several developing countries, such as India and the Philippines, that are well endowed with labour, have emerged as prominent exporters of labour-intensive services via temporary cross-border movement of workers.

Temporary migration is significant for developing countries not only because of the foreign exchange earnings that can be realized from this mode of exports, but also due to potential gains such as skill and technology transfer, alleviation of underemployment and unemployment, and higher wages in the source countries. Hence, improved market access opportunities and conditions for temporary workers are important for furthering commercial interests of developing countries that export services through cross-border labour flows, as well as their larger goals relating to human development. The General Agreement on Trade in Services or GATS is significant in this regard.

The GATS establishes multilateral rules and disciplines for policies affecting trade in services and aims to liberalize trade in services under conditions of transparency and progressive liberalization. It is designed on the basis of four modes of supply, one of them being temporary cross border movement of service providers, alternatively known as movement of natural persons (mode 4).² Liberalization of trade under the GATS has been undertaken through horizontal (cross-sectoral) and sector-specific commitments with regard to market access and national treatment obligations, for each of the four modes of supply.³ Hence, the sectoral and horizontal commitments on mode 4 provide the basis for removing market access barriers to foreign service providers and thus for promoting the interests of countries that export labour-intensive services through this mode of supply.

To date, however, little has been achieved on movement of natural persons under the GATS. An analysis of the commitments made in the Uruguay Round negotiations on services reflects the strikingly limited commitments in the case of mode 4. Sectoral commitments in mode 4 are almost all unbound while the horizontal commitments in mode 4 are subject to numerous restrictions and highly skewed against the occupational and skill categories that are of export

² The other three modes of supply are modes 1, 2, and 3. These are respectively defined as: cross-border supply which pertains to the physical movement of the service across borders; consumption abroad which refers to the consumption of the service in the overseas market; and commercial presence which is the establishment of juridical presence by a legal entity in an overseas market. This mode-wise breakdown of trade in services captures the various ways in which services can be traded, through the movement of consumers, producers, information flows, labour, and capital.

³ There are eight entries in each schedule, one entry each for market access and national treatment for each mode of supply. Countries can make a full commitment, i.e., place no restrictions on market access and/or national treatment for a mode of supply ("none"), or a partial commitment by limiting market access and national treatment in line with various conditions listed in their schedule, or an "unbound" commitment, i.e., make no commitment. For more details, see the GATS text.

interest to developing countries. In fact, one of the main criticisms about the GATS is that it has failed to liberalize in sectors and modes of supply where developing countries have a comparative advantage. This criticism is mostly based on the failure to liberalize mode 4.⁴

Much of the discussion on services in recent years and currently under GATS 2000 has thus concentrated on improving the commitments in mode 4 and on establishing guidelines and strengthening GATS disciplines to facilitate such liberalization. Several developing countries, including India and Pakistan, have made detailed proposals for liberalizing movement of service suppliers, indicating the significance of this mode to their export interests and the potential gains they expect to realize from more secure access under this mode.⁵ However, if developing countries want meaningful liberalization in mode 4, whereby they balance their commercial as well as development objectives, then they need to understand the likely impact of liberalizing mode 4, both generally as well as in the context of specific sectors. Such an assessment would help them determine the kind of commitments they should seek in mode 4, the broader issues they need to discuss under the GATS, and decide on domestic policy measures which would facilitate the gains and mitigate the costs associated with more secure market access for their service suppliers.

1.1 Objectives, scope, and rationale for the study

This paper assesses the likely human development benefits as well as potential costs arising from greater market access for service suppliers. Based on this assessment, it outlines the way in which these benefits can be realized through the commitment process under the GATS and supported by domestic policies. This paper is part of a larger project under the Asia-Pacific Regional Initiative on Trade, Economic Governance, and Human Development which is aimed at ensuring, from an Asian perspective, that human development considerations are better reflected in trade negotiations and resulting trade agreements, across a wide range of sectors. This paper deals specifically with the service sector and potential benefits such as improved employment opportunities and skill and technology transfer as well as potential challenges such as brain drain and market segmentation which may result from improved access under mode 4.

It should be noted at the outset that the analysis does not always distinguish between temporary and permanent movement of service suppliers when discussing costs and benefits or when discussing domestic policies to address migration related issues, although from a GATS perspective, one should really be discussing temporary movement. This is because temporary movement of service suppliers often results in permanent movement and it is difficult on the basis of existing migration and related statistics to clearly separate the two phenomena. Moreover, from a policy perspective, it is important to understand both permanent and temporary movement so as to develop an integrated and coherent development-oriented strategy to deal with migration as a whole.

The paper takes a sectoral approach. It focuses specifically on the software and health services sectors in India and how mode 4 has affected these sectors and the Indian economy at large. A sectoral approach has been taken for two reasons. First, it helps identify specific problems and issues arising in the context of mode 4 in key service sectors that are of export interest and thus helps determine India's negotiating strategies and domestic policies in specific sectors. Second, it helps identify common challenges and issues across very different kinds of services in the context of mode 4 and thus helps determine how this mode can be integrated into the country's overall development strategy and its broader negotiating position on mode 4 and related issues under the GATS.

⁴ See, Chanda (1999) for details.

⁵ See, Communication from India (Nov. 24, 2000).

Some discussion of the choice of India and these two services is warranted at the outset. India has been chosen because it is a prominent exporter of services through temporary cross border movement of workers, at all skill levels. The choice of software and health services has been made on several grounds. Firstly, both these services have played a key role in shaping India's prominence in mode 4 exports. For instance, on-site services provided by Indian IT personnel have made India one of the leading global exporters in the software sector. Similarly, India is a recognized exporter of health services. Indian doctors, nurses, and paramedics are in high demand in the Middle East, Africa, and even developed countries. Secondly, these are both sectors where India has expressed interest in seeking greater market access for its service suppliers. Hence, they are important from the point of view of the GATS negotiations. Lastly, these are two very different kinds of services, software services being primarily commercial and oriented towards the global market and health services being of a public good nature and oriented mainly towards the domestic market. There are likely to be significant differences in the human development implications of mode 4 for the two sectors, thus enabling discussion of a wide range of issues and strategies in the international as well as domestic contexts.

1.2 Outline of the study

The paper is structured as follows. Section 2 briefly highlights the various channels by which movement of service suppliers can affect development in a source country. This discussion is based on the existing body of literature on trade, migration, and development as well as evidence from many developing countries. Section 3 discusses the significance of mode 4 in the context of India's service sector, the main constraints to India's services exports under this mode, the wider impact of this mode on the Indian economy at large, and the government's policy towards migration. Sections 4 and 5 discuss the movement of service suppliers in India's software services and health services sectors, respectively. The discussion highlights prevailing conditions and recent trends in these two sectors in India, the significance of cross border labour mobility in these areas, the factors constraining and facilitating this mobility, the sector-specific as well as wider impact of this mode on the Indian economy, and the role of government policy in driving these labour flows and in shaping the impact. The analysis is based on secondary sources of information, including published material and data, industry reports, anecdotal evidence, surveys, and in-depth interviews of persons working in these two sectors. Section 6 analyses the existing commitments in the computer related services and health services sectors under the GATS. It also outlines the Indian government's strategy for liberalizing mode 4 in the ongoing GATS negotiations. Section 7 highlights various domestic policy measures that would enable India to benefit from mode 4 in these two sectors and more generally across a wide range of services where movement of service providers is important, so as to integrate this mode more effectively into its overall development strategy. Section 8 concludes with some observations.

2. **Brief review of the literature on migration and development**⁶

There is a vast body of literature on the relationship between migration and development, dating back to seminal work by Harris-Todaro and Bhagwati in the 1960s and 1970s. The literature is far from conclusive about the net impact of migration on development. Several studies point out that migration is a development enhancing mechanism as it helps alleviate unemployment and underemployment and thus raise wages in the source country. These studies also note the positive contribution made by migrant remittances to the source country's balance of payments. The total volume of remittances in 1998 was about the same as net official development assistance in that year.⁷ In some countries, remittances exceed official development assistance and constitute one of the main sources of foreign exchange earnings, even exceeding

⁶ The discussion in this section is mostly based on Commander et. al. (2002).

⁷ Ganguly (2003).

export earnings. However, several studies have also pointed out the adverse effects of migration, in particular, the loss of human capital (brain drain) to the source country in the case of skilled worker migration, which reduces welfare in the sending country.⁸ In addition, the positive role of remittances has been questioned since the impact of remittances on the source economy depends on the use to which they are put. If remittances finance wasteful personal consumption expenditures and are not channeled to productive uses, they need not be beneficial to the source economy. Many of these studies also point out the role government can play in addressing the costs imposed by migration on the host economy, including proposals such as taxing the brain drain, regulating skilled emigration, and channeling remittances towards productive uses.

While most of the earlier work has concentrated on permanent migration, there is a recent body of literature on temporary migration and its impact on source economies.⁹ The evidence is mixed. It suggests that the impact of temporary migration cannot be generalized and depends on sector and skill-specific characteristics of the migrant and on the volume and timing of these labour flows. Some studies suggest that temporary migration benefits the source economy by augmenting financial capital due to increased savings of the migrant worker and by augmenting human capital due to overseas work experience and skill acquisition by the migrant worker. However, other studies note that such benefits are not likely in the case of unskilled return migrants if the latter are not effectively absorbed back into the domestic labour market, i.e., the skills they acquire abroad are not used productively once they return to the source country. These studies also note the role of the government in helping returnees to reintegrate into the domestic economy, by providing incentives for return and skill transfer, and by making effective use of the acquired skills and savings in the source economy. Thus, as in the case of permanent migration, there are competing considerations when assessing the relationship between temporary migration and development and government can play an important role in shaping this relationship.

One additional dimension that needs to be considered when understanding the link between migration and development, is the role of the overseas diaspora for a source economy.¹⁰ This dimension has become very important in recent years given growing evidence on the significant contribution made by diaspora to the development process in many countries. The role of the Chinese diaspora in China's foreign investment is well documented. A more recent phenomenon is the role of the US-based Indian diaspora in the IT industry. The few studies that have studied this phenomenon indicate that diaspora networks can help in promoting bilateral trade between the host and source countries, in inducing foreign investment flows, and in enabling skill and technology transfers from the host country to the source country. Hence, the benefits of permanent or temporary migration are likely to be augmented if one considers such diaspora effects and the increased possibilities for "brain gain" from migrants, in a world where cross-country distances are shrinking.

The literature indicates clearly that the link between migration and development is highly complex and often highly context-specific. However, these studies help identify the various dimensions that are important for understanding this relationship. For instance, they indicate that aspects such as remittances and earnings of service suppliers in overseas markets, financial savings, foreign direct investment, skill and technology transfer, brain drain and associated loss of public investments, and bilateral trade are among the critical elements that make up the cost-benefit matrix on this issue. The analysis in this paper touches upon all these elements to understand the general as well as sectoral impact of movement of service suppliers in the case of India.

⁸ Bhagwati (1976).

⁹ See, Ganguly (2003) for a review of the literature on temporary migration.

¹⁰ See Ganguly (2003) and Kapur (2001) and Kapur (2003) for further discussion on diaspora contributions to the source economy.

3. Movement of service suppliers from India

India has traditionally been a large source country for skilled and unskilled migration. There are an estimated 20 million plus Indians living abroad, who generate about \$160 billion in annual income, and account for \$400 billion worth of output (80% of the Indian economy).¹¹ Between 1975 and 2000, remittances to the Indian economy amounted to \$97 billion and averaged between 1.5 to 2 percent of GDP during the 1990s.¹² Table 1 in the Annex provides information on the large Indian diaspora, which is spread all over the world.

3.1 Characterizing migration from India

It is difficult to characterize migration from India, as data on legal outmigration is not available on a regular and systematic basis.¹³ However, some estimates are available based on the Ministry of Labour, ILO and other sources. It is estimated that during the 1980s, on average, more than 100,000 persons left the country each year for employment purpose. This number rose to over 400,000 per year during the 1990s, reflecting the impact of India's economic liberalization in the 1990s on labour flows. Table 2 in the Annex shows the annual outflow of labour migrants from India for the 1976-97 period.

Skilled and white-collar workers constitute about 20 percent of the total migrant workforce from India. Hence, unskilled and semi-skilled workers constitute the bulk of these outflows.¹⁴ Most of the emigration from India has been driven by economic and social factors, including unemployment/ underemployment, low wages, poor working conditions, lack of advancement opportunities, agricultural stagnation, oversupply of trained manpower, and family and social networks.

The main destinations for these outflows are the Gulf and Middle Eastern countries, followed by the OECD countries, and increasingly South East Asia. The Gulf region became an attractive destination for Indian migrant workers, following the oil-driven boom in these countries in the 1970s and continuing through into the 1980s, with its demand for large numbers of unskilled workers for infrastructure projects and for menial work. As indicated in Table 2 of the Annex, the Gulf countries accounted for over 90 percent of labour outflows from India throughout the 1980s and 1990s. According to the Emigration Division of the Indian Ministry of Labour, during the 1991-97 period, Saudi Arabia accounted for about 50 percent or more of these workers, followed by the United Arab Emirates with about 20 percent, and the others including Oman, Kuwait, Bahrain, accounted for the remainder.

Indian workers constitute the largest group of migrants in the Gulf. A report by Birks, Sinclair and Associates estimates that the migrant non-native population of the 6 Gulf countries was 7,075,851 in the 1990s, of whom over 20 percent were Indian. According to another estimate, there were over 1.5 million Indian migrant workers in the Middle East in 1991, rising to 4 million in 1995. About one in three of these migrants were construction workers. There were an estimated 425,000 construction workers of Indian origin working in the Gulf in 1996, according

¹¹ India Today (October 2002).

¹² India Today (January 2003).

¹³ Neither of the two major sources of information on migration in India, namely, the Census of India and the National Sample Survey of Organizations, record the movement of people from India to other countries. The Office of the Protector of Emigrants at the Federal Labour Ministry is one source of information. However, the data collected by this office only cover those who require emigration permission to leave the country and do not cover persons with graduate and professional qualifications or persons who travel to join contracts after completing a contract who do not need emigration clearance. Place of birth and last place of residence are the two criteria that are used to distinguish a migrant from a non-migrant.

¹⁴ D'Sami (2001), p.1.

to ILO sources.¹⁵ The other occupations include production and related workers, transport equipment operators, domestic workers, nurse aids, technicians, engineers, accountants, and other labourers. Indian migrant workers in the Gulf countries are mainly on contractual arrangements. Table 3 in the Annex gives the number of Indian contract workers employed in service jobs in West Asia and the Gulf in 1989.

The Indian states of Kerala and Punjab account for most of the migration from India to the Gulf region. Surveys indicate that these emigrants are mostly young to middle aged males, in the range of 20 to 50 years. Their educational status ranges from illiterate to high school or middle school graduates for the most part, barring those engaged in higher skill professions like teaching, medicine, and accounting. The mean duration of stay for Indian migrant workers in the Gulf countries is about 5 to 6 years. The propensity to emigrate is positively correlated with the education level and economic status of the household (as indicated by size of landholding and type of house owned). This is because migration is costly. The more educated households tend to have higher incomes and are better informed about work opportunities abroad, and are thus more able and inclined to invest in migration.¹⁶

Indian workers who migrate to the East Asian countries are also mostly on temporary contractual arrangements in unskilled and semi-skilled occupations. The profile of Indian migrants in developed countries such as the US, UK, Australia, and New Zealand is, however, quite different. Most of the Indian workers going to these countries are skilled and educated. They are mostly knowledge workers in professions as varied as health, engineering, information technology, and accountancy. Table 4 in the Annex shows the extent of emigration by Indian knowledge workers. It is important to point out that many of the migrants to the developed countries settle down permanently in their host markets and acquire permanent residency and foreign citizenship. In contrast, migrants going to the Gulf and South East Asia, usually return to India following expiry of their contracts. Thus, permanent migration from India is concentrated among skilled workers emigrating to the developed countries.

Although most of the migration from India has been concentrated in the unskilled categories, in recent years, skilled outmigration from India has become increasingly important. This is evident from rising share of Indian workers in H-1B visas, which are designated for skilled workers in the US. For instance, as shown in Table 5 in the Annex, Indians accounted for 47 percent of all US H1B visas in 1999 (significantly greater than their share of 4.4 percent in 1989), far exceeding the second recipient country, China, which accounted for only 5 percent of these visas that year.¹⁷ Table 6 in the Annex shows the significant share of Indian workers, including professionals, technical specialists, executives, and managers, in world and Asian immigration.

Evidence from institutional sources and academics in India further indicates that emigration has been largest in the engineering and medical professions, though most of this has taken the form of permanent migration. Sukhatme (1994) has estimated that on average, during the 1980s, 7.3 percent of engineering graduates produced in the country left each year. These shares were estimated at 2.8 percent for medicine (only doctors) and 2.1 percent in natural sciences. Moreover, most of these migrants were from well-reputed publicly funded institutions in the country. For instance, on average, between 20 to 30 percent of all B.Tech graduates produced in the famous Indian Institutes of Technology (IITs) migrated from the country during the 1980s and 1990s. About eighty percent of these graduates were from the engineering stream and the rest were from natural sciences. On average, over 50 percent of medical graduates from

¹⁵ Ibid 14.

¹⁶ The profile of Indian migrant workers in the Gulf countries is discussed in Nangia and Saha (2002).

¹⁷ Commander et. al (2001).

reputed medical training institutions like the All India Institute for Medical Sciences (AIIMS), migrated from the country during the 1980s.¹⁸

Tables 7 and 8 in the Annex highlight the magnitude and nature of brain drain in the medical and engineering fields from the country. The high level of migration of highly skilled and trained professionals in the engineering and medical professions in part reflects the importance given to professional education in these two areas within the Indian education system, in terms of educational funding, government subsidies, and provision of infrastructure facilities. Table 9 shows the high percentage of students engaged in doctoral studies in the US, who have plans to stay on, again indicating the extent of permanent migration by the highly skilled and educated from the country.

3.2 Barriers affecting movement of Indian service suppliers¹⁹

There are numerous external constraints, which restrict the movement of Indian service suppliers to overseas markets and thus India's exports via this mode of supply. These are mostly constraints, which fall under the purview of domestic regulations in the host country of the service provider. They are difficult to quantify, and often very discretionary, ad hoc, and nontransparent in nature. The external constraints faced by Indian service suppliers can be broadly grouped into four categories. These relate to:

- (i) restrictions on entry and stay of service providers;
- (ii) regulations concerning recognition of qualifications, work experience, and training;
- (iii) policies which create an uneven playing field between domestic and foreign service personnel; and
- (iv) restrictions on other modes of supply, particularly on establishments in overseas markets, which indirectly limits the scope for movement of service providers associated with the staffing, management, and operations of such establishments.

The following discussion elaborates on the general nature and implications of these restrictions across a variety of services. Details pertaining specifically to the software and health services sectors, are discussed in later sections.

3.2.1 *Restrictions on Entry and Stay*

Worldwide, movement of service providers is mainly restricted by immigration and labour market policies in the host country. Indian service suppliers, like other developing country service suppliers, are subject to a variety of administrative, procedural, and regulatory barriers to entry.

One of the main administrative barriers pertains to eligibility conditions on applications for entry and stay in the overseas market. For instance, wage parity conditions are applicable in major markets such as the US. This condition requires that wages paid to foreign service providers be at par with those that would have been paid for a local person in the same position and with similar qualifications. Such conditions negate the cost based advantage of developing countries such as India in exporting labour-intensive services and works against the very concept of comparative advantage.²⁰ Moreover, such conditions also create administrative and procedural hurdles in labour certification and processing of visa and work permit applications.

¹⁸ See, Sukhatme (1994) and Khadria (1999).

¹⁹ The discussion in this section is mostly based on Chanda (1999).

²⁰ In the US, the employer is required to obtain prevailing wage information from authorities or other sources and pay at least 95 percent of this wage rate to foreign candidates. In the EEA countries, wage rates

The eligibility conditions for entry are also subject to an inherent bias against middle and lower level service professionals with respect to wages, prior employment, and investment in most developed countries. For instance, under the tiered system of work permit application in the UK, tier 1 applications that are filed for higher level persons such as directors, senior executives, and intra company transferees are easier to obtain than permits for middle and lower level personnel. This is because it is recognized that higher level managerial staff raise competitiveness without significant displacement effects in the local labour market while entry by middle level persons is likelier to displace local labour.²¹ In effect, these conditions amount to a discrimination against middle and lower level service providers such as software programmers, construction engineers, and designers. Such biases in entry conditions tend to hurt India's exports in software, engineering, and construction where India's comparative advantage lies in providing middle level professionals rather than managerial and executive level personnel, the latter categories often being linked to commercial presence overseas. Entry requirements are the strictest for unskilled and semi-skilled categories of labour, thus hurting India's export potential in areas such as construction, repair and maintenance and technical services where semi-skilled and unskilled labour flows are important.

