

INTERNATIONAL MIGRATION PAPERS

**49**

**Skilled Labour Migration from  
Developing Countries:  
Study on India**

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**Binod Khadria**

INTERNATIONAL MIGRATION PROGRAMME

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## Table of Contents

Foreword.....	v
Executive Summary .....	1
1. Introduction.....	4
2. Approach of the Study: The Underlying Perspective .....	6
3. Scale and Magnitude of the ‘Brain Drain’ .....	10
3.1. Occupational migration.....	10
3.2. Student migration.....	16
3.2.1. The United States:.....	17
3.2.2. The United Kingdom: .....	18
3.2.3. Germany:.....	18
3.2.4. France: .....	18
3.2.5. Canada: .....	19
3.2.6. New Zealand: .....	19
3.2.7. Australia:.....	20
3.2.8. The role of Indian universities: .....	21
4. Impact of Migration on India.....	22
5. Perceptions and Debates on the ‘Brain Drain’ in India .....	30
5.1. On the exodus of Indian talent abroad .....	30
5.2. On student emigration.....	37
6. Policies in Place to Manage the ‘Brain Drain’ .....	38
6.1. Restrictive policy to reduce emigration of skills in short supply.....	38
6.2. Compensatory policy to derive resources from the Diaspora.....	39
6.3. Restorative policies to encourage and facilitate return migration through national, bilateral and multilateral schemes and agreements with receiving and other sending countries .....	40
6.4. Policies for economic growth and development.....	42
7. Conclusions and Suggestions.....	42
7.1. On policy reforms and measures available .....	42
7.1.1. Specific measures by the UK government:.....	45
7.1.2. Specific measures by the Indian government: .....	47
7.2. Areas for further research .....	48
7.3. Suggestions regarding data .....	49
7.4. Concluding remark.....	51
References.....	52
Annexure.....	59



## Foreword

This report forms part of a series of studies conducted by the International Labour Office under the DFID-sponsored project on “*Skilled labour migration (the ‘brain drain’) from developing countries: Analysis of impact and policy issues.*”

International migration of skilled persons has assumed increased importance in recent years reflecting the impact of globalisation, revival of growth in the world economy and the explosive growth in the information and communications technology (ICT). A number of developed countries have liberalized their policies for the admission of highly skilled professionals.

The problem lies in that this demand is largely met by developing countries, triggering an exodus of their skilled personnel. While some amount of mobility is obviously necessary if developing countries are to integrate into the global economy, a large outflow of skilled persons poses the threat of a ‘brain drain’, which can adversely impact growth and development. The recent UK government (DFID) White Paper on International Development, “*Eliminating World Poverty: Making Globalisation Work for the Poor*” has rightly pointed out the need on the part of developed countries to be more sensitive to the impact on developing countries of the brain drain. It was in this context that the Department for International Development, United Kingdom, approached the ILO for carrying out research relevant to the above issues.

India has long been an important player in the global supply of professionals and students, and the scale and magnitude of the ‘brain drain’ from India continues to be substantial.. This study by Professor Khadria argues that the impact of brain drain on India should be examined in the light of globalisation of human capital and resulting ‘second-generation’ possibilities for sustainable human development at home through expatriate investments, particularly in education and health. The study suggests a number of specific measures that the receiving countries and India can adopt to maximize benefits from skilled migration.

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Mr. Piyasiri Wickramasekara, Senior Migration Specialist, International Migration Programme, acted as the ILO Project Coordinator and technically backstopped all the studies. ILO is most grateful to Professor Binod Khadria for his valuable contribution.

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Manolo I. Abella  
Chief  
International Migration Programme

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## **Executive Summary**

1. This is a country case study on the impact of highly skilled labour emigration - comprising both professionals and students - from India, and analysis of policies and policy options aimed at reducing the negative effects and consolidating the positive effects of the brain drain.
2. The study follows the approach that emigration of highly skilled labour could be looked at either as painful drain of human resources or gainful globalisation of human capital. The latter perception depends upon the condition that benefits flow back into the country of origin in a sustainable manner - in terms of raising the average labour productivity and standard of living of the non-emigrating masses. It is pointed out that a myriad of targets in general business and industry for roping in the expatriate nationals' resources, money, skill, and vision would not achieve this long-term objective. Rather, the two prime determinants of the objective are education and health. It is argued that policies focused on these two sectors as receptacles of expatriate participation in development would have the long-term positive impact of generating a self-sustaining market with an expanded effective demand for alleviation of poverty.

*Scale and magnitude of 'brain drain' from India continues to be substantial:*

3. India has long been an important player in the global supply of professionals and students. The scale and magnitude of emigration or the 'brain drain' from India continue to be voluminous quantitatively as well as qualitatively for both these categories. Most of the Indian emigration is U.S. oriented, though host countries such as the UK, Canada, Australia, New Zealand are also popular destinations. Some EU countries (e.g. Germany and France) and Asian countries (e.g. Japan, Republic of Korea and Singapore) have also become increasingly interested in encouraging immigration of Indian IT professionals and students in the twenty-first century.
4. There are no comprehensive national estimates of the proportion of output of Indian higher education institutions migrating to the developed countries for work or study, although immigration data in the US indicate substantial numbers of Indian immigrants in professional and managerial occupations of the American labour market. Some institution-based surveys in India put the emigration of engineers from the Indian Institutes of Technology between 22 percent and 33 percent, and from a premier medical institution at 55 percent. These are of course, the higher estimates for best of the brains; there are graduates from other streams and other institutions and universities whose proportions are likely to be lower comparatively, but otherwise quite significant in the context of the overall labour market and education scenario in India.
5. Although there is generally a dearth of data on gender dimensions of emigration, figures indicate a substantial presence of Indian women in high-end occupations like science and engineering in US higher education when compared with other immigrant nationalities. In contrast, female representation in India is loaded in

low-end occupations of the labour market, and non-science streams in higher education. Data also show growing emigration of Indian women students for higher education abroad. This has a bearing on the labour force participation rate of female labour within India, which is lower than that in the UK or the US, but any elaborate analysis calls for generation of more data and information on this important aspect.