Another major entry barrier faced by Indian service providers, especially in sectors such as health, education, and construction services, is the application of necessity tests which are used to determine the scope and extent of entry into major markets like the US and the EU. These include labour market, management needs, and economic needs tests. These tests tend to be administered in a nontransparent and discretionary manner, without clearly specified criteria or implementation procedures, and result in quantitative restrictions on entry.

In addition to strict and biased eligibility conditions and labour market regulations, cumbersome administrative procedures and requirements also hurt market access for Indian service providers. For instance, immigration officials in the US, EU, and Canada require the employer to provide exhaustive details about the job, the background and qualifications of the candidate, and evidence of an extensive search for a local person, including stringent advertising requirements and search specifications (as in the case of the European Economic Area), and failure to find or suitably train a local person. Failing all these other avenues only can an application be considered for a foreign worker.²² There may also be additional requirements specifying that the foreign worker must train a local person for replacement within a certain time period or age and residency based restriction. In sectors such as construction, engineering, and health services, these delays may be further compounded by the administration of needs tests.

There also quantitative barriers to entry by Indian service providers. The US, for instance, puts a cap on the number of H-1B visas (the most important visa for the movement of natural

paid to foreign candidates must be in line with the rates that have been set by collective labour agreements. Work permit applications are normally refused if the candidate is shown to be earning less than the minimum agreed wage for the type of work specified. Failure to comply with the wage legislation can create problems in receiving future work permits, rejection of work permit applications, and penalties if there is a violation. Moreover, there may also be stipulations on how the salary must be paid, such as under specified schemes, in order to prevent misuse of the provisions.

²¹ It is required that the position attract a salary in excess of 50,000 per year and be at board level 'or equivalent' with daily input into the direction of the company at a strategic level, or that the position be that of a high-level executive linked to inward investment of over 250,000 pounds in the UK, or that the position be a senior one that is filled by a high-level employee of a foreign branch of the company (or of a related company).

²² There are penalties for hiring foreign nationals without a work permit. For instance, in the Netherlands, violations are subject to a fine of upto NL Guilder 25,000 per employee detected. The employer can also be required to pay the illegal employee six months wages at the approved rate and the employee faces deportation.

persons).²³ Such quantity restrictions hurt India's professional services exports, especially in sectors like software, engineering, and consultancy services and force professionals from different service sectors to compete with each other, rather than allowing market demand and supply conditions to dictate the extent of entry in individual service sectors.

Restrictions also apply to Indian service providers once they enter the foreign market. For instance, there are limitations on the transferability of work permits and mobility of the provider in the host country. While such provisions are intended as safeguards to prevent temporary labour from entering the host country's permanent labour market, they limit the flexibility of moving the software personnel to various client sites to render the service and act as a disincentive to the home country employers in hiring foreign nationals.

There are also limits on the duration of stay for service providers. Work permits or visas are valid only for the specified duration, which in turn depends on the nature of the position, the candidate's skill level, and other criteria. These limits range from 3 months to five years. Although permits are often extendable, renewals and extensions are subject to stringent conditions and high fees which discourage start up companies from hiring foreign nationals and force them to use local persons who may be in short supply and costlier.²⁴ These are again problems that have been cited by Indian professionals working in various OECD countries on a temporary basis.

Overall, there is also a larger conceptual problem in the way entry restrictions are applied on the movement of service suppliers. In most host countries, the visas granted to temporary service providers fall under the purview of usual immigration market rules and procedures. For instance, H-1B visas in the US are not de-linked from eventual entry into the permanent labour market and possibilities for permanent residence and citizenship in the host country. Hence, conceptually, existing immigration rules and procedures often do not distinguish between service providers who are interested purely in "temporary entry and stay" and prospective permanent migrants. Thus, more restrictive conditions than necessary may become applicable to the temporary movement of service suppliers, effectively hurting trade through such flows.

The net effect of these various entry restrictions, explicit or implicit, is to raise the direct and indirect costs (due to delays and uncertainty) of entering the foreign market. Indian industry associations have noted that such barriers ultimately erode the cost advantage of Indian service suppliers and curtail their scope for supplying many services.

3.2.2 Recognition barriers

Movement of Indian service providers is also constrained by requirements on qualifications, work experience, and licensing/certification. Recognition requirements may either prevent market access for the foreign service provider altogether or may limit his scope for work to specific activities once he enters the overseas market. Such restrictions are common market access barriers in the case of accredited services where there are licensing and certification norms and procedures in most countries.

India's service sector exports are constrained by recognition barriers in several services. The health services sector provides a good example of one such area where Indian service providers face restrictions due to recognition barriers. At present, the main export markets for

²³ The earlier limit on such visas was 65,000. This was raised to 1,15,000 temporarily in view of the Y2K problem and further to 195,000 following pressure from the US IT lobby to increase the H-1B cap.

²⁴ For example, in the US, all new H-1B petitions and first extensions of H-1B's require a fee (in addition to the usual filing fees) of US \$500. What is visibly protectionist about such renewal schemes is that the fees collected are used to fund a training program for resident US workers.

India's health services sector are in the Middle East and Africa as degrees received by Indian doctors and nurses are recognized in the latter countries. Movement of Indian health professionals to the developed countries such as the US and the UK is limited by the non-recognition of Indian medical and nursing degrees. Indian health professionals are required to take host country medical/nursing examinations to re-certify to be able to practice in these developed country markets.²⁵

Similarly, Indian legal degrees are not accepted in the US, Canada, UK, Australia, and other markets where India could export legal services through the movement of its legal professionals. For instance, Indian lawyers need to study JD or LLM in the US and then appear for the State Bar examination. They can practice only after passing the local bar examination. In the absence of mutual recognition in the legal profession, an Indian lawyer who is recruited from India by a US or Indian firm, cannot represent clients in the US court. He can have only an advisory role. In order to be eligible for representation services, he must receive a Master's degree from the US, pass the state bar examination, and register with the State Bar.²⁶ The situation is similar in the case of accountancy services. Qualifications of Indian accountants and auditors are not recognized in the major developed countries, thus hurting their prospects for delivering important business support services to home, host, or third country firms in overseas markets.²⁷

The absence of mutual recognition agreements with important developed countries in important sectors such as health, accountancy, and legal services, hurts India's potential for trade in these areas through the movement of service providers. The latter also has adverse implications for transfer of technology and skills associated with the cross-border movement of service suppliers.

Recognition barriers often take the form of nationality and residency conditions that are imposed on foreign service providers. For instance, Indian lawyers are not allowed to provide notary services and representation services in the US market. The scope of activities provided by Indian legal consultants (who are part of overseas commercial establishments) is usually restricted to international law and home or third country law. Practice of host country domestic law is typically prohibited on nationality or residency grounds in most countries.²⁸

²⁵ The same holds for foreign health professionals wanting to practice in India. US and UK medical degrees are not accepted by the Medical Council of India and therefore health professionals from the latter countries are not permitted to practice in India, except for research and development and charity purposes.

²⁶ The recognition barriers are similar in the case of foreign lawyers wanting to practice in India. Foreign lawyers are not permitted to practice in a court of law in India unless their degree is recognized by the Bar Council of India (subject to additional conditions on the duration and nature of the degree program) and reciprocal treatment to Indian lawyers in the foreign country.

²⁷ In reciprocation, the Institute of Chartered Accountants of India does not recognize foreign accountancy qualifications and thus foreign professionals in this sector can practice only in a limited capacity in the Indian market.

²⁸ In India, nationality based recognition barriers are the main constraint to the presence of foreign legal professionals in the country. An advocate in India must be an Indian national (though a national of another country may be admitted as an advocate if there is reciprocal treatment for Indian legal professionals in the other country). There are also restrictions on appointing foreign lawyers as partners though the latter can be employed as consultants or employees of a local law firm. Furthermore, a person of Indian origin with foreign nationality is allowed to practice in India only if he intends to permanently settle down in India, i.e., meets a residential requirement. Thus, in the presence of this overall nationality requirement for practicing legal services in a court of law, entry for foreign legal professionals is very restricted.

There are also sectors where recognition of qualifications and prior experience of Indian service suppliers is accorded in a highly discretionary manner. This is more common in the case of services involving skills and training but no established accreditation procedures such as software, design, and consulting. Often, there are no clearly specified criteria or bases for determining equivalence between home and host country qualifications and work experience in such sectors, thus providing scope for discretion in granting entry.

3.2.3 *Differential treatment of foreign service providers*

Indian service providers are also affected by policies, which discriminate against them vis a vis service suppliers from the local market or from other developed countries. These discriminatory policies include being subject to more stringent qualification requirements than are imposed on local service providers and eligibility conditions requiring citizenship or residency. Another common source of differential treatment is tax policy. For instance, Indian service suppliers based temporarily or permanently in the US market, are required to make social security contributions such as Medicare and FICA taxes out of their earnings, in the absence of tax treaties between India and the US. These contributions are required despite the fact that the Indian service suppliers are on deputation in the US market for a period, which is less than the period of stay required to avail of social security benefits in the future (ten years in the case of the US). The Indian service provider not only pays social security taxes in the US, but also continues to make his contributions back home in the form of employee provident fund and similar schemes and does not recover his contributions upon returning to India. In effect, there is double taxation of his earnings.

Another common source of discrimination against Indian service providers is government procurement and sourcing policies. It is common for the government in many countries to give procurement and price-based preferences to domestic suppliers of a service, for instance in contracts for construction and consultancy services, in education, data processing, and non-medical professional services. Government subsidies, explicit and implicit, in areas such as construction, health, and education also create an uneven playing field between domestic and Indian service providers in markets like the EU.

3.2.4 *Restrictions on commercial presence*

Since movement of service suppliers often complements trade through commercial presence in services, restrictions on foreign direct investment may also translate into barriers to temporary labour movement in services. For instance, conditions relating to staffing and management by local persons for foreign restaurants in many EU countries, affect the scope for movement of Indian service suppliers in the restaurant business, including cooks, waiters, and managerial staff, to these markets. Similarly, local staffing and management requirements placed on foreign owned establishments in the hospital industry in developing and developed countries, affect movement of Indian health care workers to these markets.

Thus, there are numerous non-tariff barriers to the movement of Indian service providers across a wide range of services that are of trade interest to the country. The most striking feature about these barriers is their administrative, non-transparent, and discretionary nature and their inseparability from important aspects of domestic policies and regulatory framework. This also indicates the difficulties in removing such barriers given their bearing on sensitive issues including immigration and labour market policies, taxes, and welfare policies for domestic workers. These barriers effectively raise costs of entry and operation for Indian service providers, affect the prospects for foreign exchange earnings, remittances, and transfer of skills and technology, thus having not only a sectoral impact but also a wider macroeconomic impact.

3.3 Contribution of Indian service suppliers to the economy

Movement of service suppliers is significant for the Indian economy in many respects. First and foremost is its financial contribution to the Indian economy through remittances and increased savings. As noted earlier, remittances have constituted between 1 to 2 percent of GDP in India. Throughout the 1980s, remittances accounted for about US \$3 billion and rose to nearly US \$12 billion in cash and kind in 1997-98. By geographic origin, remittances to India were to the tune of Rs. 86.4 million, Rs. 28.6 million, Rs. 33.7 million, Rs. 118 million, and Rs. 21 million from Indian migrants in North America, Western Europe, Britain and Australia, Middle East, and other countries (including South East Asia), respectively.²⁹ Thus, Indian service suppliers in the Middle East have been an important source of remittances for India. According to a study by Nair (1986), on average, an Indian migrant worker in the Middle East, saved about 45 percent of his income, most of which was remitted home. Another study showed that in 1998, remittances received in Kerala (the principal source state for labour outflows from India to the Middle East) were Rs. 25,000 per emigrant and that cash remittances constituted 9 percent of the state's domestic product.³⁰ Thus, the contribution of migrant workers through remittances, both at the national and at the state levels, has been significant.

There is evidence to indicate that these service suppliers have made significant contributions to their home states and communities by channeling remittances towards the building of schools, buildings, roads, and other local infrastructure and by helping to improve living standards and employment opportunities in their home towns and communities. This is seen in the case of Kerala which has a large number of migrants, including, nurses, paramedics, doctors, construction workers, and repairmen who work in the Middle East and send back remittances to their home state. The construction of the international airport in Cochin, Kerala was in large part financed by Keralite workers in the Gulf countries and was motivated by the need to facilitate travel by these workers to their home state. Most return with sufficient financial standing to start businesses of their own. Similarly, Gujarati shopkeepers, hotel owners, and businessmen working in the UK and East Africa have played an important role in infrastructure development and contributions towards health and education systems in their home state of Gujarat.³¹ It is believed that remittances contributed to the Green Revolution (agrarian revolution) and to the construction of schools, roads, community centres, and temples, digging of wells, and installation of pumps for drinking water for the community in the Indian state of Punjab.³² One should, however, note that these remittances and savings have also gone towards the construction of palatial houses with modern amenities in the villages from which the workers originate, or have been used to finance private luxury consumption, which would not yield larger benefits to the community.

Non resident Indians (NRIs) have played an important role in channeling their savings to India and have helped support the country at times of balance of payments crises, such as during the recent economic crisis of 1991. Overseas Indians, mostly professionals, contributed to the country's foreign exchange reserve position by depositing their savings in special instruments such as Indian Development Bonds and repatriable foreign accounts that were designed for NRIs, and thus helped restore financial stability. The contribution made to foreign exchange earnings by service suppliers in sectors such as software, engineering, and construction, is well recognized. In fact, export earnings on the service account, mostly in the form of manpower based exports, have helped contain India's overall BoP deficit in recent years.

²⁹ D'Sami (2001), p.6.

³⁰ See, Nangia and Saha (2002).

³¹ See, Appleyard (1999), pp.209-42 and Ganguly (2003), p.71.

³² Nangia and Saha (2002).

Apart from financial contributions to the economy, Indian service providers who are based overseas have also contributed through investments, transfer of skills and technology, and through networking. For instance, returnee Indian doctors from the UK and US and Indian diaspora associations in the medical profession have helped in setting up world class corporate hospitals and superspeciality health care establishments in India. They have also helped in procuring latest equipment and technology, and in providing specialized skills and expertise gathered overseas. Professionals in other areas such as software and engineering services have helped in providing venture capital for startup companies in India. They have also helped in the development of their sectors by selling India as a safe destination for investments to foreign investors, by bringing in projects, facilitating the outsourcing of services to Indian companies, providing contacts to overseas clients, and facilitating further both inward and outward movement of service providers.

The net impact of such contributions through financial and human capital flows, through the transfer of technology and skills, and through enhanced business and export opportunities, is thus substantial in the case of many services. Such positive contributions help offset any costs arising from the loss of human capital and associated public investments due to the outflow of service providers.

3.4 Government policy towards movement of service suppliers

There has been some regulation of migration flows by the Indian government. For example, the government started the Overseas Manpower Corporation in the state of Kerala in 1978. Similar agencies were founded in Delhi and Madras to send qualified and skilled workers based on requests and requirements of foreign employers. The government has also initiated contractual arrangements with countries in the Middle East, Africa, and South Asia, in sectors such as health, education, and technical services, for exporting manpower. The government enacted a new Emigration Act in 1983 under the jurisdiction of the Ministry of Labour to regulate the deployment process which is handled by recruiting agents engaged in manpower exports. Under this Act, only those recruiting agents who are registered with the Ministry of Labour are allowed to recruit for overseas employment. This Act is also aimed at safeguarding the interests and welfare of overseas Indian workers.

Overall, however, the Government of India has had a relatively relaxed policy towards emigration. For the most part, movement by Indian service suppliers has been unregulated and driven by decisions at the individual or company levels and handled by private recruiting agents. The relaxed government policy, especially at the lower skill levels, reflects the need to relieve labour market pressures on account of the high rate of unemployment in the country as well as the government's recognition of the importance of remittances in the economy.

At the higher skill levels, there has been long standing concern about loss of human capital and public investment. However, evidence suggests that there has not been any coherent policy to either regulate such outflows or to benefit in any directed manner from such labour flows. Unlike countries such as South Korea, Taiwan, and South Africa, which have provided special incentives to attract back talent to the home country, there has not been any concerted effort to induce return migration in India. This is mainly because of the large supply of skilled and unskilled labour (employed and unemployed) that is domestically available, which reduces the need to attract back migrants to the country and which makes it difficult to significantly raise wages to levels that would make return attractive. There has not been any major effort to retain skilled workers in the country, except for some policies to delay emigration or to recover government resources spent on training and education, although proposals have been mooted for retaining professionals in the health and engineering fields.

Remittances by overseas Indian service providers have also not been regulated by the government and channeled towards specific developmental purposes such as the building of local infrastructure or for investments in health and education. These remittances and their positive contributions to the home economy (as discussed earlier), have mostly been driven by individual decision making and not government policies, barring some state level initiatives.

There has also not been any explicit policy to benefit from the overseas Indian diaspora or to develop this network in the past. Such efforts have mostly been ad hoc and not well integrated with overall development policies. For instance, periodically, NRIs have been encouraged to invest in India through special incentives and attractive savings schemes. Following the economic crisis of 1991, the Indian government targeted NRIs through a variety of deposit schemes to build up its foreign exchange reserves and restore financial stability. There have also been initiatives to develop collaborative ventures between expatriates and local investors, but these have mostly been ad hoc in nature. Some state governments in India have initiated measures to facilitate contributions by expatriates to the state and local economy. For instance, the states of Kerala, Punjab, and Gujarat have created special institutional structures to liaison with their overseas population and to deal with problems faced by temporary or permanent migrants from their states. But such state government initiatives are not common.

Recently, however, the Indian government has made explicit efforts to encourage diaspora participation in the country, by streamlining investment procedures for them, consulting with them on technology and education policies, and by creating networks and institutional mechanisms to tap their human and financial capital more effectively. In the year 2000, the government appointed a committee to consider mechanisms for encouraging NRI support. The government has also set up a High Level Committee on the Indian Diaspora to benefit from the network of migrants abroad and to give them a greater say in the country's economic and political decision making process. In January 2003, the government celebrated the Overseas Indian's Day for the first time, to express its gratitude to Indian migrants based abroad for their contributions to the economy and to motivate them to participate more actively in India's future development.

But, on the whole, the Indian government has not really made effective use of the movement of its service suppliers, whether temporary or permanent, to transfer technology, bring in foreign capital and expertise, to facilitate business contacts, and for research and development. Moreover, the Indian government has not really been effective in implementing the special incentives and schemes offered to this target group, due to problems with institutional mechanisms, follow up, and governance. Corruption, bureaucracy, and lack of administrative follow up or tracking mechanisms are among the most common complaints of overseas Indians who are interested in contributing to the Indian economy. Recent efforts to develop linkages with Indian migrants and attempts to reduce administrative and institutional barriers faced by the latter in investments and collaborative ventures, may, however, enable India to make better use of its migration experience in future.

As regards entry of foreign service providers into the country, the government and relevant industry or professional bodies have had a rather closed attitude. Although India is not a major destination country, there has been growing interest by some foreign service suppliers to enter the Indian market in areas such as legal and accountancy services, to provide supporting business services to multinationals operating in India. However, as noted earlier, there are recognition and residency/nationality related barriers in such areas, making market access difficult for foreign service suppliers or companies. Some of the professional associations, including the Bar Council of India and the Institute of Chartered Accountants of India, have lobbied actively against foreign competition through movement of service providers or establishments and there is effectively regulatory capture in these professions. Thus, there appears

to be concerned about facing up to international competition, reflected in restrictive immigration policies in India.

4. Movement of service suppliers in India's IT industry

The information technology sector in India accounts for most of the movement of professional service providers from India to the rest of the world. As noted earlier, recent steps in major developed countries to encourage more skilled immigrants, have largely been driven by the rising demand for IT professionals to deliver on-site services in these markets. Indian software professionals have gained significantly from these measures to facilitate the mobility of IT workers and have accounted for most of the increased intake of skilled workers into these countries.

The following discussion provides an overview of the Indian IT industry and specifically within this industry, the software services segment. It highlights the importance of cross-border movement of Indian professionals for this industry and the nature of this movement, in terms of the profile of the service providers, the services rendered, the key markets, and the main restrictions to movement. It also outlines the impact such movement has had on the Indian IT sector and on the Indian economy at large. The discussion also outlines the role of government policy in facilitating or regulating this movement and in addressing the resulting implications in the industry or the wider economy context.

4.1 Overview of the Indian IT industry³³

The Indian IT industry has grown from a mere US \$150 million in 1991-92 to US \$13.5 billion in 2001-02. In terms of its contribution to GDP, the industry's share in GDP has risen from 0.6 percent in 1994-95 to 2.87 percent in 2001-02. According to the National Association of Software Services Companies (NASSCOM), today, the sector provides direct employment to over 400,000 persons and future projections indicate a steady growth in demand for manpower.

The sector consists of four key segments. These include hardware, peripherals, and networking, software and services exports, domestic software and services, and training, with respective shares of 22.3%, 57.4%, 17.3%, and 2.9% in total industry revenues in 2001-02. The breakdown in terms of revenue shares indicates the very strong export orientation of India's IT sector. The software and services exports segment has been the key driver of the overall IT market in the country. Earnings from this segment increased from \$489 million or 28.3% of industry revenues in 1994-95 to \$6.2 billion or 57.4 % of industry revenues in 2001-02.³⁴ The segment has consistently recorded over 50 percent annual growth rates during the 1990s. This remarkable growth in export earnings, particularly towards the end of the 1990s, is in large part attributable to the demand for IT services for Y2K compliance from leading IT user companies during this period, along with the emergence of the internet, and rise in Supply Chain Management and Enterprise Resource Planning in this period.

The main market for India's software services exports is North America, in particular the US. The North American market accounted for over 60 percent of the industry's total software export earnings in 2000-01, at \$3.9 billion, followed by Western Europe which accounted for 24 percent of exports or \$1.5 billion. Other markets, including Japan, Latin America, and the Asia Pacific account for the remainder and are much less significant.

³³ The information in this section is mostly based on NASSCOM (2002).

³⁴ However, the bulk of these revenues have been from low value added activities such as coding, testing, and maintenance, as opposed to more profitable, high value end activities like consulting and product development.

4.2 Characterizing cross-border labour mobility in the Indian IT industry³⁵

Temporary movement of service suppliers is critical for the Indian IT industry since the bulk of India's software services exports is derived from on-site services such as custom application, software development, and maintenance work. Such services are rendered in overseas markets by Indian IT professionals, across a wide range of sectors, in particular, banking, finance, and insurance. On-site professional services contributed US \$3.6 billion worth of export revenues in 2001-01, out of total export revenues of Rs. US \$7.7 billion that year. In most years, on-site services provided by Indian programmers, coders, systems analysts, and maintenance personnel, have accounted for close to 50 percent of total export revenues in this sector. Professional services exports of high value activities are, however, quite negligible as there are only a few large Indian companies that have domain knowledge and advisory expertise to provide IT consulting services or the requisite financial capital and management skills to provide systems integration type services to developed countries.

While it is difficult to quantify the extent of movement by Indian IT professionals, some rough estimates have been made by industry sources, based on assumptions about the allocation of professional visas to Indian service providers and information on the prevailing supply of labour in the industry. These estimates indicate that out of a supply of 132,986 new IT professionals in the year 2001-02, about 64,350 left India to provide on-site services in that year. Migration for on-site work accounted for 15 percent of the total stock of 428,636 IT professionals in 2001-02. NASSCOM estimates indicate that the percentage of return migrants is very small, estimated at about 3 to 4 percent, as shown in Table 10 in the Annex. However, interest in return migration is on the rise and in the past few years, more and more Indian software professionals have been coming back to India.

Surveys of IT companies in India on migration and return migration, indicate that the majority of these professionals who go overseas have backgrounds in engineering or computer applications, from universities, colleges, polytechnics, and training institutes. They include graduates, postgraduates and diploma holders. They provide a wide range of services including programming, systems design, administration, and integration, software maintenance, software development and customization, coding and testing. Most of these professionals are employed at the middle level of their respective organizations and are mostly in their twenties and thirties. There is also movement of suppliers who are in managerial, executive, and specialized positions, mainly in the case of the few Indian companies which have commercial presence overseas and multinational IT companies located in India, but such movement at the higher level is much more limited. Evidence further indicates that although these professionals are deputed abroad on time bound contracts and have duration limits on their visas, many ultimately remain overseas and enter the permanent labour market, particularly in the case of the US. For instance, a web-based survey of Indian IT professionals in the Silicon Valley found that about 32 percent of the 769 respondents from India did not intend to return from the US, although this percentage was much higher at 50 percent for respondents under age thirty five.³⁶ Thus, there is a significant amount of brain drain of engineers, computer application graduates, and IT specialists from the country, mainly to the US market.

4.2.1 *Factors facilitating the movement of Indian IT professionals*

The successful performance of the Indian IT industry in exporting professional services to key developed country markets is mainly due to its manpower strengths and to some extent due to government incentives to promote growth in this sector. India's main strength in the IT sector is its vast base of English speaking and skilled manpower resources coupled with the low cost of

³⁵ The discussion in this section is mostly based on NASSCOM (2002).

³⁶ Saxenian (2002).

this labour, making on-site provision of software services a strong cost value proposition. Its other strengths include the flexibility and adaptability of Indian software professionals, their reputation for on-time and on schedule delivery of projects, the large number of quality training institutions which enable the supply of high class engineering graduates skilled in computer sciences and software, and the financial and technical support available from successful Indians located in the US Silicon Valley. In addition, government incentives for this sector, in the form of tax breaks, provision of infrastructure facilities, and establishment of Software Technology Parks, have also contributed to the strong performance of this sector, including its success in exporting professional services. Indian companies have effectively leveraged these strengths to take advantage of growing demand for IT professionals in developed countries.

4.2.2 Factors constraining the movement of India's IT professionals

There are several factors that constrain the movement of India's IT professionals and thus the country's software services exports. The main constraint is labour market and immigration policies in the developed countries, which affects the ability of Indian IT professionals to deliver on-site services in other markets. These take the form of quantitative restrictions on entry, administrative and procedural delays in processing of visa applications and work permits, biases against entry of middle and lower level service providers, restrictive conditions on wages, nature of work, duration of stay, and high cost of renewals and extensions.

A typical application by an Indian software programmer seeking entry into the US or an EU country may take from 2 weeks to over two months to be processed due to cumbersome labour certification requirements and eligibility conditions on wages, previous employment, and nature of work in the host market. Moreover, these processes tend to be more streamlined for larger companies and for higher categories of IT professionals such as specialists and managers, while the conditions are more restrictive and delays are greater for lower and middle and lower level professionals such as software programmers, coders, and maintenance persons, where India's export interest lies. Indian software professionals also face difficulties in transferring across projects and sites as their work permits are only valid for the particular job detailed in their initial application. In order to transfer, they need to repeat the entire application process, often incurring significant costs in this process.³⁷

The National Association of Software Services Companies (NASSCOM) has criticized these procedural barriers as they create difficulties for Indian IT companies to send their professionals overseas at short notice and in moving them across different on-site projects, thus causing them to lose business opportunities and export earnings. Compliance with such administrative requirements also raises their costs of sending service providers overseas and thus hurts their cost advantage.

The movement of Indian IT professionals has also been constrained by quotas on entry, such as in the US market, as discussed earlier. There is evidence to indicate that these quantitative restrictions have been a binding constraint on movement of Indian IT professionals. For instance, at the peak of the Y2K period when there was a surge in demand for IT professionals, the H-1B

³⁷ Information in this section is based on discussions with NASSCOM. For example, in the UK, if a software house wants to move a candidate to a new project based at a different site not originally mentioned at the time of the work permit application, it must first obtain permission from the labour services bureau. Such applications have to be accompanied by details of the new project/client and, where appropriate, any relevant contract documents. Where there is a likelihood of a candidate needing to move between different clients, or between client and proprietary projects, it is important to draft the initial work permit application in a way that explains all the projects envisaged so as to remove the need for future applications when the candidate switches projects.

quota limit was reached within the first six months resulting in a long waiting list of Indian programmers and systems analysts seeking entry into the US market.³⁸

There are also barriers that arise due to discretionary recognition of qualifications and work experience of Indian IT professionals, given that there are no formal accreditation procedures in this sector. For instance, the stipulated qualification requirements for Indian software professionals such as programmers and systems analysts in the US and UK exceed those actually needed for the service to be rendered, indirectly implying that the candidate's professional and educational qualifications are not appropriately recognized. Programmers and systems analysts applying to enter the UK are required to have five years or more of experience in a high-level (managerial, analytical, or executive) position or a graduate degree plus two or more years of senior post-graduation work experience. Similarly, while candidates are generally required to have at least three years post-graduation experience in the occupation and a degree directly related to it in the US, Indian software personnel may be skilled enough to provide the service unsupervised following 1 to 2 years of experience, given their strong engineering base and ability to adopt new technologies. Hence, their previous experience and qualifications are not duly recognized and discretion in according them recognition amounts to a barrier to their entry into the developed country market.

Another barrier faced by Indian IT professionals is social security taxation. Indian companies depute their professionals to execute many software consultancy and development activities on-site in important markets such as the US. While on deputation, the professionals are paid wages in Indian Rupees in India and continue to pay employment taxes in India under Provident Fund and Public Provident Fund requirements. However, they are also liable to pay social security taxes in the US on their gross wages.³⁹ The objective of this tax is to provide for the employee's old age, sickness, and disability. There are no exemptions, regardless of citizenship or visa status of the employee or employer and whether or not the employee qualifies for any of the benefits available under the laws. It does not matter if the person is a consultant or contractor or agent as he is deemed to be an employee under US laws. However, the Indian IT professionals are allowed to stay for a maximum of 6 years on their visas, which is less than the minimum of 10 years required to avail of social security benefits at a later date. Hence, they are forced to pay without receiving any benefits in future. Moreover, NASSCOM has argued that the social security contributions are like trade taxes on Indian software professionals deputed abroad and erode their cost advantage relative to US and other country software professionals.

Apart from restrictions on cross border mobility in major export markets, there are two issues, which are becoming increasingly important for India's software sector. The first relates to standards and quality of training and expertise of Indian IT professionals. Due to the surge in demand for Indian IT professionals, both for on-site services in client markets and domestically, there has been a rapid growth in the number of IT training institutions within the country. However, there has not been sufficient standardization of these institutes, many of which are in the non-formal sector. There is growing concern in the industry and in the government about possible dilution of quality and standards of training in this sector.

The second issue relates to the high turnover rate in the industry, due mainly to overseas movement of software service providers with very little accompanying return migration. There is some concern that such continued outflows in light of growing demand for IT professionals within the country and overseas, could create future shortage of manpower in the industry. Since

³⁸ NASSCOM sources.

³⁹ There are three types of social security taxes. These include FICA at 12.4 percent of the employee's wages, Medicare at 2.9 percent of the employer's wages, and FUTA at the rate of 6.2 percent of employee's wages). The cumulative impact of all these deductions as a percent of total wages works out to be 21.5 percent.

the Indian IT industry has relied thus far on its competitive strength in providing high quality, reliable, and low cost professional services, both these trends could adversely affect the industry's future prospects for providing on-site professional services.

4.3 Impact of movement of service suppliers in India's IT sector

Although there has been sizeable movement of Indian IT professionals to other countries, there has been little attempt to assess its impact on the domestic IT industry and on the economy at large. Most of the analysis has been general in nature, concentrating on the contribution of this sector to export earnings and India's role in the global IT market. The following discussion highlights the effect of cross border movement of India's IT professionals on various aspects of the Indian economy and its specific impact on the domestic IT industry.

Analysis of the sectoral impact of such labour flows is based on the role played by return migrants and by India's overseas diaspora in developing India's IT sector, through transfer of skills and technology, investments, overseas contacts and business networks. Evidence is primarily based on a recent survey, as yet unpublished, of return migration and diaspora investment in India's IT industry.⁴⁰ Analysis of the wider impact is based on the effect of these flows on the country's financial position, the labour market, income levels and standards of living, training and education, and related infrastructure. The evidence is based on published materials and anecdotal information from various sources.

4.3.1 *Impact of return migration*

One of the channels through which movement of Indian IT professionals to other countries has benefited the Indian IT industry is through return migration. As noted earlier, return migration to India in this sector has been very limited, with most professionals preferring to remain permanently in developed country markets, in particular the US. However, in the last few years, return migration of Indian IT professionals has been on the rise. This is in large part due to the growing opportunities in India's IT sector, including the establishment of global companies with operations in India, which offer attractive remuneration and a work environment and opportunities comparable to those available overseas.⁴¹ Surveys of returning professionals indicate that most are employed in the large Indian companies, such as Infosys and Wipro, and in subsidiaries of top MNCs that are located in India, i.e., companies that are of global repute and have high standards and good work practices.

The survey of returning Indian IT professionals indicates that the latter contribute significantly to the domestic IT industry through the transfer of skills and knowledge. Many respondents note that overseas experience in on-site projects helps them develop domain expertise in fields such as insurance, telecom, or energy, and domain knowledge in technology and applications. Hence, they are able to bring in specialization and depth, and are therefore better placed to lead and educate teams working on projects in specific areas. For instance, returnees in the enterprise solutions group of IT companies bring with them knowledge of niche technology such as CRM and Siebel. Returnees engaged in the systems integration group are very useful for interacting with potential overseas clients. Returnees engaged in offshore development work bring in knowledge of markets like the US and Europe for which such development work is undertaken. Other specific contributions made by the returning professionals include improved

⁴⁰ The sections on return migration and diaspora investment are mainly based on the results of the survey in Ganguly (2003).

⁴¹ It should be noted that compensation levels are still much lower in India than in developed countries like the US for similar positions. However, several returning professionals who were interviewed in the course of the aforementioned survey indicated that if one accounts for the lower cost of living in India and adds the perks offered by some companies in India, remuneration packages might be comparable.

documentation skills, knowledge of new estimation techniques and quality processes, and introduction of new organizational processes and systems of work based on their overseas experience. Overall, the exposure of returning professionals to overseas clients and to new technologies and applications helps Indian IT companies to undertake more diverse and up to date projects which require such expertise. Given their knowledge of overseas market conditions and expectations of clients, such professionals also play an important role by liaising with overseas clients.

Returning Indian IT professionals who have worked abroad for long periods and in senior and managerial capacities, also contribute to the domestic IT industry by helping to establish and manage subsidiaries of MNCs in the country. Often, they are instrumental in influencing foreign multinationals to set up operations in India and do offshore development work in India. Many returning IT professionals have also helped develop the IT industry by establishing their own operations in India, often out of their personal savings. They have made use of their overseas contacts, expertise, and networks to generate funds, get venture capital, and expand into new lines of business. In either instance, whether they set up their own operations or manage MNC operations in India, these professionals play a very important role by facilitating access to foreign capital, technology, personnel, and overseas clients, and by inducing return by other Indian IT professionals, given their prior work experience and networks. In addition, they help create local employment opportunities and create other positive externalities through income generation, higher standards of living, and development of related human and physical capital in the domestic economy. Although it is very difficult to quantify the value of such contributions given their intangible nature, survey-based and other evidence indicate that return migration by IT professionals has had a significant positive impact on the sector in India.

4.3.2 Impact of diaspora investment

Much of the recent success of the Indian IT industry is attributable to diaspora investments in this sector. Many Indian professionals who continue to be located in the Silicon Valley have established companies in India, including some which are 100 percent owned subsidiaries of their US operations. Others have played an important role in financing Indian startups located in India. Such entrepreneurial activity has in part been motivated by the desire of many Indian IT professionals who are settled overseas to give back to their home country, coupled with India's attractiveness for offshore development work due to the availability of low cost, high skill and technically qualified labour. These entrepreneurs typically have many years of experience overseas, usually in globally reputed companies such as Microsoft, Novell, and Hewlett-Packard, and have expertise in niche areas of technology and in product development. Table 11 in the Annex shows the extent of NRI involvement in collaborations in India's IT sector. The figures show the high degree of participation by US based NRIs in this sector.

A recent survey indicates that most of these diaspora based firms are young, founded in the mid to late 1990s, and small to medium sized establishments with sales ranging from US \$5 million to \$20 million.⁴² Their specialization varies widely, including computer systems design and analysis, software consulting and development, application development, quality assurance, data processing, and testing. Most firms are in niche areas and have domain driven expertise. The number of employees varies, ranges from 100 to 300, with 70 to 80 percent of employees being based in India given lower labour costs in India and only about 10 to 50 employees being based overseas. These firms are mostly funded by the personal savings of their founders, though subsequent funding is obtained through venture capital. According to NASSCOM, the authorized capital of such firms ranges from Rs. 50 million to Rs. 400 million. Most of these entrepreneurial firms do not have difficulties in financing or raising funds for business, partly because of the proven record, experience, and overseas networks of their founders. Since most of the diaspora

⁴² This refers to the survey conducted in Ganguly (2003).

investment in India's IT sector originates in the US, the US market is also the largest client for such firms, in volume and value terms, constituting as much as 65 to 80 percent of total sales. Europe and Japan are much smaller, though growing markets, while the Indian market accounts for a very small portion of total revenues.

Apart from the contribution made by the diaspora through resource mobilization and investment, their overseas experience and presence is of great value to the Indian IT industry, in ways similar to those for return migration. For instance, the overseas exposure of the diaspora helps them understand the needs of the market better, often in terms of specific requirements in process design or marketing and thus enables them to develop and deliver appropriate products and services. Physical presence overseas enables the entrepreneurs to develop global networks, gain access to potential customers, and raise capital more easily from the global market where more venture funds are available. Diaspora investment in the IT sector also yields benefits that are internal to the firm, such as enabling continuous skill enhancement and greater diversity and quality of skills among the firm's employees, due to the more complex and demanding types of projects that are obtained on the basis of diaspora networks and contacts. Some of these firms also have policies to train and impart their expertise to the local Indian workforce. These entrepreneurs also encourage the return of qualified and experienced overseas Indian professionals, often consciously targeting such service suppliers. Thus, diaspora investment also gives many Indian IT professionals an opportunity to do professional work and give back to their country. There is a virtuous cycle of investment, skill enhancement, and return.

4.3.3 *Impact on the Balance of Payments*

Much has been written about the contribution of software services exports, mainly through on-site professional service exports, to India's balance of payments position in recent years. The contribution to the current account position is evident from the fact that out of total gross invisibles receipts of \$34 billion in 2000-01, software export earnings constituted about 18 percent at \$6.2 billion, of which professional services exports constituted roughly half of total software export earnings. Hence, roughly, cross border mobility of Indian IT professionals has contributed to about 9 percent of gross invisibles receipts. In fact, there has been much discussion of how the increased inflows under the invisibles portion of India's BoP has helped contain the country's current account deficit at a sustainable level of around 0.5 percent of GDP despite a slowdown in merchandise exports.⁴³ It is widely acknowledged that the software services sector has been the main reason for India's improved position under the invisibles account. In addition, Indian IT professionals have also contributed to the current account position in the BoP through remittances and earnings, although there is no separate breakdown to specifically capture the earnings remitted by this group of service providers.

Movement of Indian IT professionals to markets like the US has also contributed to FDI and portfolio capital inflows into India, as discussed earlier, and thus helped support the capital account of the country. Again, there is no separate breakdown available in the capital account of the BoP to indicate the amount of capital inflows specifically attributable to this group of service providers. But several FDI related indicators suggest that the software sector has been an importance source as well as destination of FDI in the country. For instance, information on foreign collaborations obtained from the Indian Ministry of Commerce and Industry indicates that the list of the top 25 investing companies from the US to India is dominated by major IT companies like Intel, Microsoft, IBM, and Motorola, apart from major financial services companies. Moreover, collaborations in the IT sector by Non-resident Indians increased sharply during the late 1990s, mirroring the trend in outward movement by Indian service providers in the IT sector in this period. Between 1991 to 1999, NRIs contributed a significant 14.2 percent of total collaborations in the IT sector. The electrical equipment sector, including computer software

⁴³ Economic Survey (2001).

has been among the top five sectors attracting FDI into the country in the past few years.⁴⁴ Thus, there is a lot of evidence to indicate that there has been increased FDI in India's IT sector by global IT majors and that this investment has in large part been facilitated by overseas Indian IT professionals and returning Indian IT professionals, a point made earlier in this paper.