6. A large number of developed countries are in the fray to attract Indian students for higher education in their countries. This is because Indian students are considered amongst the best in the world, and also because it substitutes for the dwindling enrolment of domestic students in providing the necessary minimum economies of scale to the institutions of higher learning in these countries. Obviously, this will have an impact on India.

*Impact of 'brain drain' on India needs to be examined in the light of shifting paradigms:*

7. The impact of brain drain on India has been examined in the light of the shifting paradigms of the phenomenon of skilled labour migration - from the first-generation 'loss-and-gain stereotypes' to the 'second-generation' possibilities for sustainable human development-led growth of average labour productivity within India.
8. Amongst the major positive impacts has been the rapid increase in remittances from Indians abroad, but economic costs of remittances are often high. Remittances from the highly skilled Indian emigrants seem to be declining over time. Moreover, a high proportion of remittances are supposedly flowing back to the developed countries as education fees paid by larger numbers of students going abroad for higher studies.
9. The impact of the brain drain of IT professionals and students is anticipated to be negative on technological development in India because of imminent shortages. This follows from the projections that Indian demands for IT workers are greater than their forecast production until 2008. While the government perceives little problem with these trends and is, in fact, euphoric about India becoming a superpower through globalisation of Indian IT professionals, the media voices grave concern about critical shortages and/or loss of public subsidies in higher education for the benefit of the multinational companies in India and abroad. The recent layoffs in the US due to slowdown in the IT sector has, however, altered the tone of these debates and perceptions on both sides.
10. Return migration of highly skilled Indian professionals from abroad has received a lot of attention recently, but only a limited number seem to be involved in development activities. A large number of non-resident Indians (NRIs) coming to India as intra-company transferees of multinational corporations end up being ambassadors of their employers. Many Indian returnees come to India only for short periods.



11. Emigration prospects and possibilities have led to choice distortions amongst students and their parents preferring to choose IT, commerce, or finance related disciplines rather than medicine or science, which would have a direct bearing on future productivity of the Indian population in the long run.
12. Impacts are subject to perceptions and debates amongst various sections of Indian society on the issue of brain drain. National debates are also affected by the international perceptions about the growing demand for Indian skills, and sometimes by slowdown and layoffs.

*There is scope for both Indian government and the receiving country governments to take specific steps within an underlying general policy direction framework:*

13. India has experimented with restrictive, compensatory (reparation), and restorative (return) policies to deal with the brain drain, but only as a matter of general guidelines without much emphasis on operational execution. Concrete thinking is required now to exercise the "Diaspora option for development." This would counter the negative effects of the brain drain by discouraging further emigration of skilled workers to a minimum. More importantly, it would make the system immune to the loss in gross domestic product due to migration by raising the average domestic labour productivity of those who remain within the country through mass education and mass health initiatives.
14. This study suggests a number of specific measures for the British and the Indian governments, areas for further research, and scope for generation of data on emigration of highly skilled persons.

## 1. Introduction

Skilled labour migration from a relatively less developed country to a relatively more developed country may in the present times be described either as 'brain drain' on one end of the universe of discourse, or as 'globalisation of human capital', on the other. In between, there is a whole spectrum of terminology - brain exodus, exodus of talent, emigration of talent, brain export, brain overflow, brain bank, brain trust, brain circulation, brain exchange and so on. These are mostly results of attempts, some still ongoing, to describe the phenomenon of skilled labour migration as close to reality as possible - some to causes, some to characteristics, some to impacts, and some even to policy.<sup>1</sup> However, without going into the polemic, it is possible to retain the use of the term 'brain drain' for analysis of any of these aspects of skilled labour migration.

It is also possible and desirable to avoid prejudging that the skilled labour migration so implied inherently involves a loss to the sending (home) country; or even permanent residency of the migrant in the receiving (host) country - the two major characteristics or impacts of brain drain in its conventional form. Rather, it may be argued that the term be understood as a brand name which has, due to usage, turned into a generic name of a phenomenon, so to say, that may or may not have itself undergone change in characteristics and pattern.

Elsewhere, the description 'migration of knowledge workers' in place of 'brain drain' has been used to distinguish the movement of skilled workers from that of the 'service workers' - the unskilled or semi-skilled workers who form the counterpart 'brawn', as they were sometimes described in the earlier literature on brain drain (Khadria 1999a).<sup>2</sup> But, to avoid any possible confusion arising from variable terminology, one can justifiably stick to the conventional terminology of 'brain drain' whenever a reference is made to the general issue of skilled labour migration, comprising all categories of qualified and experienced personnel, i.e., doctors, nurses, engineers, architects, surveyors, teachers, bankers and so on including the latest addition of the Information Technology (IT) professionals.