4.3.4 Impact on education and training⁴⁵

It is well recognized that India's main competitive advantage in the software services sector is its abundant, high quality, and low cost pool of skilled knowledge workers. The recent increase in demand for IT professionals in major developed countries and the resulting opportunities for overseas and domestic employment for Indian software professionals, has had a major impact on the demand for education and training in this sector and on societal preferences in this regard.

The increased demand for education and training in the IT sector is evident from the fact that the number of IT professionals in the country has risen from a mere 6,800 knowledge workers in 1985-86 to over 500,000 in 2002 due to rising enrolment for IT education. For instance, the number of students admitted for an IT degree in engineering programmes increased from 50,832 in 1992 to 89,957 in 1997 and further to 133,053 in 2001. The number of admissions for IT diplomas in engineering programmes increased from 46,591 in 1992 to 64,263 in 1997, and further to 73,465 in 2001. In both cases, about half of those admitted into these IT degree or diploma programmes, graduated as IT professionals. These increases in numbers admitted for IT degrees or diplomas reflect a shift in society's preference towards IT education and away from other engineering and pure science disciplines in recent years. This shift is mainly in response to the increased scope for temporary and possibly permanent movement to overseas markets for providing on-site professional services in this sector, witnessed in recent years.

The increased demand for IT education and training has also had a major impact on the supply of training institutions and related infrastructure. There has been a significant rise in the number of institutions for graduate and postgraduate training in the IT area and in related disciplines. Apart from the prestigious IITs which were earlier the main source of newly qualified graduates or postgraduates in this field, today, there are more than 250 universities and engineering colleges providing computer education at the degree/diploma level. There are also thousands of private training institutions and polytechnics that provide computer education all over the country. Some of these private institutions, such as NIIT and Aptech, have acquired brand value. They have become an attractive choice for students seeking higher education after leaving school, for mid career professionals interested in changing or diversifying their career path, and for those seeking professional development and upgrading in the IT area.

Statistics providing the educational background of India's IT labour force indicate the growth of training institutions and facilities in the IT sector and the important role they are playing in meeting society's demand for training and education in this sector and in meeting the needs of the IT labour market. For instance, degree and diploma colleges accounted for 90,867 new IT professionals who entered the labour market in 2001-02, of which 57,000 were IT degree professionals and about 34,000 were IT diploma professionals, across the computer science, electronics, and telecommunications streams. These degree and diploma colleges also produced 35,612 new non-IT professionals who entered the labour market in 2001-02. In terms of the total stock of professionals, these colleges accounted for 71,066 IT professionals and 118,707 non-IT professionals in 2001-02 (not all of whom entered the IT labour market). In addition, the number of IT professionals produced by engineering schools stood at 71,000 in 2001, up from about 43,000 in 1997. Thus, it is evident from the large annual output of graduates in IT and non-IT

⁴⁴ FDI information is based on Ganguly (2003).

⁴⁵ Statistics in this section are from NASSCOM (2002).

fields and the variety of training institutions available, that there has been a significant increase in training and education opportunities in this area.

There are both positive and negative dimensions to the increased demand for and supply of education and training in the IT sector. Greater demand for IT education and training and the supporting supply of such institutions may have helped to raise skill levels and productivity in the economy, by providing new avenues for skill enhancement and learning. In the absence of such opportunities, many students may not have been able to obtain higher education in engineering and technical fields of their choice, given India's competitive education system. Thus, the growing supply of IT education and training has probably helped fill a potential gap in higher education and gainfully absorbed many of those seeking higher education.

There have also been positive externalities from the increased supply of training institutions in this sector, in terms of standards of training and infrastructure, employment opportunities, computer literacy, and the overall development of the sector. For instance, the emergence of institutes like the Indian Institute of Information Technology has helped promote quality and standards in education infrastructure in the IT sector. It has also helped promote collaboration between industry and training in terms of development of syllabi, course materials, and product development. In some states like Tamil Nadu, private training institutes have tied up with local schools and colleges to launch innovative schemes to promote computer education. The local schools and colleges provide free space to the private training institutes in their campus. The latter in turn set up their own infrastructure and provide free training to school or college students during regular hours and after school hours conduct commercial training.⁴⁶ Such partnerships have helped promote computer literacy at the local level, and have also helped develop local IT training infrastructure.

The increased supply of education and training institutes in this sector has also made possible the expansion of segments such as IT-enabled services by providing the needed manpower, with associated benefits in terms of employment opportunities and development of related sectors. There have also been benefits on the export side as some of the major training institutions like NIIT have emerged as important exporters of training, on-site maintenance, and programming services to markets as varied as the US, Japan, South East Asia, and Europe. Hence, there appears to have been a virtuous cycle of higher demand, higher supply, greater investment in human and physical capital, increased employment opportunities, and enhanced export prospects.

However, there are some reasons for concern. It has been argued that the shift towards IT education and away from the conventional areas of engineering and the pure sciences may have adverse effects on core technical competence in the long run. Since increased enrolment in IT degree or diploma programmes has been at the expense of enrolment in the core engineering and science streams, long term prospects for research and development, India's excellence in engineering and sciences may be affected adversely. Some critics have even gone so far as to argue that this internal shift in education preferences represents a form of internal brain drain of the best and brightest towards IT, purely in response to growing overseas work opportunities. Thus, movement of service suppliers in this sector through its impact on societal preferences regarding higher education, may hurt the availability of a well balanced pool of scientific and technical manpower in the country.

Another concern regarding the growing supply of IT training institutions relates to the dilution of standards and quality of training, as discussed earlier. There is lack of standardization in curricula and teaching infrastructure across these institutes, particularly in the case of private institutes operating in the non-formal sector. Many do not meet basic teaching and research

⁴⁶ NASSCOM (2002).

infrastructure requirements and the quality of faculty resources and training imparted is highly suspect. Hence, the gains noted earlier, need to be qualified by such quality considerations.

4.3.5 *Impact on the labour market*⁴⁷

Movement of Indian service providers in the software sector to overseas markets has serious implications for the labour market in India, again both positive and negative. These relate to availability of manpower, brain drain, wages, and the labour market structure in the industry. All of these have consequences for human development.

(i) *Labour supply*

As noted earlier, there has been a significant increase in employment in India's IT sector. In 2001, over 500,000 persons were employed in this sector, of which almost 170,000 were estimated to be working in the software and services export segment of the industry, 106,000 in the IT-enabled services segment, and the rest in user organizations. Thus, the software segment which accounts for the bulk of overseas movement in this sector, also constitutes a sizeable share of nearly 40 percent of the workforce in India's IT sector. This in turn implies that the high turnover rate in the industry due to temporary or permanent migration of software service providers, with very little accompanying return migration, has implications for the availability of manpower in the industry.

There are some statistics to indicate that continued outflows of service providers in this sector could lead to future shortage of manpower in the industry. NASSCOM estimates that in 2001-02, total demand for knowledge professionals amounted to 416,000 while total supply of such professionals was estimated at 428,000. However, projections of future demand and supply of knowledge professionals indicate a reversal in this situation by 2004-05, with a total demand of about 939,000 and supply of 875,000, i.e., a shortfall of 64,000 knowledge professionals. More optimistic demand projections put the shortfall at over 500,000. In either scenario, the forecast indicates labour shortage in the IT industry in a few years, with most of this shortfall arising in the software exports segment due to higher growth in demand for knowledge professionals in this area, compared to the domestic software segment or the user organization segment. The effect of migration on the labour supply is clearly indicated by the fact that only about one-third of IT professionals leaving the country for on-site work, are expected to return to India over the next few years, thus contributing significantly to the shortfall.⁴⁸ Hence, in the absence of adequate investment in training, research and development, and education infrastructure to increase the supply of IT professionals, the high turnover rate in the Indian IT industry due mainly to the overseas movement of software service suppliers, could hurt the sector's long run competitiveness which is primarily based on the availability of low cost and high quality manpower resources.

(ii) *Brain drain*

In addition to the impact on labour supply, migration of knowledge workers from the Indian IT industry also constitutes a form of brain drain. To the extent that temporary movement of software professionals results in permanent migration to the host country, most common in the case of the US market, the country incurs a loss of skills and expertise and associated investment in training and education, often at government expense. Since many Indian IT professionals are

⁴⁷ Statistics in this section are based on NASSCOM (2002).

⁴⁸ These projections are based on a variety of factors, including the outlook for software exports and the domestic software sector, outsourcing and offshore activities, output of knowledge professionals in the country, new entrants into the IT labour force, number of IT professionals leaving the country for on-site work, and number returning to the country.

among the best and brightest in the country, graduating from prestigious institutes like the IITs, this outflow of human capital does constitute a brain drain for the economy. National resources spent on such individuals are lost in the short run to the country.

However, there are also positive aspects to this brain drain. Today, there are increased possibilities for "brain gain", through diaspora investment, networking for contacts and projects, technology transfer, information dissemination and exchange with the aid of information and communication technologies, and various forms of collaboration. Thus, brain drain is not irreversible and a one-way phenomenon. Moreover, to the extent that many of the migrating knowledge workers are not the best and brightest and have actually benefited from the increased education and training opportunities in this sector and would otherwise not have been gainfully employed or educated in India, such permanent outflows cannot always be characterized as brain drain.

(iii) *Wages and labour market structure*

Movement of service providers in the software sector prompted by high demand in overseas markets for on-site professional services, has led to higher wages in the IT industry across all occupation levels. For example, entry level salary across selected firms in Bangalore are in the range of Rs. 12,000 to Rs. 15,000 per month (US \$250–320) for software professionals with basic graduate degrees or diplomas in computer applications.⁴⁹ This is more than that received by professionals with similar or even better qualifications working in other sectors of the economy. Thus, the scope for on-site work in developed country markets has helped boost wage levels in the IT sector above wages in other sectors for similar educational qualifications. This has meant improved earnings, better standards of living, and increased savings for those sections which have participated in this technology boom, mainly the young and middle aged population based in a few cities and regions of the country. However, this has also led to greater disparity in wages across sectors and dualism in the labour market for engineers and technically skilled persons working in IT versus non-IT sectors. Also, as mentioned earlier, this disparity in opportunities and wage levels has led to a shift in demand for higher education towards IT and away from core disciplines of engineering and sciences, with possible long term implications for research and development capabilities and competence in other areas such as manufacturing and technology. There is also some concern that rising wages could eventually erode India's competitive edge in providing professional services in this sector.

4.3.6 *Social and other externalities*

Movement of service providers in India's software sector has also affected the pattern of regional and urban development within India, migration flows within the country, and social dynamics. The emergence of cities such as Bangalore and Hyderabad as technology hubs and major urban centres within India is mainly due to the expansion of the IT sector and location by major IT companies like Wipro and Infosys in these cities. The latter trends in turn have been driven mainly by the growth in software services exports, including exports of on-site professional services to developed country markets. The growth of these cities and other such urban software centres has in turn led to migration of IT professionals from other parts of the country to these technology hubs. Hence, external migration in the software services sector has influenced the pattern of internal migration within the country and the very character of many of these host cities in terms of demographics, cultural characteristics, and workforce, with both positive and negative implications.

There has been another very interesting and well known social impact of migration in the software sector. There has been an increase in the demand for prospective grooms working

⁴⁹ ILO (2002), Table 17, pp. 41-42.

abroad in IT companies, especially in some states such as Andhra Pradesh. Dowry rates commanded by such grooms have risen to exorbitant levels, often as much as Rs. 500,000. Thus, overseas movement of software professionals has intensified social customs such as the dowry system. It has also created another form of stratification within Indian society, between those working in the IT sector and those in non-IT professions, and further between those going abroad in the IT sector and those working for the domestic IT market.

4.4 Government policy towards movement of Indian IT professionals

In recognition of the important role played by the IT sector in terms of employment, export earnings, the country's reputation in overseas markets, and positive externalities for other sectors, the Indian government has supported the movement of Indian IT workers to other markets. This support has been provided in direct and indirect ways, through policy incentives, supporting measures and investments, and through negotiations and support for the industry lobby at the bilateral and international levels.

The Indian government has invested in IT training and infrastructure to ensure future supply of knowledge workers, in view of the likely shortage of such workers noted earlier. One major initiative to increase the IT workforce in India has been to set up the Indian Institute of Information Technology (IIIT) in various parts of the country, along the lines of the Indian Institutes of Technology. Some of the IIITs are joint initiatives between the government and industry while others are solely government initiatives. The IIITs give computer software engineering degrees and also conduct short term courses, thus producing degree holders, training professionals, and industry sponsored candidates in short duration courses. In many parts of the country, particularly in the South, state governments have supported the establishment of private training institutions through provision of physical infrastructure. Such government support to promote training and education in the IT sector is in large part a response to the industry's need for a continued stream of low cost and high quality IT workers if it is to remain cost competitive in providing on-site professional services. Thus, it is both a step to enable continued provision of manpower based exports in this sector and to ensure that such outflows do not hurt the industry in the long run.

However, questions can be raised about the quality and standards of many of these training institutions, a point also made earlier. The government has not made any concerted efforts to regulate training standards or to ensure that basic educational infrastructure requirements are met in these private institutes. Hence, despite government efforts to sustain outward movement of service providers in this sector, failure to enforce quality and standards and the wide divergence in training imparted by these institutions, could affect India's ability and reputation as a provider of high value, quality services to other markets.

The government's liberal position towards migration of knowledge workers is also evident from the various incentives it has given the software export segment through tax breaks, setting up of export processing zones and software technology parks with single window clearance for investment approvals. The setting up of the National IT Task Force and the recent establishment of a separate Ministry of Information Technology to promote the growth of the IT sector and of software exports, including on-site services, also reflect the government's general support of manpower based exports in this sector. It must be noted, however, that the government has recently undertaken initiatives to promote offshore work in India, to stem the high labour turnover in the sector and to promote value addition and greater externalities within the economy. Thus, there seems to be a slight shift in policy towards encouraging outsourcing to India and more research and development work in India rather than body shopping type services in this sector.

The government has also been proactive in supporting the industry lobby for greater market access for Indian software professionals in bilateral and multilateral fora. For instance, the government has endorsed the industry position on quicker and simpler procedures for issuance of work permits and visas, on removal of wage parity requirements, on greater transparency in labour certification requirements, greater inter-firm and inter-project mobility for on-site professionals, and on exemption from social security taxes. Hence, the government has tried to facilitate the movement of Indian software professionals through negotiations and industry level support.

While the government has supported the movement of service providers in the IT sector, either by directly facilitating this movement or by providing the necessary infrastructure and conditions to sustain this movement, there has not been any concerted effort to maximize the benefits from these flows. For instance, there has not been any directed effort to attract knowledge workers back to India or to facilitate their integration into the domestic sector, unlike in countries such as Taiwan and Korea which have actively wooed their IT workers through special incentives and privileges. This is partly because of the large pool of labour already available in this sector in India which reduces the incentive for return migration and partly because the software sector has operated in a decentralized manner with very little government intervention. There has also not been any concerted policy for directing the remittances and export earnings from overseas IT professionals towards specific uses in the country. Software export earnings have been exempt from taxes and thus outside the ambit of government policy.

However, recently, there have been some initiatives to encourage FDI by overseas Indian IT professionals under the guidance of the High Level Committee on the Indian diaspora.⁵⁰ Efforts are under way to tap overseas diaspora networks such as The Indus Entrepreneur (TiE) and the International Association of Scientists and Engineers and Technologists of Bharatiya Origin in IT, for financial, technical, and organizational support to develop the IT sector as well as other parts of the economy. However, such efforts are still at a preliminary stage and are few in number. Moreover, overseas as well as returning Indian entrepreneurs in the IT sector have cited difficulties in investing in India, due to bureaucratic hurdles in receiving investment clearances and approvals, inadequacies in supporting infrastructure, lack of institutional capacity at the government level, disconnect in policy intentions and their implementation between the central and state governments, and corruption and governance problems.

Recently, an important issue has emerged with regard to the movement of Indian IT professionals for on-site operations in other countries. This is the issue of welfare and treatment of Indian IT workers. In March 2003, over 200 Indian IT professionals were rounded up (along with other Indians), detained, and ill-treated by the Malaysian police in Kuala Lumpur.⁵¹ Although the Malaysian government ordered an investigation into this incident, the actions were explained as being part of constant efforts by Malaysian authorities against illegal immigrants. However, there appeared to have been an ethnic bias to this raid.⁵² A similar incident occurred in 2002 against Indian IT professionals in the state of Texas in the USA. Several Indian IT workers were rounded up, handcuffed, and made to parade publicly. While such harassment is uncommon in the case of skilled providers, these incidents have raised some concern about the need to protect the welfare of Indian migrant workers, including those in skilled professions. The muted response in the Indian Parliament against this incident and the absence of higher level

⁵⁰ See, Gupta (2002).

⁵¹ According to news reports, several of the professionals were slapped and kicked, handcuffed, made to kneel or sit in a police car, and confiscated of their personal belongings. Their passports and visas were allegedly defaced and they were asked to apply for fresh visas. The detained IT professionals had gone at the invitation of Malaysian companies.

⁵² See, Hindu (March 15, 2003) for more details.

government intervention (except by local Indian government officials) indicates the absence of policies to address such issues of worker protection and harassment.

Thus, overall, the Indian government has not taken steps to regulate the flow, outward or inward of Indian IT professionals to and from other markets. It has taken some steps to ensure the viability of such outward flows in the future but not in a well-directed manner. It has also taken steps to gain from overseas and returning migrant workers in this sector, through investments and technology, but again not in a well administered and coordinated manner. It has also not paid much attention to the protection of its IT workers.

5. Movement of service suppliers in India's health sector

Apart from the engineering profession, the health care sector has been one of the main sectors in which movement of service suppliers, temporary or permanent has taken place in India. Migration of Indian health care workers, including doctors, nurses, paramedics, and technicians, is a long-standing phenomenon. Indian health care providers are found in the Middle East, Africa, the US, Canada, and other major developed countries and are reputed for their quality and skills around the world.

The following discussion provides an overview of the Indian health care sector and the extent and characteristics of cross-border movement of Indian health care providers as well as the factors facilitating and constraining these flows. It also outlines the positive as well as negative impact cross-border movement of service providers has had on India's health sector and on the economy at large. The discussion also highlights the role of government policy in shaping these flows and in addressing the resulting implications.

5.1 Overview of India's health care sector⁵³

According to the World Health Report of 2001, India spends around 5 percent of its GDP on health, with an absolute health expenditure of around Rs.1,030 billion. Although India compares well with other developing countries in terms of its health expenditure relative to GDP, it compares very poorly in terms of annual per capita expenditures on health care. In 1998, per capita total expenditure on health (at official US\$ exchange rate) was a mere \$22 compared to \$320 in Brazil, \$275 in South Africa, and \$667 in Argentina. India spends less than a \$1 per person per day in health care expenditure, which is much lower than that in other low income countries and insufficient to meet the health needs of the population.

5.1.1 *Market structure of India's health care sector*

The health care sector consists of a large public network of health providers. The large size of this network is evident from the fact that in 1998, there were an estimated 23,179 primary health centres, 2,913 community health centres, 4,817 allopathic hospitals with over 400,000 hospital beds and 11,108 allopathic dispensaries with 14,600 dispensary beds, provided by the government and by local bodies. However, notwithstanding the large size of India's public health care system, the segment is rife with problems of inadequate resource allocation in absolute and relative terms, poor prioritization in resource allocation within the sector, inadequate human and physical infrastructure, poor quality, and inequitable distribution.

Central government budgetary allocation to health is very low and stagnant at about 1.3 percent of GDP, putting India among the lowest 20 percent of countries in this regard.

⁵³ Discussion in this section is mainly based on Peters et. al (2002), ICRA (2002), and Baru (1998). Statistics on the health sector are from Peters et. al (2002) and ICRA (2002).

Meanwhile, state budgetary allocations to health have declined in the last decade. The low priority given to health care in resource allocation has resulted in low per capita health expenditures which has affected the reach and quality of public health services. Moreover, public spending on preventive health care receives lower priority than curative care (although the former is exclusively provided by the public health sector), thus imparting a pro-rich bias in expenditures. State and local governments account for three fourths of public spending on health as the delivery of public sector health services is effectively a state responsibility. However, there are significant differences in the level and distribution of expenditures between rich and poor states within the country, causing wide disparity in health care infrastructure across states. There is also disparity in availability of services and health infrastructure between rural and urban areas, with severe inadequacies in the rural areas. In addition to insufficiency of resources, the public health system also suffers from problems with human resource systems, in terms of availability of skills relative to needs, incentives, training and upgrading, quality, performance, and accountability. The latter has resulted in problems of staffing particularly in primary health centres and community health centres in rural areas. Overall, the sector is highly centralized, rigid, politically manipulated, poorly managed, and inadequately monitored.