'Globalisation of human capital', on the other end of the discourse, would be a new description of the concept of 'brain gain' - a subset perhaps of 'globalisation of human resources' or 'globalisation of labour'. In the context of liberalization and reforms that have swept the world economies lately, over the last decade, 'globalisation of capital' in terms of foreign investments by multinational corporations has become a more familiar and accepted terminology. In contrast, 'globalisation of labour' has only just begun to take shape - under Mode 4 of GATS in WTO - in terms of 'movement of

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<sup>1</sup> See Koser and Salt (1997) for a survey of upturns and downswings in academic and policy interests in brain drain. See also Khadria (1978) for a welfare-theoretic classification of impact of brain drain.

<sup>2</sup> It is Peter Drucker who had coined the terms 'knowledge workers' and 'service workers' in 1960 to introduce a classification of work among two divergent employment categories that would be, according to him, discernible by the end of the twentieth century (Drucker 1993). The knowledge workers are destined to constitute the highly educated, intellectual, technocratic and managerial elite of every country in the modern era. The more modestly endowed service workers would constitute the rest of the workforce. They would have some training, but lack the necessary education to become knowledge workers. The knowledge workers would be swiftly globalized, for soon they would be welcome in most countries, their incomes being determined in the world market. And the service workers, who would remain localized, would also have their low wages determined globally, for typically the globalized industries would be free to locate their processes anywhere in the globe.

natural persons', or 'presence of service providers' etc., for temporary stay for the purpose of work in a foreign country.<sup>3</sup> Lately, it has encompassed in its fold, the migration of students as well, as they too are supposed to be temporary residents under international trade through 'consumption (of educational services) abroad' under the WTO regime.<sup>4</sup> However, it is also true that overseas student migration has been a part of the universe of discourse on brain drain for long.<sup>5</sup> One reason for this has been that large proportions of these students do not return to their home country or countries but change their visa status to those of permanent residents in the country of immigration, after completing their degrees.

India has long been an important player amongst the main suppliers of skilled persons (both professionals and students) to the world market (of labour and education respectively), particularly in the developed countries, and therefore, a sending country experiencing the brain drain.<sup>6</sup> Presently, in fact, it has emerged to be the most sought-after source country in this regard in the last one year. This has been the outcome of a major paradigm shift - the scale tilting away from entry as a permanent immigrant to entry with the status of a temporary visitor or guest worker to begin with, e.g., on 'non-immigrant visa' of H-1B category in the case of the United States.<sup>7</sup> The issue that came to the centre of focus in the late 1950s was of permanent loss of the highly educated emigrants (professionals and students) suffered by a home country due to their long-term residency abroad for work in the host country.

By the 1970s, however, there was optimism that the increasing frequency of the migrants' contact with their home countries as facilitated by rapid technological developments in information, communications, and travel will have a trickle-down effect on development in the sending countries. However, this did not seem to happen. In the maze of shifting paradigms, the focus in international migration has of late fallen back once again on the 'loss' factor in brain drain, as well as on 'uncertainty' in migration under the oncoming WTO regime. In the 1990s and now too, it has been felt in the developing countries that much of the knowledge- or skill-based developments the world has experienced are the direct results of the immigrants' presence in the developed West - many of them as developing-country-born foreigners, contributing to R&D and growth of other products and services.

Location of skilled labour (prospective in the form of students in higher education, and professionals accomplished in education/training/experience) at home or abroad is, therefore, being viewed as an important determinant of the national developments in the twenty-first century - when the dichotomies between the developed and the developing countries are feared to become more profound, leaving the former in affluence and the latter in poverty.<sup>8</sup> The presence of a substantial (in terms of stock) and growing (in terms of flow) number of highly educated Indian nationals in the West, mainly in the United States, but also in the UK, and Canada (stocks and flows),

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<sup>3</sup> See WTO (1998b), Khadria (1999c).

<sup>4</sup> See WTO (1998a).

<sup>5</sup> See Myers (1972).

<sup>6</sup> See Section III of this study, on scale and magnitude of the brain drain from India.

<sup>7</sup> For details of H-1B visa system, see Lowell (2000).

<sup>8</sup> In fact, the very basis of the British White Paper(s) on Eliminating World Poverty has been this as a central concern. See U.K. (1997, 2000). See also Khadria (1998).

and Australia, New Zealand, Germany, France, Denmark, Japan, South Korea, Singapore etc. (flows), in this respect, makes brain drain an issue of significance for public policy in the Indian national, bilateral, and multilateral contexts.

This country paper discusses the current broad picture, the impact, and the policy measures within a perspective of positive potentials and sustainable possibilities, with particular reference to the role that a developed receiving country like the UK can play vis-à-vis a developing sending country like India: Can the receiving (host) country (the UK) and the emigrants - the non-resident Indians (NRIs) and the persons of Indian origin (PIOs) the world over, i.e., the expatriates in the so-called Indian Diaspora - participate with the sending (home) country (India) in a few selected, specific, and innovative poverty-reducing nation-building activities as opposed to getting lost in the multifarious stereotypes of the general development targets?

The impact of skilled labour migration on a developing country can to this end be classified into two types. The first type, the 'first-generation effects' - both negatives and positives - have often made even the emigrants themselves feel either guilty about having left their country of origin for 'greener pastures' abroad and, in the process, caused the so-called drain of 'human capital' (the negative stereotypes) or, sometimes, justified and satisfied (the 'Feel-Good-Factor') about having compensated for it more than adequately (the positive stereotypes). The second type, the 'second-generation effects' are expected to be long-term positives only.