There is also a large network of private health care providers in the country. The private health care segment consists mainly of for profit medical providers ranging from individual practitioners and small nursing homes to large corporate hospitals. There are also nonprofit entities and providers of Indian systems of medicine such as ayurvedic and unani and many untrained providers offering a combination of systems of medicine. The private sector also offers ancillary services, including diagnostic centres, ambulance services, and pharmacies. The segment as a whole constitutes roughly 80 percent of total health care expenditures in the country, significantly more than in other developing countries, the bulk of this spending coming from the middle and upper sections of the population. Most of this private spending is out of pocket and distributed in a fragmented manner across many different types of service providers.

In recent years, there has been rapid growth of private sector health provision, particularly, by for-profit and nonqualified providers. According to recent estimates, private hospitals represent 93 percent of all hospitals and 64 percent of all hospital beds nationwide. In addition to these allopathic facilities, there are an estimated 2,800 hospitals and 46,000 hospital beds operating under the Indian systems of medicine, most of which are in the private sector. In terms of number of health care providers also, the private segment dominates. Of an estimated 400,000-47,000 allopathic doctors practicing in the country in 1997, about 80-85 percent were practicing in the private sector. Moreover, many doctors employed in the public sector also work in the private sector. Added to these are the informal providers who are not registered but work part-time and are also in the private sector. There are an estimated 1.25 million nonqualified rural medical practitioners. The proportion of people using private health care services has also been rising rapidly, in rural and urban areas. For instance, the proportion of urban outpatients using the public health care system fell from 28 percent in 1986-87 to 20 percent in 1995-96 while the proportion for rural outpatients fell from 26 percent to 19 percent. The proportion of urban inpatients using the public health care system fell from 60 percent to 43 percent and for rural inpatients fell from 60 percent to 44 percent over these same periods.

The high level of privately financed health care and the rapid growth of the private segment is indicative of the failure of the public health system to deliver health care services in terms of both quantity and quality, stemming mainly from the low level of resources invested in the sector. Hence, it is a matter of concern that there is as yet no clear policy framework or implementation mechanism at the national, state and local levels towards private sector health care, which has resulted in undirected and unregulated growth of the private segment.

The labour market structure in India's health care sector is also very skewed. There is relatively greater supply of doctors compared to other health care workers, though the quality of doctors is not uniform across training institutions within the country. Since nursing is not as lucrative a profession as of doctors in India, the availability of nurses is low. But where India really falls short is in its supply of well-trained technicians and supporting health personnel, mainly due to inadequate investment in technical and support training within the medical education system in the country. Further, the skill levels and quality of training for health technicians and support staff is quite low in the country. Overall, this skewed distribution of human resources has resulted in a health care system that is heavily dependent on doctors but without a supporting pool of well-trained nurses and technicians which would enable an equitable and quality health care system.

5.1.2 Status of India's health care sector in the international context⁵⁴

Available internationally comparable data indicate that India is much behind other low income countries in terms of per capita availability of manpower and facilities. Combining the data for the public and private segments, the ratio for the number of doctors per thousand persons was 1.00 for the 1990-98 period, roughly the same as that for all low income countries, but much below the ratio of 1.8 for middle income countries and the world average of 1.5 for all countries. The ratio for the public sector was a mere 0.2 doctors per thousand persons. The ratio for the number of nurses per thousand persons was only 0.9 compared to 1.6 for low income countries, 1.9 for middle income countries, and 3.3 across all countries, during the 1990-98 period. In terms of hospital beds also, India fares poorly by international standards. The ratio for the number of hospital beds per thousand persons was only 0.4 for the public sector and a combined ratio of 0.7 for the public and private sectors combined. This was much lower than the ratio of 1.5 for all low income countries, 4.3 for middle income countries, and 3.3 across all countries in the 1990-98 period.

Although the Indian health care system compares poorly with other countries in terms of availability of both physical and human resources, India has a global presence in the provision of health services. India exports health services through all four GATS modes of supply. For example, India exports telediagnostic, telepathological, and consulting services via the internet to Nepal and Bangladesh, under the mode of cross border supply. There are also exports under the mode of consumption abroad, as patients from the Middle East and South Asia get transplants, bypass operations, and cataract operations done in Indian hospitals, at a fraction of what it would cost them for similar treatment in developed countries. Patients also come from developed countries like the UK, Germany, and the US for treatment under alternative systems of medicine like ayurveda and unani. There are also imports of health services under this mode as there is substantial outflow of Indian patients seeking treatment in developed countries. Indian corporate hospitals are also engaged in commercial presence based trade, including the setting up health care establishments/branches in overseas markets and in India and joint ventures and strategic alliances with networks of health care providers in other countries. Finally, there is export via movement of natural persons as Indian doctors and nurses and to some extent technicians migrate (temporarily and permanently) to other markets to provide health care services. Thus, India has considerable trade potential in the health sector.⁵⁵

5.2 Characterizing cross-border labour mobility in India's health care sector

India's significance as a global exporter of health services is mainly due to the movement of its health care providers to developed and developing country markets. As indicated earlier in

⁵⁴ Statistics on the health sector are from Peters et. al (2002).

⁵⁵ UNCTAD/WHO (1998).

this paper, apart from engineering, the medical profession has been the other main sector that has contributed to emigration, temporary and permanent, from the country.⁵⁶

As of 1992, there were 33 bilateral agreements between India and six countries in the Middle East for providing doctors on short-term assignments. This number is likely to be an underestimate as it only captures the assignments by government doctors who need to clear a formal process before they can leave the country. Private short term contractual arrangements between doctors and these countries are also present. There has been considerable outflow of Indian doctors and other health personnel to developed countries. There are an estimated 60,000 doctors and 35,000 doctors of Indian origin in the UK and US, respectively, constituting permanent migration from the country, though more conservative estimates put these numbers 20,000 in the US and 13,000 in the UK, respectively.⁵⁷ In addition, there is also short-term movement of Indian doctors from reputed institutions to these and other developed countries, mostly under bilateral agreements. The main developed country markets are the US, UK, Germany, Australia, New Zealand, and Canada.⁵⁸ The majority of Indian physicians who are abroad, are based in Commonwealth countries, in particular, the UK due to the fact that India is a member of the Commonwealth. Most of this movement has been permanent in nature, including movement which was originally short term in nature. It is also important to note that many Indian physicians enter the US or UK markets from countries other than India and thus the existing numbers on migration by Indian physicians to these countries, may be underestimated. Estimates of the total stock of physicians that have left the country range between 11 and 15 percent.⁵⁹

There has been a steady stream of nurses to the Middle East and the Gulf countries on such short-term assignments or on a longer term basis. There is not much short-term movement of nurses and other health personnel to developed countries, though there is some temporary movement from public hospitals and institutions for training purposes. There are an estimated 4,000 Indian nurses abroad, representing about 5 percent of the total stock of nurses in the country, most of it being to countries like Bahrain and Oman.⁶⁰ Thus, nurse migration has been much lower than migration of physicians. There is some migration of Indian technicians and paramedics, mainly to the Gulf countries, but little is known about its magnitude and nature. Given the poor quality and non-uniformity of standards and training for health technicians within the country, it is likely that the migration numbers in this category are low and limited to developing countries.

There has also been migration of Indian medical graduates. Although there are no hard statistics on the actual number of medical students leaving the country, there is evidence to indicate that this movement is considerable. For instance, over five thousand Indian medical graduates take the ECFMG exam each year in neighbouring countries (as the exam cannot be taken in India) and over 30 percent of these graduates pass the exam. Since the number applying

⁵⁶ In discussing movement of service suppliers in India's health sector, one cannot really distinguish between temporary and permanent movement. Often what originates as temporary movement for short-term assignments ends up as permanent movement, with health care providers moving from the Gulf or African countries to the UK or the US. What originates as temporary movement for training and upgrading purposes, also ends up as permanent migration to the developed countries. Thus, the discussion in this section covers both kinds of migration.

⁵⁷ The estimates of migration in India's health sector vary. The figures given here are from UNCTAD/WHO (1998) and the Commonwealth Secretariat (1996).

⁵⁸ Even as early as the 1960s, India was one of the main source countries for doctor migration to the UK. There were about 6,000 registered civilian doctors in the UK between 1962-67, who were born in India. While some of these doctors also returned to India, the number of doctors arriving from India to the UK was double the number of those who left the UK for India, during this period. Hence, concerns about brain drain and labour market shortages for doctors, have been long standing in India. See, Gish (1971).

⁵⁹ Meija (1979).

⁶⁰ Ibid 59.

for the exam is an indication of those interested in going abroad, the potential number of medical graduates leaving the country is over a thousand per year. India's most prestigious medical schools figure among the main exporters of medical students to developed countries as shown in Table 12 in the Annex. For example, in 1979, 75 percent of students from the prestigious All India Institute of Medical Sciences who appeared for the ECFMG exam, passed and could leave the country. The pass rates were large for other reputed schools at 48 percent for the Baroda University Medical College, 57 percent for the Seth GS Medical College at Mumbai University, and 62 percent for Madras University Christian Medical College.⁶¹ Though these numbers are dated, they clearly reflect the large numbers migrating in the health sector at the training stage. And as indicated earlier, some 50 percent of students at the famous AIIMS leave the country to work abroad.

Thus, if one combines the statistics for doctors migrating on short or long term assignments, for nurses, technicians, and medical graduates, the extent of movement of service suppliers in India's health sector is huge. It is therefore not surprising that according to a 1979 WHO study, India is the world's largest donor of medical manpower.

Although much of this movement has been permanent in nature, especially in the case of the developed countries, data suggest that there is high interest in return, especially among graduates from some of the best institutions. Table 13 in the Annex provides the results of this survey on return migration. According to this survey of All India Institute of Medical Sciences graduates settled abroad found that about 40 percent of the respondents were ready to return, mainly for personal reasons followed by their desire to give back to the country. On average about 43 percent of those trained and practicing abroad in selected developed countries, actually returned to India. For example, of the 3,708 doctors trained in the UK, 48 percent returned. Of the 1,080 trained in the US, close to 50 percent returned. The absolute numbers were smaller for the other developed countries and the corresponding shares were comparable to those for the UK and the US.⁶² These doctors were trained in general medicine, surgery, veterinary sciences, and pediatrics.

The profile of health care personnel moving abroad from India, varies depending on the occupational and skill category. Within the category of physicians, most of the movement is by specialists, probably reflecting the fact that the effective market demand for persons with very specialized skills is low in a country like India and the opportunities are superior in overseas markets. Within the category of medical graduates, most of the movement is from the best medical training institutions in the country as these are more likely to pass the ECFMG examination. Little is known about the profile of the migrating service suppliers in the case of nurses and health technicians.

5.2.1 Factors facilitating movement of Indian health care providers

Several factors have influenced movement of Indian health care workers, whether temporary or permanent, to other countries. Indian doctors are well known for their training and expertise and their diagnostic abilities. Indian nurses from the state of Kerala, for example, are well known for their professionalism and caring attributes. Moreover, Indian health care workers are also attractive, as they are trained and competent in English, as opposed to healthcare workers from other developing countries. The medical education system in India is also well suited to meeting the requirements in countries like the UK and the US in terms of their urban and curative orientation and thrust on specialists, far removed from domestic health care requirements. In addition, the large stock of doctors, nurses, and technicians available in the country provides a

⁶¹ Ibid 59.

⁶² Ganguly (2003).

ready pool for export of manpower, especially to developing and developed countries facing severe manpower shortages in this sector.

Economic and development factors also influence migration of Indian health care workers. One important factor is that there is overproduction of doctors in India and the market is unable to absorb the available supply of doctors at attractive wage levels. A study of the Indian health care sector in the 1970s estimated that India could afford only about 35,000 physicians compared to the 130,500 physicians it had actually produced and therefore that "overspill" emigration was inevitable. This study found that Indian physicians earned about \$562 per year, about 8 times the national average but much lower than the relative pay levels for physicians in other developing countries and much lower in absolute terms than the pay levels for physicians in developed countries and in the Middle East and Gulf.⁶³ Thus, given the low level of per capita income and purchasing power of the population and the low levels of budgetary allocation to this sector, effective market demand and income levels for physicians are poor, thus resulting in emigration in search of better work conditions and higher incomes.

The same holds true in the case of nursing. Income levels are low and senior nursing positions are highly underpaid. In addition, Indian nurses are faced with difficult working conditions, as they are denied professional status, unlike doctors. They are also typically overworked as hospitals tend to be understaffed. And, there is limited scope for training and upgrading their skills. Such an environment results in movement to overseas markets for better living standards and working conditions. Such economic and development factors are also important in the case of migration by health technicians and support personnel, but since the extent of this migration is more limited and this category has not been studied, little can be said.

5.2.2 Factors constraining movement of Indian health care providers

There are both external and domestic factors, which constrain movement of Indian health care providers to other markets. The single most important external constraint is that qualification of Indian doctors, nurses and technicians are not recognized in many countries, including the US and the UK which are among the main destination markets. Indian medical graduates wanting to go to the US have to clear the US Medical Licensing Examination (USMLE) in order to be certified and be able to practice. This examination which is also applicable to US medical students assesses knowledge and understanding of basic biomedical science as well as clinical science.⁶⁴ For persons holding Indian post graduate degrees, in order to be recognized as a specialist, certification is required by a specialty board following a three to five year programme that includes work in a recognized hospital.

In the UK, Indian medical graduates and postgraduates are subject to stringent certification requirements. They are required to take a PLAB (Professional and Linguistic Assessment Board) examination. Only after clearing the PLAB are they entitled to registration, and to a job in the UK. However, here again there are limitations as the registration is for only a limited period of five years and the PLAB exam can be taken only in the UK and not in India or a third country. Postgraduates are subject to further requirements in order to be eligible to practice,

⁶³ Meija (1979).

⁶⁴ There are three steps to the USMLE. The first step assesses knowledge and understanding of key concepts of basic biomedical science with stress on principles and mechanisms of health, disease, and modes of therapy. The second step assesses medical knowledge and understanding of clinical science considered essential for patient care under supervision, including stress on health promotion and disease prevention. The third step assesses medical knowledge and understanding of biomedical and clinical science considered essential for the unsupervised practice of medicine with stress on patient management in ambulatory settings. The first two steps can be taken in any order but the third one can only be taken once the first two have been cleared.

despite holding a MD or MS degree from India. They are required to clear the fellowship or membership and only after clearing an open general examination are they eligible for selection to a consultant's post.⁶⁵ Similar procedures for certification and registration apply to Indian medical graduates seeking to practice in Canada and Australia.

Although Indian medical qualifications are recognized in the Middle East, Africa and parts of Asia, some of the latter countries are now beginning to require Indian medical graduates and postgraduates to undergo examinations to qualify for practice. In addition, there is also discrimination against Indian medical graduates in the Middle East in terms of the compensation package relative to professionals holding equivalent English or US degrees and diplomas.⁶⁶ It is further important to note that lack of recognition of Indian medical qualifications, not only affects India's exports of health services through the movement of service suppliers, but also its exports from other modes of trade in health services, including telemedicine and portability of insurance under consumption abroad. It also constrains India's ability to staff hospitals and clinics overseas, including those set up by Indian entrepreneurs.

There are similar problems of recognition in the case of nurses, technicians and other paramedical staff. Nursing and technical qualifications from Indian institutions are not recognized in the developed countries, limiting the movement of such professionals as individual service providers or as part of Indian commercial establishments overseas.

In addition to the absence of recognition, other market restrictions include wage parity conditions, administrative and procedural delays relating to visas and work permits, labour market conditions, and social security taxation, which generally affect professional service providers. These restrictions are also applicable to Indian IT workers and were discussed earlier.

There are several domestic constraints to cross border movement of Indian health care providers. These pertain mainly to domestic standards and quality of training and medical education in India. There is a lot of disparity in standards of training for doctors within the country. Degrees recognized by the Medical Council of India (MCI) are based on examinations that are set by individual states with very different standards of training and institutions. This is unlike the case in the US or the UK where degrees are conferred on the basis of a common countrywide examination ensuring uniform standards for all those who qualify. In India, degrees from different institutions and regions of the country are not equivalent. A degree from the All India Institute of Medical Sciences is not equivalent to a degree from a regional university, though both institutions may be recognized by the MCI. The problem of non-uniform training standards and the current certification system is in turn one of the major impediments to the recognition of Indian medical professionals abroad as graduates from reputed institutions carry the burden of being clubbed together with poorly trained graduates from lower rung institutions.

In the case of nurses and technicians also, there is a lot of disparity in domestic training standards. Degrees or diplomas conferred by different institutions are not necessarily equivalent. Nursing degrees or diplomas are under the purview of individual state nursing councils giving rise to divergent standards across states. In the case of technicians, the problem of standards is all the more severe as there is no central technician's council to ensure minimum standards and training via a common curriculum and examination.

⁶⁵The Open General Examination consists of five papers: Paper A—a multiple choice question paper, paper B—a comprehensive English paper, paper C—a medical short answer paper, paper D—a written English paper, and paper E—an oral examination.

⁶⁶There is even further discrimination in that an Indian holding an English medical degree is still paid less than a westerner holding the same degree. However, this is more a case of racial discrimination than a direct recognition issue per se.

These shortcomings in the training and certification set-up are further exacerbated by infrastructure and technical constraints in the health sector. For instance, there is inadequate quality and availability of medical supplies and equipment in training institutions and lab and clinical facilities are often of poor standards. There is also lack of coordination between private and public sector medical colleges and hospitals in the present educational framework. For instance, trainees in medical colleges may have adequate clinical material but may not have adequate supply of high-tech equipment, while trainees in private and public sector hospitals may have sufficient high-tech equipment but not enough supply of clinical material. The present training framework prevents rotation of trainees among the three units in order to overcome the problem of infrastructure and equipment. Such infrastructure and technical constraints adversely affect the quality of medical training in the country and thus the quality of Indian health care providers and their prospects for recognition and market access to other countries.

5.3 Impact of movement of service providers in India's health sector

As in the case of the IT sector, there are both positive and negative implications arising from the movement of service suppliers in India's health sector. Some of these implications, such as in the context of return migration and diaspora investment are similar to those for the IT sector. However, the implications in the context of the labour market and other externalities are much more serious in the case of the health sector, given the latter's public good and non-commercial nature. The following discussion highlights the key channels through which movement of India's health care providers has affected the sector and the economy at large. These include the channels of return migration and investment, export earnings and remittances, labour supply, brain drain, and labour market structure.

5.3.1 *Impact of return migration on the health sector*⁶⁷

It was noted earlier, that there has been some amount of return migration by Indian health care providers, especially to reputed hospitals in the private sector. There is also evidence of increased intent to return among Indian health care providers practicing abroad.

(i) *Skill and technology transfer and intangible benefits*

In recent years, there has been increased return by Indian physicians, mainly to private corporate hospitals like Apollo, Escorts, and Manipal, which have working conditions and infrastructure that are comparable to those in developed country hospitals and which pay much higher wages than in the public sector. A recent survey of these corporate hospitals found that there are around 200 to 250 returning consultants and between 100 to 150 returnee doctors in these institutions. The percentage of doctors with overseas qualifications and experience ranges from 40 to 80 percent of the total staff in these hospitals, according to this survey. The overseas experience of these returning doctors ranges from 5 to 15 years and most have received graduate training in India followed by post graduation training and fellowship abroad, mainly in the US, UK, and Australia. Many of these returning doctors are superspecialists in varied streams such as neurology, cardiology, surgery, and oncology. Almost all the returning doctors (except those returning from the Gulf countries) improve their educational qualifications overseas (unlike in the case of the IT sector), with many being certified by accreditation bodies in the UK and the US. These doctors are often enticed by the corporate hospitals through incentives and compensation packages.

The survey results indicate that there are several important contributions made by returnees to the health sector. The first is technical expertise gathered in the physician's particular

⁶⁷ Discussion in this section is mostly based on Ganguly (2003).

field. Many returning doctors have acquired specializations in rare and niche areas such as skull-based surgery, interventional cardiology, and oncological oncology, for which training opportunities and expertise are not available in India. Thus, return migration enables transfer of skills and expertise in areas that are underserved in the Indian health sector. Also, since the majority of returning doctors have received further training abroad, there is also upgrading of skills and knowledge that results from return migration.