## **2. Approach of the Study: The Underlying Perspective**

In the past, the issue of the emigration of skilled and educated professionals had engaged European scholars and policy makers when the so-called 'brain drain' to North America assumed worrisome proportions. More recently, the issue has reappeared as a major concern for the developing countries, which appear to be losing their skilled professionals to the markets of North America and Europe. Some basic questions in this literature, however, remain unresolved: How much of the emigration is actually a loss to the sending country; how to measure it; how much does the host country gain; can the emigration of skilled labour be taken calmly as just a factor-price equalization process that leaves everyone better off?

These were the traditional 'first-generation' issues regarding the brain drain problem. It is time, however, to depart from that perspective, and take emigration of skilled labour to developed countries as a datum of the problematic, and focus research efforts on exploring how a developing country like India can benefit from its nationals abroad. Rather than worrying about the flow which is ongoing, and will be ongoing, the stock of a country's professionals abroad should be taken as given and efforts made to explore ways of maximizing the home country's returns from this stock - the 'second-generation effects' of the brain drain.

Information collated from various sources show that project investment and return of personnel from abroad to work on productive projects in India do not appear to be very significant. Remittances, on the other hand, are quantitatively significant, but

their benefit to the economy is doubtful. Given this, a more holistic approach for measuring the return from brain drain in terms of raising the average productivity of the resident labour force in India - leading to higher production, higher earnings, higher consumption, and thus elimination of poverty is advocated, rather than continuing to dwell on a myriad of investment avenues in general business and industry for the expatriates. Towards this, sectors may be identified where the social return on expatriate investments - in terms of increases in average labour productivity of the resident workforce - is much higher and sustainable than the market return. Two areas, viz., education and health have been identified as qualifying for this.

The case may be argued on the basis of an underlying model of skill outflow from India, not stated explicitly in the paper: The outflow of skilled professionals is driven by the mismatch of the potential productivity of skilled labour, produced through schooling and training in the Indian education system, and the ability of the economic system to offer jobs that pay them at their potential productivity. Though it may look like a failure of the economic system, which is unable to produce or sustain competitive real wages for skilled professionals, actually it is nested in a basic failure of skill or human capital formation, comprising education and health.

An illiterate workforce, the outcome of the same system that produces India's emigrant knowledge workers, and poor health perpetuate the low productivity of the economic system. The resulting low income creates the incapability of low-income poor families to finance the education of their children, or even to bear the opportunity cost of a child going to school when education is free. Poor health, malnutrition and child mortality reduces the scope and effectiveness of schooling when it is pursued. The chain of causation is completed when the resulting low productivity of the system constrains the potential earnings of high-skilled professionals, the luckier products of the same education system. The same overall low productivity (reflected in low per capita GDP) limits the improvement and extension of the health and education systems as well; creating a second loop that reproduces and perpetuates the structure.

It is in this context that the present state of education and health in India in terms of the latest available snapshots of information presents a pertinent picture to pitch at:

India has turned out to be a country with more students seeking school admission but with fewer school buildings to get into. There are increasingly fewer classrooms available and to add to the grim picture, there are fewer primary and upper primary teachers. The rate of growth of primary school has not kept pace either with the increase in population, which is 2.2 per cent, or with that of enrolment, which is a whopping 14 per cent. The number of primary school buildings has meanwhile grown by a little over one per cent. There are about 775,000 lower and upper primary schools in the country of which about 600,000 are primary and the rest are upper primary. The number of primary schools has risen from 530,000 in 1987 to 575,000 in 1997. A school according to government norms should have a minimum of two rooms and two teachers, a teacher pupil ratio of 1:40. It was more than 1:60 unofficially, but even official estimates of 1:48 in 1997 put India at the bottom of the 47-country ranking

that the *World Competitiveness Yearbook 2000* presents.<sup>9</sup> The school should be located within 1 km from a child's house. The Tapas Majumdar Committee report, which continues to be a major point of reference in educational matters, calculated that to achieve Universal Elementary Education (UEE), 400,000 schools would have to be built, comprising nearly 221,000 upper primary and 179,000 primary schools. The panel felt that India needs nearly 4 million teachers to translate UEE into reality.<sup>10</sup>

A National Status Report on Education prepared by an association of NGOs, viz., NAFRE (National Alliance for the Fundamental Right to Education) says: "A large proportion of schools lack *pucca* (i.e., cemented) buildings; nearly 55 per cent of such schools lack drinking water facilities; while most schools possess blackboards they lack other learning materials."<sup>11</sup> This has an adverse effect not only on quality education, but also health of the children!<sup>12</sup>

In the field of health, the National Family Health Survey-2 (NFHS-2) carried out in 1998-99, and published in October 2000 covered a representative sample of more than 90,000 reproductive-age women between 15-49 years from 26 states of India, comprising more than 99 percent of India's population (IIPS and ORC Macro, 2000). The survey provides state-level parameters as well as data on various socio-economic and programmatic factors that are critical for bringing about desired changes in India's demographic and health situation. During the five years preceding the survey, the infant mortality rate was 68 deaths at age 0-11 months per 1000 live births; lower than 79 in the five years before NFHS-1 carried out in 1992-93. The child-mortality rate, 29 deaths at age 1-4 years per 1000 children reaching age one, also declined from the corresponding rate of 33 per 1,000 in NFHS-1. Ninety-five children out of 1,000 born do not live to age five years. In other words, 1 in every 15 children die in the first year of life, and 1 in 11 die before reaching age five.

Child survival programmes might usefully focus on specific groups of children with high mortality rates, particularly the poor. Women do not get priority in national policies because their voices are not being heard; children do not get it because they have no 'voice'. With particularly high infant and child mortality rates, and high rates of pregnancy, the repeated periods of pregnancy, marked by low contribution to the production of GDP, lead to enormous avoidable wastage. This perspective needs to be brought to the forefront for long-term policy making. These children are those, whose

<sup>9</sup> Even the ratio for secondary education was at the bottom amongst 45 countries, at 1:35.

<sup>10</sup> 'More students, less schools and teachers', *The Hindustan Times*, New Delhi, 25.4.2001. See, also the Tapas Majumdar Committee Report (Government of India, 1999). See also Majumdar (1991).

<sup>11</sup> *The Hindustan Times*, *ibid*. Illiteracy is also highest in India; amongst 47 countries, it was 46.5 per cent, next to China with 17.1 per cent. Even the 2001 Census figure of 34.6 per cent will not improve India's ranking. In quality-of-life survey of 47 countries, India's position was 42<sup>nd</sup> with a score of 3.07 (USA 11<sup>th</sup>, 8.92; UK 20<sup>th</sup>, 7.44) on ten point scale mentioned in Introduction. In terms of Human Development Index, India was at the bottom of the 46 country ranking with an index of 0.545 (USA 2<sup>nd</sup>, 0.927; UK 10<sup>th</sup>, 0.918) (IMD 2000).

<sup>12</sup> Normally, it is assumed that education always contributes positively to health. But, the new British White Paper (U.K. 2000) takes cognizance of the gravity of the issue. It says, "Children, who are at most risk from sickness and disease, need alert minds and healthy bodies if they are to get the most out of learning." Minimum comfort and facilities are a prerequisite for keeping the mind alert and the body healthy. It is no wonder that India registered almost 200 new cases of tuberculosis per 100,000 population in 1999, whereas only 14 per cent of population had, as per WHO sources cited in the *Economist* (24<sup>th</sup> - 30<sup>th</sup> March, 2001), had access to 'directly observed treatment through short course' (DOTS).

mothers are illiterate, the children of the unprivileged - the Scheduled Caste (SC), Scheduled Tribe (ST) parents, and the children from poor households. Infant mortality rates are more than two and one-half times as high for women who did not receive any of the recommended types of maternity-related medical care than for mothers who did receive all recommended types of care.

Three internationally recognized standards are used by the NFHS-2 to assess children's nutritional status - weight-for-age, height-for-age, and weight-for-height. Children who are more than two standard deviation below the median of an international reference population are considered underweight (measured in terms of weight-for-age), stunted (height-for-age), or wasted (weight-for-height). Stunting is a sign of chronic, long-term malnutrition; wasting is a sign of acute, short-term malnutrition; and underweight is a composite measure that takes into account both chronic and acute malnutrition. Based on these international standards, an alarmingly high proportion of 47 per cent of children under age 3 years in India are underweight, down slightly from 52 per cent in the earlier survey. Similarly, 46 per cent of children are stunted and 16 per cent are wasted. Nearly three quarters (74 per cent) of children age 6-15 are anaemic.

The performance of the economy in this context is also not surprising. This state of education and health has led to the creation of "two worlds in India," making it difficult to get a true picture of India. While the World Bank had ranked India among the top 15 countries in terms of Gross National Product (GNP), the IMF's *World Economic Outlook 2000* last year focused on the 'uneven pace' of economic reforms evident in the increase of rural poverty. Even the National Sample Survey Organization's 55<sup>th</sup> Round of last year (NSSO 2000a) on employment and unemployment in India had shown that rural poverty had gone up though urban poverty had marginally declined.<sup>13</sup> Clearly two worlds exist in India with huge difference of standard of living between the two. This year India has been termed as the world's fourth largest economy in Purchasing Power Parity US prices, after the US, China and Japan, according to the latest world development indicators.<sup>14</sup> In contrast, according to the *World Competitiveness Yearbook 2000*, India ranked at the bottom in the list of 47 countries in 1999, in terms of GDP (PPP) per person employed at US \$4,849, and an even lower nominal GDP per person employed at US \$824 (IMD, 2000). Similarly, in terms of GDP (PPP) per employee per hour, India was again at the bottom of the list with US \$2.15, and with nominal GDP per employee per hour of US \$0.37.<sup>15</sup>

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<sup>13</sup> Prime Minister Atal Bihari Vajpeyi, on the other hand said, while inaugurating a seminar on 'Understanding socio-economic changes through national surveys' in New Delhi on May 12,, that the 10 per cent reduction in poverty between 1993-4 and 1999-2000 showed the economic reforms were impacting on poverty elimination (*The Hindustan Times*, 'Reforms have reduced poverty, says PM', May 13, 2001). In fact, various surveys have derived different results on poverty alleviation in India, which has become an issue of debate (see Lal et al 2001). The Prime Minister stressed the importance of a reliable statistical base and urged the National Statistical Commission (NSC) to submit its recommendations by mid-July (*The Economic Times*, 'The importance of stats', May 13, 2001).

<sup>14</sup> *The Hindustan Times*, "India world's 4<sup>th</sup> largest economy", PTI, Washington, 30 April, 2001. The World Bank President James D. Wolfensohn has been reported to have said, guardedly, "While the challenge of poverty reduction is immense, the prospects for success in some areas are improving." For more substantive data on India's GDP and per capita GDP, see Central Statistical Organization (2000). See also Dreze and Sen (1996).

<sup>15</sup> In terms of remuneration levels for skilled professionals and managerial level personnel, including CEOs, Engineers, Director (Manufacturing), Director (Human resource development), India has been practically found at the bottom because only the former socialist countries were below India, if at all.