A second contribution of returnees is in helping build the reputation of the institutions in which they work. Several corporate hospitals note that the presence of such superspecialists and overseas trained doctors helps them convey an image of quality care and treatment of international standards to the patients. Thus, return migration also enables enhancement of reputation and credibility in the health care system and helps attract more patients, including patients from abroad.

A third contribution made by returning Indian doctors is to improve the state of medical research and information in the health sector. One of the main deficiencies in the Indian health care system is the low priority given to medical research for practicing doctors. Return has helped create a research environment and institutions such as Apollo today which has introduced continuous medical education programmes to help their doctors update knowledge and to publish in their fields of expertise.

There are other intangible benefits from return migration that are cited in this survey. These include knowledge of quality processes, better ethics and attitudes towards work, greater professionalism and transparency, better management practices, and familiarity with the latest technology.

In the absence of information on emigration or on return migration by nurses and health support personnel, it is difficult to say much about the impact of return migration in these occupational categories. But to the extent that there would be return in these areas, the benefits in terms of transfer and upgrading of skills and knowledge of latest technology and practices, are likely.

(ii) *Investment by returnees in the health sector*⁶⁸

Returning doctors have played an important role in India's health sector through investments. The reputed Apollo group of hospitals, India's first corporate hospital chain, was set up by Dr. Pratap Reddy, a returning Indian doctor from the US. Today, Apollo is one of Asia's largest health care establishments and the first to attract foreign investment in India and the first to set up hospitals outside the country. There are many other cases of doctor entrepreneurs who have raised funds and established their own institutions after returning with considerable overseas experience. Evidence from regional studies in health care indicates that growth of private hospitals in Hyderabad was in large part due to the return of doctors who had practiced in the Middle East, with one-third of the owners of general nursing homes having worked in that region.

A survey of these doctor entrepreneurs around the country indicated that most of these professionals have 10 to 20 years of experience overseas and have been attached to reputed health institutes as specialists have worked in senior positions before returning to India. Many have also been involved in academic medicine and are members of professional medical organizations. These doctor entrepreneurs have set up medical institutions in the country in order to improve the state of medical practice in India through centres of quality and world class care. These establishments vary in size and specialization, ranging from multidisciplinary centres (providing general and specialized services) to specialized centres (mainly for heart and eye care). The size

⁶⁸ See Gupta (2002) and Baru (1998).

ranges from large hospitals like Apollo with 2,600 beds to small institutes like the LV Prasad Eye Institute in Hyderabad and West Bank in Kolkata with 100-150 beds.⁶⁹

The emergence of such doctor entrepreneur hospitals has also helped raise the standard of health care within the private sector in India. These include processes such as counseling for patients, computerized medical records, seminars, education and training mechanisms, collaboration with overseas doctors and institutions, availability of the latest technology and infrastructural facilities, apart from cleanliness, hygiene, and better staffing and management practices. Improved standards and working conditions in turn induce further return by Indian doctors. Thus, overseas experience helps bring in capital into the health sector, in international networking, and in improving standards and quality of health care services.

The establishment of such institutions also generates employment, for general practitioners, specialists, and support staff. The survey finding indicates that the number of full time doctors and consultants ranges from 60 to 159 depending on the size of the establishment. Thus, the employment benefits within the health sector and in ancillary areas can be quite large. Given the inadequate absorption capacity of the Indian health care system, noted earlier, the employment opportunities afforded by such hospitals are important.

These hospitals that have been set up by returning Indian doctors have also taken steps to improve community health and help the poor. Most of these institutions, like Apollo and LV Prasad institute have outpatient and inpatient facilities earmarked for the poor. They also have rural outreach programmes and train personnel in rural and underserved areas. There are subsidized facilities for the poor in almost all such hospitals and there is cross subsidization of poor patients by the paying patients. The LV Prasad institute for example, serves four categories of patients, free, general, supporter, and sight savers. The sight savers help fund treatment for 5 poor patients.⁷⁰ Thus, there are conscious measures in these establishments to serve the needy and to address India's public health requirements.

These institutions also help in improving the state of medical research in the country as they invest in state of the art libraries and create forums for exchange of ideas. They also invest in education centres and training and some have fellowship programmes for medical students.

Thus, there have been considerable direct and indirect benefits from the movement of Indian doctors through the channel of investment. The associated externalities are also obvious, though difficult to enumerate and quantify.

5.3.2 *Diaspora investment in the health sector*

There is also evidence to indicate that there has been investment by non-resident Indian doctors in India's health sector. Table 14 in the Annex shows the importance of NRIs as a source of FDI in India's health sector. Data on foreign collaborations collated from the Ministry of Commerce and Industry show that between 1991 and 2002, NRIs accounted for the largest share of foreign investment in the health sector, at about 30 percent, with the main developed country source being the US. Although there is no separate breakdown for NRI health professionals, a recent report by the Committee on the Role of NRIs and Persons of Indian Origin (PIOs) in Health Sector Development notes that much of this diaspora investment in India's health sector has been by nonresident Indian health care personnel.⁷¹ This fact is also supported by Baru (1998) study which finds that NRI doctors based in the US have contributed significantly to the growth of private hospitals in Southern India, through their involvement as shareholders or as partners.

⁶⁹ Based on survey in Ganguly (2003).

⁷⁰ Gupta (2002).

⁷¹ Ibid 70.

Most of this investment has been in setting up of large superspeciality hospitals and providing high tech diagnostic facilities and to some extent for assisting in upgrading existing hospitals. Nonresident Indian health professionals have also set up small and large nursing homes, usually in their places of original domicile, either on their own or in partnership with local medical professionals and entrepreneurs.

An example of a diaspora funded superspeciality hospital is the Krishna Heart Institute in Ahmedabad, which is a specialized heart and care facility set up by 35 eminent NRIs, headed by a physician, from the state of Gujarat. This institute has been set up through equity participation of the founding members, at a cost of US \$8 million. Its aim was to prevent outflow of patients from India to the developed countries for superspeciality treatment in heart care. The institute has state of the art facilities in terms of specialized laboratories, networking, computerized record system, and intensive care facilities. As many as 30 heart specialists in the US have committed time to the institute and will be assisted by a permanent staff of physicians in surgeons based at the institute. The institute also provides subsidized treatment to the poor based on donations. The group is now aiming to set up similar hospitals in other cities around the country.⁷² This one example illustrates the wide range of benefits possible from diaspora investment in India's health sector.

A survey of different categories of NRI health professionals indicates that the interests and motivations for investment differ across the groups. NRI doctors are mostly interested in setting up new hospitals for philanthropic reasons and for improving the state of India's health care system. NRI nurses are more interested in setting up superspeciality or multidisciplinary nursing homes, with the objective of giving back to their own communities. NRI pharmacists are primarily interested in upgrading existing hospitals and to promote opportunities for research, teaching, and training in these hospitals. Finally, NRI medical professional entrepreneurs are mostly interested in setting up high tech diagnostic centres, superspeciality hospitals, and teaching, research, and training facilities in the health sector, with the aim of improving standards, skill levels, and opportunities for career advancement.⁷³

5.3.3 Impact on the balance of payments

It is recognized that Indian health care providers in the Middle East, Africa, and in developed countries have contributed to the Indian economy through remittances and export earnings under short-term contractual arrangements. For some states like Kerala, remittances by nurses in the Middle East and Gulf countries are believed to be sizeable. However, there is no information available to separately quantify the extent of remittances or service export earnings arising from the movement of Indian health care workers. But it would be safe to say that the magnitude of these remittances or export earnings is not likely to be so large as to help the country tide over difficult BoP conditions, unlike the case in the IT sector.

5.3.4 Impact on the labour market

This is one area where the movement of Indian health care workers raises major concerns, of equity, access, and quality. These concerns arise mainly because of the public good nature of health and stem from the impact of migration on the availability of manpower and the public-private balance in the health sector.

(i) Labour supply and brain drain

Migration of Indian health personnel, to the extent that it is mostly permanent in nature, constitutes brain drain from the economy, in a sector that is vital for ensuring quality of life. The

⁷² See, Gupta (2002).

⁷³ Ibid. 72.

statistics given earlier for the stock of Indian doctors working abroad and the extent of out-migration from reputed medical institutions in the country, combined with the low share of return, is indicative of the extent of brain drain that occurs in India's health care sector. Given the already low per capita availability of manpower (in absolute terms and by international standards) as shown earlier, brain drain adversely affects labour supply in the health sector. A WHO study conducted in 1979, though dated, is illustrative of the impact of migration on manpower in this sector. This study estimated that an addition of 15,000 physicians to India's medical stock (this being the conservative estimate of the number of Indian physicians based abroad) would raise the physician to population ratio by 0.3 physicians per 1,000. This study also found that it would take nearly two years for India's medical schools to produce enough physicians to replace those that had emigrated (assuming that the growth rate of output for medical graduates in the country would continue as in the previous five years).⁷⁴ No such estimates are available for nurses, but given the large stock of some 4,000 nurses outside the country, noted earlier, and the low per capita ratio for the availability of nurses, also noted earlier, migration is likely to have adversely affected the supply of nurses in the country.

The implications in terms of availability of health care personnel and services are likely to be worse than is indicated by such rough estimates. This is because the best doctors and nurses are likely to be migrating from the country, in terms of training and qualifications. This is evident from the high pass rates in the ECFMG exam for medical graduates from the best medical colleges and institutions in the country, highlighted earlier. Hence, migration not only affects labour supply, it also adversely affects the quality of manpower that remains in the country. Moreover, as specialists are more likely to migrate, labour supply in niche areas and specializations is likely to be affected more. Also, to the extent that there is outflow of physicians from public sector hospitals and institutions, which are already understaffed and underprovided, migration hurts the poorer sections of the population which use the public system relatively more than the affluent classes. Thus, equity is also affected adversely in addition to quality.

Associated with this brain drain is the economic loss of resources that are invested for training health care providers, mainly doctors. The aforementioned WHO study from 1979, estimated the cost of educating a physician in India at \$9,600. Thus, taking the conservative estimate of 15,000 Indian physicians present outside the country, this would amount to lost investment to the tune of \$144 million.⁷⁵ The current numbers are likely to be larger as the cost of education has gone up over this period and the stock of Indian physicians present abroad is much larger. Moreover, this simple calculation does not include the contribution, direct and indirect, that these physicians would have made to the country's GDP if they had stayed and been gainfully employed, or the cost of their primary and secondary education. The government subsidies in educating these migrating physicians are lost to the country and could have been spent on other forms of health personnel and health care, or in other areas of the economy.

(ii) *Market segmentation and public-private balance*

Movement of health care providers also affects the labour market structure and the public-private balance in the availability of resources in the health sector. These implications arise mainly in the context of returning health care providers. The latter are typically absorbed into the private health care system, given better working conditions and higher wages in that sector compared to the public segment. Moreover, private corporate hospitals and clinics established by returning doctors, discussed earlier, provide employment to returning doctors and support staff. While this is beneficial to the returning individuals in that they would not have found comparable opportunities and incomes in the public sector, this does aggravate dualism that already exists in the health sector. It aggravates the divide between a well funded, well equipped,

⁷⁴ Meija (1979).

⁷⁵ Ibid 74.

and high paying corporate segment and an understaffed, underfunded, and poorly managed public segment, the former catering mainly to the urban affluent population and the latter catering mainly to a poorer and rural clientele. Thus movement of health care providers, to the extent that it helps stimulate growth in the private segment only, worsens existing inequities within the health care system in India.

The emergence of private hospitals and clinics by returning doctors, which pay considerably more and offer more training and other opportunities also attracts doctors from the public system. There is wide spread belief in India that hospitals like Apollo and Manipal have attracted the best doctors from the public sector hospitals. Thus, there is also a problem of internal brain drain that results indirectly from return migration and associated growth of the private segment.⁷⁶ This too aggravates the dual market structure in India's health sector in the absence of cooperation and mechanisms for resource transfer and sharing between the public and private segments.

5.4 Government policy towards movement of service suppliers in the health sector

The Indian government has taken some steps to discourage overseas movement of Indian health care personnel, chiefly for doctors. These steps date back to the 1960s. In 1969, the government banned the ECFMG examination in the country. Those interested in taking the exam would have to take it in other countries. The government also stipulated that doctors going to the UK and the US for further training would have to obtain a no-objection certificate declaring that the training was essential for developing the country's health care system. In addition, the government has not taken any steps to sign mutual recognition agreements with key markets like the US and the UK. Existing mutual recognition agreements are with countries in Africa, the Middle East, Central Asia, and in the region where migration occurs mostly on a contractual, short-term basis. Thus, the overall approach has been to impede permanent outflow of service providers. However, steps such as the ECFMG ban in the country have not been successful as Indian medical students have circumvented this ban by taking the exam in neighbouring countries like Thailand.⁷⁷ There have also been proposals to require a period of service or payback by those who have received medical education at government expense, before they can emigrate from the country. But such proposals have not been implemented.

There has not been any concerted effort to attract health care providers back to the country, probably reflecting the fact there is already a large pool of such providers in the country, as in the case of the IT sector. There has also not been any effort to help reintegrate returning health care providers into the sector. Such steps have, however, been taken by individual hospitals and institutions, which are the main employers for returning health care providers. These include schemes such as the "fee for service" programme instituted specially by the Apollo group of hospitals for returnees. Under this programme, the returning doctor receives an equity stake in the hospital and receives not only his own consultation fees but also a part of the billing operations, thus enabling him to build a sense of ownership with the hospital while also helping to raise funds. Apollo also offers returnees a "guarantee money" program, which is valid for a one year period. In this period, the doctor does not have to worry about getting enough patients and so can use the time to integrate himself into the system and build his own practice and network.⁷⁸

There has, however, been some effort by the government to attract investment by the Indian diaspora in the health sector. Since 1996, hospitals and diagnostic centres have been accorded automatic approval for foreign equity participation of up to 51 percent. Investments by

⁷⁶ See. Chanda (2001) for a discussion of market segmentation in the health sector and trade in health services.

⁷⁷ Ganguly (2003).

⁷⁸ Ibid 77.

non resident Indian or migrant Indian investors have been given further special concessions, including automatic approval for investments of up to 100 percent foreign equity participation and exemption from import duties if at least 25 percent of the patients are offered free treatment. The recent report of the High Level Committee on Indian Diaspora, 2000 notes that NRIs and persons of Indian origin have to be targeted for developing tertiary health care services in the country, as neither the public nor the domestic private sector has the necessary resources to undertake such investment.

Notwithstanding such efforts, however, the government has failed to create a supportive environment for investors. Returning doctors cite problems in implementing investment projects in the health sector due to bureaucracy and corruption at the state government level, even after receiving clearance and approval from the investment authorities. There is also no specific development board or council which can facilitate the process of investment in this sector, such as by supplying information and helping with clearances and approvals (unlike the case of IT). The government has also not given any special incentives in the form of subsidized land and infrastructure facilities to encourage investment directed at underserved areas. Entrepreneurs (and returning doctors) also cite problems with existing labour laws and poor quality and availability of trained support staff, which make it difficult for such establishments to function efficiently.⁷⁹

Overall, the government has not had a holistic approach to addressing migration and its associated benefits or costs. While it has taken some steps to impede labour outflows in the health sector, these have had little effect. There have been some steps to encourage movement on a short-term basis under contracts with developing country hospitals and governments. There has been an attempt to attract investments by the diaspora, but without the necessary administrative and institutional support to facilitate this process. Incentives for return and reintegration into the labour market have been decentralized in nature and in the private sector, with no efforts in this regard by the government. In addition, the government's failure to enforce uniform standards of training within the country has hurt prospects for movement of health care providers. The government has also failed to address the public-private balance in the health care system. Greater market segmentation has resulted from return migration and the emergence of corporate hospitals established by such migrants. Nor has the government really tried to use the private sector to serve meet larger public health needs. Any efforts in the latter regard have been mainly voluntary on the part of private sector entities.

6. Negotiating strategies under the GATS for movement of service suppliers

The preceding discussion highlights the developmental benefits and the many positive and negative externalities resulting from the movement of Indian service suppliers in the IT and health sectors. It also indicates the role of host and home country governments in regulating this movement, in facilitating the benefits, and in mitigating the adverse consequences. The discussion clearly reflects the need for multilateral rules and disciplines to create conditions that are conducive to more secure market access for developing country service suppliers while also ensuring that development interests and public policy concerns are not compromised in the process. In this regard, the GATS is significant as it provides a forum for multilateral negotiations on temporary cross border movement of service suppliers.

The following discussion highlights the market access commitments that have been made for movement of natural persons, specifically in the IT and health sectors and horizontally across all sectors, by markets of interest to India. It analyses the nature of these commitments, their implications for India in these two sectors and more generally. It also presents India's negotiating

⁷⁹ Based on survey results in Ganguly (2003).

strategy to improve market access for its service suppliers in the health and IT sectors, and more generally in all sectors where India has export potential under mode 4.

6.1 Status of commitments in mode 4: Sectoral and horizontal issues⁸⁰

From the Indian perspective, there have been no meaningful commitments in mode 4 in either the IT or the health sector. All markets of export interest to India that have scheduled commitments in these two sectors have left mode 4 unbound in their sectoral commitment and have referred instead to their horizontal commitments in this mode. These include countries like the US, EU, Canada, Australia, Singapore, and Japan in the case of computer related services (as the IT sector is classified under the GATS) and countries like the US, EU, Canada, Australia, Singapore, and Kuwait in the case of health services.

6.1.1 *Characterizing mode 4 commitments in health services*

An analysis of the GATS commitments in health services clearly reveals that there has been virtually no liberalization under mode 4. The majority of countries have left this mode unbound under market access and national treatment, except for their horizontal commitments in mode 4. In addition, countries have also applied sectoral and horizontal limitations. For instance, among the 55 countries that have committed on medical, dental, and/or veterinary services under mode 4, only 2 countries have not made any limitations on this mode. Of the remainder, 32 have maintained horizontal limitations, and 16 have made sector-specific limitations. The most common limitations include nationality or residency requirements, recognition and qualification requirements as stipulated by relevant professional bodies, and economic needs and labour market needs tests, manpower planning requirements, and requirement of commercial presence. Table 15 in the Annex illustrates the nature of specific commitments in health services under mode 4.

A close examination of the commitments filed by important markets like the US and the EU further reflects the considerable scope for discretion that is retained by these countries in granting approval, determining local needs, and in applying various economic and social criteria to accord market access. Hence, there are problems of transparency and subjectivity in the commitments under mode 4 in this sector. The GATS therefore has no significance for India as far as enabling more secure and transparent market access for its health care providers to other countries.

6.1.2 *Characterizing mode 4 commitments in computer and related services*

The characterization of the mode 4 commitments in computer and related services is broadly similar to that for health services. This is a sector which has received a large number of commitments. However, while these commitments are very liberal in the case of modes 1, 2, and 3, they are mostly partial or unbound in the case of mode 4. Only 5 per cent of the countries have made full commitments in mode 4. As many as 91 per cent of the countries have made partial commitments in this mode, with the remaining 4 per cent of the countries leaving this mode unbound. Moreover, as with health services, most of the sectoral commitments in mode 4 refer to the horizontal commitments in this mode. The latter in turn are also very limited in terms of the scope and extent of liberalization undertaken. For instance, most countries have covered only certain categories of service providers, namely, managers, executives, specialists, and professionals. The schedules do not cover middle and lower level service providers where India's interests lie in exporting software services. In addition, the commitments made on the limited

⁸⁰ Analysis of the commitments is based on the horizontal and relevant sectoral commitment schedules, the WTO Background Reports on the Health and Computer Related Services sectors, and UCTAD/WHO (1998).

categories of service suppliers are further undermined by a variety of horizontal limitations on mode 4, including quantitative restrictions on entry, labour market conditions, wage parity conditions, and limits on stay and transferability of employment. As in the case with health services, there is a lot of discretionary scope and lack of transparency in the use of these limitations. Table 16 in the Annex illustrates the limited extent of liberalization under mode 4 in computer and related services and the highly asymmetric nature of these commitments when compared to those in the other modes.

As in the case of health services, there has been no improvement in market access for Indian software service suppliers under the GATS. Relevant categories of personnel are excluded from the commitments and non-transparent and discretionary barriers continue to remain.