Given the above-mentioned perspective, the broad picture of Indian reality in education and health in the backdrop of poor performance indicators of the labour market, the potential social return from investment in education and health sectors are not only much higher than their market returns - thus capable of making the system immune to the negative effects of brain drain; they are also capable of eventually correcting the structure that is responsible for brain drain in the first place. A more useful approach to non-residents' contribution, as well as the contribution of the host countries would be to channel them into education and health, rather than try to attract them into general business and industry or multifarious development targets. Education and health sectors are also more suited as receptacles for the skills of Indians abroad who are mostly professionals: doctors, engineers, scientists, academics, and lately, high-skilled workers in information technology and in the near future in biotechnology. If the non-residents' contributions of money, skill and vision, fuelled by appropriate support and action plans from the host-country governments and people, can be utilized by the home country to make a dent on the baneful cycle, it would help restore the human capital taken away from the system and may some day even produce a break to the negative and very negative first generation effects of the brain drain.<sup>16</sup>

A number of non-residents or returnees are actually working in education and health sectors in India. While the magnitude of such involvement is not significant, UK, as a concerned country may hasten such participation through policy initiatives. For this, specific policy options for working with the Indian Government and the people of India may have to be devised. The UK may also take the lead in mobilizing similar initiatives by some other host countries, viz., the US, and in the EU, and the multilateral forums like the WTO. The underlying long-term strategy though has to be one geared towards lifting the level of average labour productivity of resident Indian workers through education and health. To make these efforts sustainable, monitoring of achievements as well as of setbacks have to be undertaken through further research backed by generation and consolidation of relevant data. It may be a rewarding effort to design appropriate strategies and supporting institutions for removing the hurdles to large-scale involvement of Indian emigrants' resources, money, skill, and vision, in transforming the quantity and quality of India's education and health sector coverage.

### **3. Scale and Magnitude of the 'Brain Drain'**

#### **3.1. Occupational migration**

In a forty-seven-country ranking of brain drain arrived at on the basis of a survey whether "well-educated people emigrate or do not emigrate abroad," and presented in the *World Competitiveness Yearbook 2000*, India has been placed at position forty-second from the top, sixth from the bottom (see Annexure, table A1). India has also been assigned a significance score of 3.291 calculated on a ten-point scale between 0 and 10, using a special standard deviation method (SDM) to assign each country a

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<sup>16</sup> See Khadria (1999b).



standardized (STD) value or score.<sup>17</sup> The low ranking and score both mean that India has a high degree of brain drain in terms of well-educated people emigrating abroad. The USA is at the top with a score of 8.524, meaning very few educated Americans emigrate<sup>18</sup>; UK's ranking is thirteenth with a score of 6.343, meaning that some people emigrate. India is better off, relatively speaking, than Venezuela, Philippines, Russia, Colombia, and South Africa, but worse off than Argentina.

Traditionally, the U.K. has been the main recipient of Indian migrants - both skilled and unskilled until the end of the 1960s. This was mainly due to the colonial ties between the two countries and the advantage of the English language as medium of education in India particularly at the higher, professional and technical levels.<sup>19</sup> Later on, over the 1970s, and through the rest of the twentieth century, the U.K. was overtaken first by Canada but eventually by the U.S.A., the latter continuing to be the destination country not only in terms of the largest number immigrants per year, but also in the terms of the ever rising trends of transfers of residence (30 percent of temporary visitors from India in 1996) and change of citizenship (3 past entrants for every 4 immigrants admitted from India in 1996) of the immigrants. Over a long period, the yearly number of Indians getting the 'green card' for permanent residency in the U.S. had increased from 17,500 in 1976 to 44,859 in 1996, whereas the corresponding number of Indians who naturalized as U.S. citizens had grown from 3,564 to 33,113 (Khadria 1999a). Moreover, the occupational profile of Indian immigrants in the U.S. during 1986-1996, as presented in table A8, shows major shares amongst all Asian and other immigrants in the top-end professional and managerial occupations during 1994-96.

What is important in this context is that already 118 out of 435 legislators in the US Congress have become members of the Indian Caucus, which now steers Congress in a pro-Indian direction time and again. "India is in a category by itself", says Dan Griswold, Director of Immigration Studies at The Cato Institute, Washington, D.C. (Cato Institute 2000). According to the latest US Census 2000, the first results of which have just become available, Indian population in the US grew the fastest amongst the Asians in the decade, doubling since 1990 to 1.7 million, the total now just behind the 2.4 million Chinese and 1.85 million Filipinos.<sup>20</sup> The US National Intelligence Council, a representative body of US intelligence agencies, is reported to have predicted in its report, "During the next 15 years, globalisation, demographic imbalances between OECD and developing countries will fuel increasing international migration...." It further said that populous countries such as India and China will be

<sup>17</sup> Table 8.13 (IMD 2000, p.500): Labor Force Characteristics. For methodology of arriving at the rankings and the scores, see chapter on Data Processing Methodology.

<sup>18</sup> USA is the most sought-after destination country with highest positive net in-migration in the world. See also Khadria (1991).

<sup>19</sup>Partly, this was also because Britain did not face any competition from the US for import of skilled labour from India. For example, in the US, an annual quota of 100 immigrants was set in 1946 for Indian citizens to come and settle in the U.S. This still comprised mainly the unskilled and the semi-skilled - the 'service workers'. It was with the U.S. Immigration and Nationality Act Amendments of 1965, when this quota went up to 20,000 – on par with all other countries, that the U.S. started welcoming, at least the Indian 'knowledge workers'. Gradually, over the 1970s onwards, large numbers of them in various categories of knowledge occupations and skills (doctors, engineers, architects, scientists, teachers, nurses, etc.) were absorbed into the U.S. labour market (see Jensen 1988).