6.1.3 Characterizing the horizontal commitments in mode 4

The above characterization of the sectoral commitments in mode 4 also holds for other sectors. Almost all countries have left mode 4 unbound across the sectors, and have referred instead to their horizontal commitments in this mode. The latter are in turn limited in scope to service providers at higher levels and associated with the movement of capital (or commercial presence). They are also subject to many limitations. The horizontal limitations on mode 4 include: restrictions on entry and stay; pre-employment conditions and other related requirements; needs based tests, quantitative restrictions by numerical quotas for entry; requirements for technology and skill transfer (training local staff); discriminatory tax treatment; wage parity conditions; residency and nationality conditions; recognition and qualification requirements; and government approval requirements, among others.⁸¹

There are several problematic features to these commitments, from the Indian perspective. The first is their bias towards higher level service providers, where India's export interests do not lie in either IT or health care, or for that matter in other professional services. There are hardly any entries for individual service suppliers and independent professionals, categories that are of export interest to India. Moreover, commitments under mode 4 are typically linked to commercial presence abroad. This further reduces the value of these commitments for India as India's exports in software or health services, and in other professional services, is mainly on contractual terms and not related to staffing and management of Indian commercial establishments overseas.

A second problematic feature is the scope for discretion in the interpretation and implementation of the commitments and limitations. This tends to further limit the significance of the existing commitments. A case in point is the failure to precisely define what qualifies as "temporary" under the GATS. There is no agreed definition of "temporary" presence in GATS. This enables countries to leave unspecified the period for entry and stay for the more restricted categories of persons such as specialists and "other persons" where in the first place commitments are fewer and subject to more conditions. Similarly, there is a lot of ambiguity in the terms and definitions of the various categories of service persons that are used in the commitment schedules. These categories are not well defined, often vaguely worded, and remain subject to arbitrary interpretation by immigration officials and consular offices. Likewise, additional requirements such as economic needs and labour market tests have also not been clearly specified and defined in terms of the relevant criteria that are to be applied. Vague terms and conditions lend themselves to administrative discretion, discriminatory practices, and reduced predictability. In general, the commitments on mode 4 suffer from a lack of transparency and objectivity. This is reflected in the way commitments have been worded and filed without sufficient detailed information on the nature and criteria governing limitations that have been scheduled.

⁸¹ See, Chanda (1999) for a detailed discussion of the horizontal commitments in mode 4.

A third and critical problem with the GATS commitments in mode 4 is that they fail to distinguish between temporary and permanent labour flows in services, in terms of the applicable measures and restrictions, even though the GATS is meant to cover only temporary movement. Most limitations that have been filed fall under the purview of general immigration legislation and labour market regulations which also affect permanent movement of labour.

More generally, the GATS framework itself is problematic as regards liberalization of mode 4. This is because the GATS does not have strong and clear multilateral disciplines on the use of domestic regulations that affect movement of natural persons. These include regulations such as discriminatory licensing practices involving citizenship and permanent residency requirements, recognition of qualifications, wage parity requirements, and differential tax treatment between foreign and domestic service providers. The non-generality of principles such as national treatment, the lack of sector specificity of market access commitments, and modalities of the scheduling process, are major structural shortcomings of the GATS framework in the context of liberalizing mode 4.

6.2 Negotiating strategy on mode 4: sectoral and horizontal issues⁸²

The Indian government has adopted a highly pro-active approach to the negotiations on mode 4. In fact, liberalization of mode 4 is perhaps the single most important item for India in the ongoing GATS 2000 negotiations. The strategy is three-pronged. The first part of the strategy is to obtain improved market access commitments in mode 4 from selected countries of interest and for selected sectors. The second part of the strategy is to improve the structure and scope of the horizontal commitments in mode 4. The third part of the strategy is to address horizontal limitations and to strengthen and broaden relevant GATS provisions.

6.2.1 *Sectoral commitments in mode 4*

The sectoral strategy under mode 4 is to target countries such as the US, EU, Canada, Australia, Singapore and other East and South East Asian countries, and WTO member countries in the Middle East, and to target professional and business services. The main goal is to obtain binding sectoral rather than horizontal commitments in these sectors with clearly laid down conditions and limitations, with transparent criteria, and coverage of all service provider categories that are of export interest in that sector.

(i) *Health services*

In health services, India is seeking more liberal and binding commitments in mode 4 from those countries that have already filed/will be filing commitments in the next round of negotiations. The sectoral negotiating strategy will also focus on removing quantitative restrictions on entry by health professionals based on economic needs and other tests or authorization requirements and on the use of recognition-related regulations.

Specifically, India has requested the removal of economic needs and local needs tests with the US and the EU which have included such conditions in their schedules to regulate entry of foreign health professionals. At the least, India has sought information on the criteria for determining eligibility for entry and the number to be allowed to enter based on these tests and transparency in administering necessity tests in this sector. An important objective will be to reduce possibilities for discretion and nontransparency that are currently present in the schedules of major export markets, due to the lack of detailed information on additional requirements.

⁸² Based on Communication from India (Nov. 24, 2000) and Union Ministry of Commerce Working Note on Mode 4. (2003).

The Indian government is also considering negotiating mutual recognition agreements for medical professionals, with important destination markets such as the US, Canada, Australia, and the UK and also member countries in the Middle East, such as Kuwait and Bahrain where current recognition of Indian qualifications may not continue in future. In addition, India is also considering pushing for transitivity in recognition of its qualifications, especially among the EU countries and other regional blocs where there are recognition arrangements.

(ii) Computer and related services

As with health services, India is seeking binding sectoral commitments in mode 4 under computer and related services. In the case of the US, it is seeking the removal of labour conditions for specialty occupations listed in the US horizontal commitments, and at a minimum is requesting clearly enunciated criteria for the use and application of such labour conditions. In the case of Australia, India is seeking the removal of labour markets tests for all specialists. It is also seeking commitments for a larger set of service providers, including occupational categories and skill levels that cover its export interests in this sector. The latter would, for instance, include categories such as programmers, systems analysts, consultants, and technicians.

6.2.2 Horizontal commitment strategy on mode 4

In the context of horizontal commitments on mode 4, India is also pushing for greater scope and coverage of service personnel, including de-linking of commercial presence from movement of natural persons and specifically including the category of individual professionals so as to adequately cover middle and lower level professionals where it has an export interest. India has also called for uniformity in definition and coverage of service provider categories across countries, and specification of relevant criteria for eligibility in each category. This is because binding sectoral commitments can only be meaningful if the coverage, definition, and criteria for service providers, and applicable measures and their associated criteria, as reflected in the horizontal commitments on mode 4, are common across all countries.

The main idea underlying the Indian strategy towards horizontal commitments in mode 4 is to ensure *complementarity rather than substitutability* between the sectoral and horizontal schedules. The horizontal commitments should provide the broader umbrella within which the sectoral commitments would fit while the details provided in the sectoral commitments should support the horizontal commitments and formulae agreed upon. The horizontal commitments would establish a common working definition and coverage of personnel categories and cover a wider range of provider categories than at present. The sectoral commitments would build on this wider scope and provide more detailed provisions and conditions, making them as relevant and specific as possible to individual subsectors and individual classes of service providers within the overall sector.

In both the horizontal and sectoral commitments, India has proposed the need for finer classification of occupational categories in line with sectoral needs and interests. The Indian proposal suggests use of the ILO's ISCO-88 classification, i.e., making commitments as per the MTN/GNS/W/120 classification and supplementing the latter with ISCO-88 categories in relevant service sectors for better disaggregation and coverage of providers.

*6.2.3 Addressing horizontal limitations*⁸³

India is focusing its negotiating strategy on removing or relaxing certain horizontal limitations on mode 4 and for strengthening/ establishing multilateral rules under the GATS to facilitate this strategy. These limitations include: (a) economic needs tests; (b) administrative

⁸³ See, Chanda (1999) for a detailed discussion of the broader Indian strategy for liberalizing mode 4.

procedures for entry and stay; (c) social security taxation; and (d) recognition. The suggestions made in each of these categories are highlighted here.

(i) *Economic Needs Tests (ENTs)*

The Indian proposal calls for multilateral norms to guide the use of economic needs tests and to reduce their discriminatory application. These norms include specification of the criteria for these tests and establishment of procedures for administering these tests and translating their results. In addition, the proposal suggests that fewer occupational categories be made subject to such tests and to exclude certain categories of professionals in the ISCO-88 classification altogether from such tests. The Indian proposal also calls for a reference paper on the use of ENTs. This reference paper would be along the lines of the Reference Paper on Telecommunications. It would define ENTs, specify the criteria for their use, the application procedures, and duration and review process for ENT applications, and provide administrative guidelines. Hence, it would lay the principles for application of ENTs and the procedural aspects of this application.

(ii) *Administrative procedures for visas and work permits*

The Indian proposal calls for separation of temporary and permanent movement of service providers and the institution of a GATS visa or a special subset of administrative rules and procedures within the overall immigration framework for categories of service providers which are covered by the horizontal and sectoral commitments on mode 4. The various features of such a visa or subset of procedures as highlighted in this proposal would include a two to four week time frame for issuing the visa, flexibility in issuing the visa if required on short notice, transparent and streamlined application procedures, mechanisms to determine the status of applications and cause of rejection, ease of renewal and transfer, GATS visas for selected companies, and adequate build in safeguards to prevent entry into the permanent labour market. The Indian proposal insists on transparency and objectivity in the implementation of any visa regime and less onerous conditions than in the case of permanent movement of service providers so as to reduce the scope for discretion and ensure more predictable market access under mode 4.

(iii) *Norms for social security taxation*

The Indian proposal calls for an exemption of the social security contribution in the case of developing country professionals. In addition, it notes the need for bilateral totalization agreements and for GATS norms to facilitate such agreements between developed and developing countries.

(iv) *Stronger disciplines on recognition*

The Indian position is that the issue of recognition of qualifications requires a two pronged approach. Firstly, it requires the establishment of bilateral MRAs in areas such as accountancy, architecture, and health services with interested trading partners. Secondly, it requires the establishment of multilateral guidelines and monitoring mechanisms.

The Indian proposal suggests the establishment of multilateral norms to facilitate MRAs. These include guidelines for granting recognition when there are no formal accreditation or licensing procedures (e.g., criteria for minimum professional experience and education), procedures to determine equivalence between work related and academic qualifications (between on the job experience and degrees), procedures for establishing mechanisms to enable broad-based equivalence of qualifications (e.g., bridging mechanisms, local adaptation period, and

aptitude tests), temporary licensing norms, and mechanisms to facilitate the establishment of bilateral MRAs.

India has also raised the possibility of tackling the wider issue of recognition multilaterally, through GATS Article VI on recognition. Here, the options suggested include pushing for Article VI:4 disciplines on professional services as a whole or using Article VI:6 for professional services if members make commitments in these sectors.⁸⁴ India has, however, noted the need to clarify what is meant by “adequate procedures” for verifying the competence of foreign professionals under Article VI:6. Towards this end, India is considering highlighting specific examples of recognition barriers faced by its professionals in sectors such as accountancy, architecture, and health services in other markets due to the lack of “adequate procedures”, in order to outline what should constitute adequate procedures for verifying the competence of professionals. India is also considering requesting the WTO Secretariat to compile existing work that has been done under the Working Party on Professional Services for the accountancy services sector, and accordingly suggest the necessary elements for “adequate procedures”.

The Indian proposal also calls for the implementation of the notification requirements under Article VII on recognition under the GATS and for the Council for Trade in Services to regularly monitor the implementation of requirements under Article VII. It has called for the submission of the text of existing MRAs to the WTO Secretariat and circulation of these texts among all member countries and that opportunities be provided to developing countries to join negotiations for establishing MRAs.

Thus, the main thrust of India’s strategy to obtain more secure and effective market access and market conditions for its service suppliers is on removing procedural barriers to entry and stay, and improving the overall structure of mode 4 commitments. While it may be difficult to implement some of the Indian proposals, such as those for a GATS visa (especially in light of post September 11th security considerations) or removal of economic needs tests, the Indian strategy on mode 4 has stirred much debate on movement of natural persons. It has prompted other developing countries to take a similar position on this issue and has forced developed countries like the US to consider issues of procedural transparency and administrative barriers to entry and stay. At the least, some of the Indian proposals, such as those on economic needs tests and recognition could lead to improved enforcement of relevant GATS disciplines. Other issues such as social security taxation could be pursued bilaterally with selected countries.

7. Domestic policy measures and options

The government has an important role to play in facilitating the movement of service suppliers and in ensuring that these flows are beneficial to the country. The discussion of the health and IT services sectors in India indicates that government policies on education and training, the labour market, and foreign investment, among others, can greatly influence the nature and extent of cross border movement of service suppliers from a country, and its impact on the country. The following discussion highlights some of the main policy measures that the Indian government would need to take to benefit from the movement of service suppliers, address

⁸⁴ Article VI:4 requires member countries to notify the Council for Trade in Services (CTS) about their existing recognition measures, state whether such measures are based on agreements/arrangements in accordance with Article VI provisions, inform the CTS when opening such negotiations or adoption of new recognition measures or changes in existing measures. Article VI: 6 requires members to provide for “adequate procedures to verify the competence of professionals of any other member”, in sectors where specific commitments regarding professional services have been undertaken.

the attendant concerns, and support its negotiating strategy at the GATS. These measures fall under three categories. The first pertain to enabling greater movement of service suppliers from India's health and IT sectors. The second pertain to ensuring that benefits are realized from these flows, whether they are temporary or permanent in nature. The third pertain to minimizing the negative consequences of such flows. However, these categories are not distinct as the proposals are inter-related across the three categories.

It should be noted that although the discussion refers to the case of the health and IT sectors, the proposed measures are generally applicable to a wide range of services where India can export through the movement of natural persons. Also, some of the proposals are more relevant to the health services sector, given the equity and public good type considerations that arise in this sector.

7.1 Facilitating movement of service suppliers

There are several policy measures that need to be undertaken to ensure that India maintains its comparative advantage in exporting IT and health services (and other professional services) through mode 4. These include, ensuring adequate standards and quality of its service providers, investing in training and education, signing mutual recognition agreements to overcome qualification related barriers, and entering into short term contractual arrangements with certain countries and institutions for movement of Indian service providers.

7.1.1 *Improving quality, standards, and competitiveness of service providers*

While it is true that India has considerable potential in exporting labour-intensive skilled services, its ability to exploit this potential depends on the quality of its service providers. The latter in turn is determined by the standard of training, availability of related infrastructure, the norms for licensing and accreditation, and also the extent to which there is competition in the domestic market.

In the health sector, standards and quality of training and related infrastructure are very poor. There is serious shortage of labs, clinical supplies, and technical equipment in many government training institutions. Private medical training institutions are not properly supervised and thus often lack basic training facilities, manpower, and equipment. The situation is worse for training of nurses and technical staff. Hence, cost competitiveness alone is not sufficient. Indian health care providers must be competent to provide quality health care for which they need to have quality training and educational infrastructure. The Indian government needs to spend much more on medical education and training, including for doctors, nurses, and technicians, and ensure opportunities for continuous upgrading of skills.

It will also be important to reduce disparity in standards and training within the health sector, if India is to signal the quality of its health care providers. As discussed earlier, there is wide divergence in the quality of training that is received by medical graduates in the country. Nursing qualifications and training requirements vary from state to state. Technicians receive training of very different standards and have no central regulatory body to establish standards or administer courses and exams. Such divergent standards not only reduce the mobility prospects for many in the health sector, but also affect those who are of superior quality.

There is thus need to establish common standards of training, common curricula and common examinations, and to upgrade infrastructure for training purposes to realize a higher general level of competence and quality among Indian health professionals. If the long-term aim is to raise training standards to those of the developed countries, then India should also consider opening up its institutions and facilities to international accreditation. A more pro-active role by

regulatory bodies such as the Medical Council or the Nursing Council of India would be required, including the de-recognition of institutes that are below the set standard. Establishment of regulatory bodies such as the setting up of a Central Technician's Council would also be required. Such steps would facilitate the signing of mutual recognition agreements between India and important developed country markets such as the US, Canada, and the UK and provide the basis for increased mode 4 based exports of health services by India to these markets by removing recognition-related barriers.⁸⁵

This issue of maintaining uniformity in training and the importance of enforcing and monitoring established standards through regulatory bodies also applies to other accredited professional services, such as *legal and accountancy services*. Professional bodies such as the Bar Council of India need to supervise training and examinations conducted across law colleges and universities across the country and de-recognize those which fail to meet established norms. At present, there is a general perception that barring a few legal training institutes such as the National Law School of India University, most are of inferior quality and their graduates are far below international standards. If India is to tap its potential in areas such as legal services through cross border movement of professionals or overseas establishment of its law firms, then it must improve the standards of its legal professionals. The same holds true in the case of accountancy services.

Even in unaccredited sectors such as *software services*, the government needs to move towards quality control and establishment of some minimum standards across the large number of computer training institutes that have mushroomed all over the country. To what extent the quality of training and infrastructure provided by these emerging institutes is comparable to that of well-established ones such as NIIT and Aptech is an open question. If India is to retain its reputation as a source of competent software professionals and maintain its dominance in customized software services exports, Indian software professionals must be competitive not only in cost terms but also in quality terms. The government will need to ensure that training institutions meet certain norms for trainer to student ratio, availability of infrastructure, that they have relevant and up to date curriculum, and that there is sufficient interfacing with industry in the training process.

In some service sectors, efforts to improve quality and competitiveness of Indian service suppliers would also require greater market competition within the domestic sector. For instance, at present, there are considerable barriers to inward mobility of foreign service providers and establishment of foreign firms in areas such as legal and accountancy services. Domestic lawyers and accountancy professionals have for example agitated and lobbied strongly against foreign competition. The anti-liberalization sentiment in such sectors reflects regulatory capture by professional bodies, effectively reducing market contestability. Such regulatory capture by vested interest groups needs to be addressed, as it is inimical to improving quality and competitiveness of Indian professionals. Professional bodies within the country will need to accept more competition and be willing to move closer to international standards.

7.1.2 Investment in training and education

India will need to invest in building its human capital base to be a competitive exporter of manpower. As seen in the case of the IT sector, continued outflows of IT professionals from India and the consequent high rates of turnover in the Indian IT industry could result in serious shortage of IT manpower in future. Hence, the Indian government will need to focus on greater investment

⁸⁵ One could argue that such steps would also increase migration of health professionals out of the country and contribute to brain drain. However, such brain drain exists even today. Moreover, the raising of standards would result in welfare gains for society at large and could also help in the retention of professionals as well as help in the process of "reverse brain drain".

in training and education in this sector to ensure adequate supply of labour so that its labour cost advantage in providing on-site IT services (as well as offshore services) is not eroded. Investment in education and training is further required to sustain the expansion of the IT industry in India. This will require setting up of IT training institutions and facilities in the public and private sector, incentives by the government to private training institutes, greater collaboration in training between the public and private sectors, and between institutes and the IT industry.

In the case of health services, the problem of ensuring adequate labour supply through investments in education is not as severe, especially for doctors and specialists, where the labour market is already not large enough to employ existing numbers gainfully. However, this problem is present for nurses and technicians and for health support staff. There is inadequate supply in these categories which has also meant that India has not really exploited its export potential in these areas. In order to export manpower in these categories, the Indian government will need to first invest in building its manpower base in these professions. This will require setting up of training institutions and facilities for nurses, technicians, paramedics, and other health support personnel. These are areas which currently receive less priority than training of doctors and specialists under the Indian medical education system. Thus, some reorientation and reprioritization of expenditures on health education will also be required.

At a broader level, given the paucity of government resources for funding investments in education, there is need to open up higher education to private competition. At present, higher education is the monopoly of the government. Under the University Grants Commission (UGC) Act of 1956, institutes can award degrees only if they are established under Act of Parliament, if they have been especially empowered to award degrees via legislation (IITs), if deemed to be a university, or given the status of a diploma granting institution (IIMs). Although three quarters of the 10,600 colleges in the country are classified as private institutes, in order to be able to award degrees they must be affiliated to 1 of the 240 central or state universities. However, the severe resource crunch faced by the government is preventing it from investing adequately in education, including in higher education. Total expenditure on education fell from 1 percent of GDP in 1980-81 to below 0.4 percent in 2000-01. The share of higher education in total education expenditure has declined from 25 percent in the Fourth Plan to 8 percent in the Eighth Plan. Resource constraints in higher education are likely to become even more severe in future. The UGC has failed in its administrative and certification functions. It has failed to maintain standards of higher education, to the extent that graduates from some universities have even been barred from applying for jobs⁸⁶ If India is to effectively exploit its potential in manpower-based services, greater investment is required in higher education and related infrastructure. This can only be possible if private participation, with appropriate regulatory safeguards and mechanisms, is encouraged in the higher education sector.

7.1.3 Mutual recognition agreements

Lack of recognition is the main impediment to movement of Indian service suppliers in several accredited sectors, including health, legal, and accountancy services. The government has to enter into mutual recognition agreements in such areas with countries where it has an export interest, including in particular, the US, UK, Canada, Australia, New Zealand, and countries in South East Asia and South Asia for the health services sector. The main markets of interest in the case of legal and accountancy services would be the OECD countries, chiefly the US, UK, Canada, Australia, and some EU countries. However, signing of mutual recognition agreements would require the government and relevant professional bodies to benchmark to international standards and the aforementioned steps towards ensuring standards, quality, and adequate investments in training and related infrastructure.

⁸⁶ Panagariya (March 25, 2001).

7.1.4 *Bilateral arrangements on movement of service suppliers*

The Indian government could also consider entering into more bilateral agreements with selected countries and institutions to facilitate the movement of its service suppliers in particular sectors. As noted earlier, India already has more than 30 bilateral agreements in the health sector with countries in the Middle East, Central Asia, and Africa. These are short-term contractual arrangements whereby Indian doctors and nurses go to certain institutions in the latter countries for a specified duration and return to their place of employment in India. Similar agreements can be considered with even some of the developed countries. For instance, there is demand from the National Health Service of the UK for doctors and nurses. This demand can be met through such arrangements, with the added benefit that brain drain type concerns would not arise due to the contract-based nature of work. It would, however, be important for India and the host governments to ensure that such arrangements are not misused to enter the permanent labour market or into third countries (as is the case with many Indian doctors and nurses going from the Middle East to the US and the UK).

7.2 Maximizing the benefits from movement of service suppliers

The experience with the health and IT sectors and available evidence from these two sectors indicates that the government has not made any major effort to benefit from the process of migration, be it from return migration, or from temporary or permanent migrants located abroad. Steps can be taken to make use of the experience and skills of return migrants more effectively. Steps can also be taken to enable the overseas Indian diaspora in sectors like health and IT and other professional services, to participate more effectively in the Indian economy.

7.2.1 *Attracting return migrants*

Evidence in the IT and health sectors indicates that return migration helps in transfer of skills and technology, in building overseas networks, in securing overseas clients and projects, and in attracting investment, directly from the returnees themselves and indirectly through their overseas networks. Thus, the government should take some steps to encourage return migration.

The government should help returnees to be absorbed more effectively into the labour market, to the extent that they enter public sector institutions. As most of returnees enter the private sector, given higher wages and better working conditions compared to those in the public sector, the government needs to target eminent returnees in the private sector. This can be done by involving them in policy making and by encouraging them to network with the public sector and contribute their skills and expertise to public sector institutions, with the aid of tax incentives for working in the public sector or doing charity work, or through moral suasion. Such measures are important in the case of health services. The government should also encourage returnees to contribute financially through investments in setting up establishments or upgrading existing establishments, by streamlining investment procedures for interested returnees and through investment incentives.

The aforementioned policies for upgrading infrastructure and standards would also yield benefits in the form of reverse brain drain and better retention of professionals. It would make Indian health professionals established or going abroad more inclined to return to India, given the fact that poor quality infrastructure and facilities has been one of the primary reasons for outward migration in sectors like health. A recent article in the Economic Times noted examples of Indian doctors who had left lucrative practices abroad to serve their country, attracted by high quality corporate sector hospitals such as Apollo and Escorts.

7.2.2 *Encouraging diaspora participation*

The Indian diaspora in health and IT has played an important role in the growth of these sectors, through investments and networks. However, the Indian government has only recently realized the huge potential of its diaspora. The thrust of the government's policy towards the diaspora should be to encourage diaspora investment in their sectors of origin and more generally in the economy. Recent proposals in this context include setting up a single window contact mechanism with the diaspora (like a Person of Indian Origin or Non Resident Indian cell in the government) to deal with diaspora investment, and forming committees at the local and state government levels to consult with overseas Indians and encourage their participation in the Indian economy. The government also needs to address problems faced by diaspora in the investment process due to the lack of streamlined approval and implementation procedures, corruption at the state and local levels, and problems with follow up and institutional set up in the investment process. Such problems do affect potential investment by the diaspora, as is indicated by surveys. In order to effectively tap its diaspora network, the government will also need to track its diaspora, create a data bank of overseas professionals, and institutionalize and develop its diaspora network, as has been done by countries like China, Colombia, Taiwan, and South Africa. Once established, the government can make effective use of this network not only for attracting foreign investment but also to organize joint development projects with government agencies, establish links between the diaspora and the concerned domestic sector for research and training purposes.

7.3 Mitigating the negative consequences of movement of service suppliers

The discussion in this paper points to potential adverse consequences from the movement of service providers, in particular, the problems of brain drain and increased market segmentation that may result from such movement. The government also needs to take measures to mitigate such impact through targeted policies and through general development policies.

7.3.1 *Addressing brain drain*

Policies to stem brain drain have been suggested by many academics and are well known. These include measures like a tax on brain drain and regulating outflows. Some of these proposals merit consideration in India. In particular, in the health sector, other than for short-term contractual arrangements, steps can be taken to delay emigration. For instance, in the case of medical graduates who have been educated at government cost, emigration may not be allowed till the potential migrant has served in the public health sector for a specified period and thus paid back for the subsidized education received. Medical students who are educated at government expense are typically required to sign a bond with the government, to serve public institutions for a specified time period following their graduation. This rule can be enforced for those seeking to go abroad for higher education in lieu of which, the government could insist on monetary pay back for its investment in training the individual (though this compensation would not cover the indirect loss to the economy from migration by this individual). This rule can be enforced through the existing practice of requiring emigration clearance for health providers leaving the country, in that clearance would not be allowed unless this pay back in cash or kind, has been met. Such proposals are less relevant to the IT sector and to more commercially oriented services.

The government would also need to monitor movement of service providers under contractual arrangements to prevent misuse for the purpose of permanent migration. Here, host and source country cooperation would be required for preventing overstay and misuse. In general, there is need for *bilateral cooperation* between receiving countries and India to manage cross-border flows of health service providers in line with host and home country supply and demand conditions. Bilateral cooperation could be in the form of host countries compensating the sending

countries through assistance agreements or ensuring that the latter's health professionals return after serving a fixed period. This is also possible through cooperation on *immigration and labour market policies*, such as under special visa schemes and recruitment programmes for overseas health professionals, so as to regulate the movement of health professionals in accordance with the needs and interests on both sides.

Bilateral cooperation is also required to promote links between emigrating professionals and skilled nationals and benefit from "brain gain" networks. Also, the aforementioned policies of investing in training and education to ensure adequate labour supply, would also be important in mitigating the negative effects of brain drain on equity, costs, and quality.

7.3.2 Addressing structural consequences of movement of service providers

Movement of service suppliers can lead to greater dualism within the education and labour markets in the concerned sectors. In the health sector, outflows of service providers have been mainly from public sector institutions, thus aggravating shortages in that segment. Moreover, return migration is concentrated in private corporate hospitals, which in turn have attracted away the best practitioners from the public sector, causing further two-tiering of the health sector. In the IT sector, movement of IT professionals has led to an internal brain drain from engineering and core sciences towards IT education and has resulted in wage distortions between IT and non-IT technical employment.

Such distortionary consequences in the health sector need to be addressed through the establishment of public and private sector linkages. For example, mechanisms need to be instituted to ensure that the public health system gains from the outflows and return of service providers. These could include policies of cross subsidization between the public and private health care sectors through transfer of tax revenues collected from the latter, provision of beds for the poor at free or subsidized rates in high quality corporate hospitals, and incentives to the private sector and to returning professionals to provide extension and outreach services and training in underserved areas. Such linkages would enable the public health care segment to also reap the benefits associated with return migration and investment by diaspora in the health sector. Similarly, linkages through cooperation in training, professional exchange, use of facilities, sharing of information and research, and provision of complementary or specialized services, and other such collaborative arrangements should be encouraged between the public and private segments.

It is more difficult to suggest policies which could address the distortionary consequences of cross border labour flows in the case of the IT sector. Here, the government will need to ensure that increased investment in IT training and education is not at the expense of investment in non-IT sectors and long term research and development capabilities. Thus, a balanced education policy needs to be followed while also responding to labour market pressures in the IT sector.

8. Conclusion

This paper has highlighted the importance of movement of service providers for India from various perspectives. Cross border mobility of Indian service providers constitutes an important source of export earnings, remittances, and foreign investment for the Indian economy. It is also associated with positive social and economic externalities through the transfer of skills and technology and through its impact on education, employment, and incomes. However, cross border mobility of Indian service providers also aggravates structural distortions in the economy, results in loss of valuable and scarce human capital, and undermines the very basis for such

flows. Thus, this is an issue that needs to be approached with a balanced and holistic understanding of its positive and negative implications.

The discussion in this paper indicates the possible multilateral strategies and domestic policy measures that the Indian government can adopt to benefit from the movement of service suppliers, while keeping in mind concerns of equity, resource availability, and larger developmental goals. If India is to benefit from the ongoing GATS negotiations on movement of natural persons, the outlined GATS strategy needs to be supported by the outlined domestic policies. In addition, partnerships between the government, industry, professional bodies, and civil society are required in formulating India's multilateral strategy and in implementing the supporting domestic policies and reform measures.

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Annex

Table 1. Estimated size of overseas Indian population: Major Countries, 2002

Region/Country	Total – Non Resident Indians and Persons of Indian Origin
USA	1,678,765
Malaysia	1,665,000
Saudi Arabia	1,500,000
UK	1,200,000
South Africa	1,000,000
UAE	950,000
Canada	851,000
Mauritius	715,756
Trinidad and Tobago	500,600
Fiji	336,829
Kuwait	295,000
Australia	190,000

Source: Report of the High Level Committee of Indian Diaspora (2002)

Table 2. Annual Outflow of labour migrants from India, 1976-97

Year	Number of emigrants	Percent of emigrants to the Middle East	Year	Number of emigrants	Percent of emigrants to the Middle East
1976	4,200	n.a.	1987	125,356	97.2
1977	22,900	n.a.	1988	169,844	97.7
1978	69,000	n.a.	1989	126,786	95.1
1979	171,000	n.a.	1990	141,816	94.2
1980	236,200	n.a.	1991	192,003	96.0
1981	276,000	n.a.	1992	416,784	96.7
1982	239,545	93.6	1993	438,338	95.5
1983	224,995	96.9	1994	425,385	95.1
1984	205,922	96.4	1995	415,334	93.0
1985	163,035	98.4	1996	414,214	93.7
1986	113,649	96.1	1997	416,424	92.8

Source: Nangia and Saha (2002), Table 1, p.14.

Note: n.a. = not available

Table 3. Indian Contract Workers in Service Jobs in West Asia and the Gulf

Country	Number
Bahrain	110,000
Kuwait	150,000
Oman	280,000
Qatar	80,000
Saudia Arabia	700,000
UAE	500,000
Yemen	103,000
Libya	36,000

Source: D'Sami (2001), p.3.

Table 4. Indian Emigrants to Europe, America, and Oceania (knowledge workers)

Country	Number
France	42,000
Germany	32,000
Netherlands	103,000
UK	790,000
US	815,000
Portugal	102,000
Canada	250,000
Australia	200,000
New Zealand	30,000
Indonesia	30,000

Source: D'Sami (2001), p.3.

Table 5. Total Issue of USA H-1 Visas & Sending Country Shares. 1989-1999

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
India	4.4	4.6	6.9	10.7	18.0	22.9	26.3	32.0	39.3	44.0	47.2
China	1.7	1.0	1.9	1.7	2.4	2.5	3.2	3.9	4.0	4.2	5.0
Philippines	12.4	12.4	12.2	14.6	18.0	17.8	17.0	7.7	3.3	3.0	2.6
Mexico	6.0	6.4	5.4	4.8	3.1	2.3	2.5	3.2	3.5	2.5	2.1
Russia	4.6	6.3	6.6	3.2	4.5	2.5	2.0	2.1	1.7	1.5	1.4
Total LDCs	29.2	30.8	33.1	35.1	46.0	48.1	50.9	48.8	51.8	55.4	58.2
UK	13.6	12.2	14.8	13.0	9.5	8.6	8.1	9.3	8.6	6.9	5.7
Japan	7.5	6.5	8.7	5.4	5.1	4.5	3.5	4.0	3.6	3.1	2.9
France	4.7	3.9	4.1	3.3	2.1	2.0	2.1	2.4	2.3	2.3	2.3
Germany	3.7	2.8	3.2	2.9	2.4	2.2	2.5	2.5	2.6	2.5	2.1
Australia	1.8	1.4	1.9	1.9	2.0	2.1	1.8	1.9	1.8	1.8	1.4
Total Developed Countries	31.4	26.8	32.6	26.5	21.1	19.5	17.9	20.2	19.0	16.7	14.3
Others	39.4	42.4	34.3	38.4	32.9	32.4	31.2	31.1	29.3	27.9	27.4
Total no. of Visas	48820	58673	59325	51667	42206	49284	59093	60072	80608	91378	116695

Source: Commander et al (2002)

Table 6. India's Share in Asian and World Immigration of workers 1994-1996

Occupation	Indian Immigration	Asian Immigration	World Immigration	Indian as % of Asian	Indian as % of world
Overall Occupational	114,528	688,327	2,440,777	13.2	4.7
Total Occupational	38,395	295,516	851,507	13.0	4.5
Professional, Technical	19,603	89,917	201,568	22.0	9.7
Executive, Managerial	6,246	41,841	83,631	14.9	7.5
Sales	1,489	14,581	39,950	10.2	3.7
Administrative Support	2,390	20,816	61,610	11.5	3.8
Production, craft and repairs	767	17,775	66,780	4.3	1.1
Operator, Fabricator and Labour	846	43,543	195,861	1.9	0.4
Family, Forestry and Fishing	3,567	20,366	42,698	17.5	8.4
Service	3,467	47,406	159,409	7.4	2.2
No Occupational Reported	76,133	572,811	1,589,270	13.3	4.8

Source: Khadria (1999)

Table 7. India's Brain Drain in Engineering, Medicine and Natural Science and Degree Holders of IIT, Bombay: Estimate for 1980s

Field	Yearly Average National Output in the '80's	Estimate of Brain Drain (yearly average for 80s)	Per cent
Engineering	24,088	1,765	7.3
Medicine	21,175	590	2.8
Natural Sciences	22,714	470	2.1

Degree	Number of Typical Annual Output	Number likely to Settle Abroad	Estimate of Brain Drain
B.Tech	250	77	30.8
M.Sc.	80	20	25.0
M.Tech.	250	34	13.5
Ph.D.	60	6	9.8
Total	640	137	21.4

Source: Sukhatme (1994) in Khadria (1999)

Table 8. A Comparative Overview of the DST Sponsored Brain Drain Studies on Migration in India

	IIT Bombay	IIT Madras	AIIMS Delhi	IIT Delhi
Year of Study	1987	1989	1992	1997
Period Covered	1973-77	1964-87	1956-80	1980-90
Population Size	1,262	5,942	1,224	2,479
Sample Size	501	429	402	460
In India	179	184	200	316
Out of India	322	245	202	144
Magnitude of Brain Drain	30.8%	25-28%	56.2%	23.1%

Source: Khadria (1999)

Table 9. Number and Percentage of Students with Firm Plans to stay in US, 1999

Region/country	<i>Foreign S&E doctoral recipients</i>				
	Total	With plans to stay	Percent	With firm plans to stay	Percent
Total: Selected Countries	55,444	34,917	63.0	21,779	39.3
Asia	43,171	28,280	65.5	16,964	39.3
China	16,550	14,145	85.5	7,935	47.9
India	7,843	6,200	79.1	4,290	54.7
Korea	8,851	3,197	36.1	2,005	22.7
Taiwan	9,927	4,738	47.1	2,734	27.5

Source: Saxenian (1999) reprinted in Commander et al (2002)

Table 10. Return Migrants in the Indian IT Industry, 2000-2005

Category	2000-01	2001-02	2002-03	2003-04	2004-05
India new IT Labour		132,986	158,099	172,977	192,194
Number of Professionals live in India (onsite work)		64,350	64,350	64,350	21,450
Number of IT Professionals returning to India		-	20,109	24,131	29,250
Number of IT Professionals	360,000	428,636	542,495	675,233	875,248
Percentage of Migrants		15.01%	11.86%	9.53%	2.45%
Percentage of return Migrants			3.7%	3.57%	3.34%

Source: NASSCOM (2002)

Table 11. Collaborations involving NRI's in the IT Sector, 1991-1999

Year	NRI	USA	Mauritus	Others	Total
1991	0	2	0	6	8
1992	4	18	0	14	36
1993	6	23	0	12	41
1995	10	39	0	26	75
1996	10	48	8	40	106
1997	11	51	11	58	131
1998	27	57	10	40	134
1999	45	106	25	86	262
<i>Total</i>	113(14%)	344(43%)	54(6%)	282(35%)	793

Source: Ganguly (2003).

Table 12. Major Exporting Medical Schools in India, 1979

Name of Institutes	Pass Rate
Baroda University Medical College	48%
Seth GS Medical College, Bombay University	57%
Madras University Christian Medical College, Vellore	62%
All India Institute of Medical Sciences, (AIIMD), New Delhi	75%

Source: Meija (1979)

Table 13. Estimates of Doctors who have returned from overseas, 1998

Country of Destination	Total Trained %	% Returned	Major Specialties
United Kingdom	3,708	48.03	General Medicine, Surgery, Veterinary Science and Pediatrics
USA	1,080	49.7	-Do-
Germany	82	41.46	-D0-
Other European Countries	284	52.46	-Do-
Australia & New Zealand	60	23.33	-Do-
Canada	176	42.04	-Do-
Other	694	47.55	-Do-
Total	6,084		

Source: Ganguly (2003) (obtained from the Health Information of India).

Table 14. Sources of FDI in the Health Sector, 2001

Source	Investment	Percentage
NRI	2,013.24	36%
Mauritius	1,154.51	20%
USA	1,006.6	18%
UK	674.6	12%
Singapore	217.85	4%
Germany	195.2	3%
Canada	157.75	3%
Others	219.13	4%
Total	5,638.88	100%

Source: Gupta & Goldar, 2001

Table 15. GATS Commitments in Health and Related Services For Movement Of Natural Persons

	MARKET ACCESS			NATIONAL TREATMENT	
	Unbound	None	Measures	Unbound	None
<i>Movement of Natural Persons</i>					
Medical and dental services	32	1	11	39	5
Services provided by midwives, nurses, physiotherapist, and paramedical	23	0	8	21	2
Hospital services	22	2	7	31	7
Other human health Services	10	0	1	10	0

Source: UNCTAD/WHO (1998), *International Trade in Health Services: A Development Perspective*, Geneva.

Table 16. Analysis of Market-access Commitments on Computer and Related Services (by mode of supply, as percentages of the number of schedules including each sub-sector)

	No. of schedules	Cross-border			Consumption abroad			Commercial presence			Natural persons		
		F	P	N	F	P	N	F	P	N	F	P	N
A. Consultancy related to the installation of computer hardware	52	63	13	23	73	12	15	77	21	2	6	90	4
B. Software implementation services	57	60	21	19	70	19	11	68	30	2	7	88	5
C. Data processing services	55	60	20	20	71	18	11	69	29	2	5	89	5
D. Data base services	49	63	14	22	76	14	10	71	27	2	4	92	4
E. Other	30	53	40	7	57	37	7	53	47	0	0	97	3

F: Full commitment (indicated by "none" in the market access column of the Schedule)

P: Partial commitment (limitations inscribed in the market access column of the Schedule)

N: No commitment (indicated by "unbound" in the market access column of the Schedule)

Note: The figures in this table reflect only those entries inscribed under the computer services commitments in the schedules. It should, however, be borne in mind that entries made in the horizontal section of the Schedule relate to commitments made in this and all other scheduled sectors. Per centages may not add up to 100 due to rounding.

Source: WTO (1998), "Computer and Related Services", Background Note, Geneva.