<sup>20</sup> *The Economic Times*, 'Indian population grew fastest in the US', by Nicholas Kulish in Washington, New Delhi, May 16, 2001.

the sources of growing regional and global migration flows, and high tech workers and entrepreneurs will be increasingly prepared to emigrate from countries like India provided immigration laws in industrialized countries become sufficiently flexible. Already, it reported foreign-born residents at nearly 11 per cent of the US population, up from 6 per cent in 1980. Politically, the report says, "Other countries' responses to migration issues will affect migration pressure on the US and a broad range of US economic and security interests."<sup>21</sup>

An interesting feature of the shift in direction has also been the Indian immigrant women's participation characteristics in the American labour market, which normally goes unnoticed. In the 1980 US Census, 87.2 per cent of foreign-born Indian female immigrants aged 25-34 years were found having completed high school - the highest amongst all Asian ethnic immigrants in the U.S., excepting for the Japanese women at 92.6 per cent.<sup>22</sup> In terms of female median incomes, however, Indian women occupied an unchallenged top ranking with US \$13,138 for full-time workers. With the sex ratio of Indian immigrants in the U.S. stabilizing at 50:50 (which is higher than India's average sex ratio 931 females per 1000 in the last two decades, growing better at 933:1000 as per the latest 2001 Census)<sup>23</sup>, and median age of women at 28.8 (against 29.4 of male) in the late 1980s, this was an indication of the emancipation of Indian women due to emigration.

A large proportion of them perhaps would not have participated in the labour market of the home country - whether skilled or unskilled - had they stayed in India. Indian women amongst the science and engineering faculty in the U.S, higher education, in fact holds major shares amongst all Asian and other foreign women faculty, particularly in mathematics, computer science and life science, as could be seen from table A9. However, the proportions are not very significant amongst all Indian faculty (men and women), excepting in life sciences. Table A2 providing a comparative bird's-eye view of the 1999-2000 labour market scenario in India vis-à-vis the United Kingdom and the United States of America - the two largest receiving countries of high skilled workers from India, does not seem to be providing any obvious contrast because in India too the proportion of female labour in 1999 has been low at one-third, leading to India's comparatively low overall female labour force participation rate. However, what is significant is that Indian women participate at the high end of the labour market in the US, whereas in India the female labour participation is high in low-education low-skill occupations like farming and fishing, as the skill profile of Indian labour force presented in table A3 testifies. This could be one of the important issues related to international migration of the highly skilled workers, but there is an acute dearth of data on gender generally to carry the analysis further very much in this regard.

Despite growth in labour force being high at 10 percent compound rate per annum between 1994 and 1999, occupational distribution-wise India is still largely an agricultural economy (60 percent of the labour force as given in table A2); service

<sup>21</sup> *The Hindustan Times*, 'Indians, Chinese to migrate globally', by PTI Washington, New Delhi, May 7, 2001.

<sup>22</sup> U.S. Bureau of the Census (1998), as cited in Khadria (1999a, pp. 104-107).

<sup>23</sup> The overall population in 2001 crossed a billion mark and stood at 1.027 billion. See Government of India (2001); also (2000b).

sector comes next with 22 percent of workforce, but comparatively it is far below the U.K., or the U.S. (both above 70 percent). In absolute numbers, there were 8.8 million unemployed people in India in 1999-2000, up from 7.3 million in 1993-94.<sup>24</sup> In other words, out of those looking for a job, in India, 2.2 per cent were unemployed in 1999-2000 compared to 1.9 per cent in 1993-94. While unemployment rate has gone up from 4.1 per cent to 4.5 per cent for urban males that for urban females has fallen from 6.1 per cent to 5.7 per cent. It is lower in rural population, at 1.7 per cent for male and 1 per cent for female. A very important component of urban unemployment in India comprises the highly educated graduates, due to the very extensive network of higher education institutions, mostly publicly subsidized.<sup>25</sup> Tables A4, A5, and A6, present the growth in the number of higher education institutions, the level of enrolments in 1999 - including girls' enrolment, and the number of admissions and output of professional educational institutions in various years in the 1990s respectively.

The above broad scenario about the status of India's population and the labour market provides the backdrop against which the migration of skilled labour from India to developed countries takes place. Although there is no hard evidence available from the Indian sources of data, most indirect estimates, and speculations by researchers and the media put 80-90 per cent of India's brain drain today to be US-bound. Indians have occupied 5 per cent to 6 per cent of space amongst all immigrants coming to US every year from different countries of the world from 1996 onwards. In terms of very broadly rounded figures, the number of Indians being given immigrant visas (i.e., permanent residency) can be said to be in a range of 35,000 minimum and 45,000 maximum per year between 1996 and 1998. With this, India's ranking has varied within the first seven, but if one considered only the labour market determinants of immigration in the US, India could be said to be holding the first position since 1993 itself.<sup>26</sup>

In terms of numbers, the share of employment-based immigration has been roughly one-fourth in 1998. On the other hand, India's share amongst temporary foreign worker admissions into the US is very large and growing. Out of 372,000 overall in the US Fiscal Year 1998 (FY98), India was at the top with 69,000, followed by Mexico (51,000, mostly unskilled), UK 39,000, and Canada 20,000. Similarly, amongst the H-1B workers, there were 62,544 admissions from India, followed by 38,190 from the UK, 10,000 each from Germany, France, and Mexico, and 9,000

<sup>24</sup> *The Economic Times*, "8.8m jobless in 1999-00", April 30, 2001. Statewise, Kerala tops among the major states, with 8.7 per cent unemployment. It is also higher than national average in Assam 4.6 per cent and West Bengal 3.8 per cent. Orissa, Maharashtra, Tamil Nadu, Bihar, and Punjab have unemployment rates between 2 per cent and 3 per cent. Rajasthan and Gujarat have a very marginal unemployment rate of 0.7 per cent and 0.8 per cent. Madhya Pradesh, Haryana, Uttar Pradesh, and Karnataka also have low of 1-1.5 per cent. These rates will be higher with stricter definition of unemployment.

<sup>25</sup> See Khadria (1989).

<sup>26</sup> In terms of number of immigrants, India ranked seventh after Mexico, China, Philippines, Vietnam, Soviet Union, and Dominican Republic. But, *purely* from the labor market point of view, India may be called the largest contributor, because all other countries seemed to have some other considerations too for the movement of their people to the US: Mexico, a poor neighbour to the US was not a competitor of India because it sent mainly the unskilled and semi-skilled labour; China received a priority for student immigration due to the Tiananmen Square massacre; Philippines had been a former American military base; Vietnam was receiving war reparations from the US; Soviet Union was given importance because of the fall of socialism; and Dominican Republic has been a dominion of the US (Khadria 1999a).

from Japan, 7,800 from China, and 7600 from Canada.<sup>27</sup> As per the 1990 US Census, Indians were the most highly educated ethnic lot amongst the Asian communities in the US (58 per cent with college and higher education).

In September 2000, there were 461,000 H-1B foreign professionals in the US. Half of them were in computer-related occupations. The leading countries of origin for H-1B visas issued in FY99 were India 55,047; UK 6,665; China 5,779, Japan 3,339, and Philippines 3,065 (Martin 2001). In 1999, the median pay of H-1B workers in the US was \$45,000, median age was 28, half were born in India, and 40 per cent were already in another status before being employed as H-1Bs. So, one can talk primarily in terms of India vis-à-vis USA, particularly when data too from other host countries are either imperfect or not easily available.

In the case of the UK, the British Home Office data on "Control of Immigration," for example, suffer from the constraint of regional classification like 'Indian subcontinent' rather than country or nationality classification. In comparison, the "Work Permits Issued, by Nationality" data, of the British Overseas Labour Service, as presented in table A10 for India, are more useful.<sup>28</sup> However, without the overall immigration data, comprehensive analysis becomes difficult. Of the 1999 work permits, 51.4 per cent were granted for work in the computer industry. Having gone up since, at least two-thirds of all software professionals entering Britain now are from India, thanks to amendments to work permit rules last year to invite more information-technology-trained foreigners. The amendments have opened the floodgates for Indian IT professionals, and with Britain facing a massive skills shortage in IT, they are pouring in.<sup>29</sup> Government figures are reported to be showing 18,257 foreign IT professionals coming to Britain last year (i.e., in 2000). Of this, 11,474 were from India - three times the number in 1999. This year the numbers are rising faster, according to official estimates.<sup>30</sup> Last year, the second highest number of IT professionals (2,034) came from the US. Of these, many are of Indian origin. Many of the 748 professionals who came from South Africa, and the 708 who came from Australia are also reportedly of Indian origin. Within Asia, Indian professionals have clearly taken a substantial lead over others in taking up IT jobs in Britain: Only 132 came from Pakistan, 69 from Sri Lanka, and 15 from Bangladesh.<sup>31</sup>

The scope in IT world is huge. However, a report from European Information Technology Observatory (EITO), an independent group that monitors the IT situation in Europe, says Britain will be short by 620,000 IT professionals in 2003. The shortfall is particularly acute in e-business: "In the e-business area, this year itself there is an estimated deficit of 126,000 qualified employees," the EITO report is quoted to be saying. The shortfall is expected to rise to 270,000 in the next two years. To the British economy, e-business is becoming vital for survival in Europe. The

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<sup>27</sup> Martin (2001).

<sup>28</sup> See also Findlay (2001).

<sup>29</sup> *The Hindustan Times*, 1 May 2001, 'Indian IT workers flooding UK', by Sanjay Suri in London.

<sup>30</sup> "We succeeded in persuading the British authorities to alter and simplify the work permit system for IT professionals." Deputy High Commissioner Hardeep Puri is reported to have said, "The scope in the IT sector is enormous. The Indian government is looking to IT to bring the next quantum jump in business relations between India and Britain. India is looking to an increase in business in trade and services from current \$7.5 billion to about \$12 billion." (*The Hindustan Times*, 1 May 2001, 'Indian IT workers flooding UK', by Sajay Suri in London.)

<sup>31</sup> *ibid.*

work permit rules were relaxed lest Britain became uncompetitive in many businesses if the current shortage of IT skills continued. This happened despite the fear of many that the whites will become an ethnic minority in their own native country.<sup>32</sup> Under the new laws, Britain will allow 100,000 skilled workers from abroad to settle in UK annually - one of the most significant changes in 30 years.<sup>33</sup> Before 1971, there had been a consistent flow of people from India and other developing countries, coming to Britain for economic reasons.

The Labour Government had felt it was time to resume economic immigration. The search for new recruits would focus on those skilled in health services (doctors and nurses), in information technology, engineering, and teaching. Under the old rules, skilled workers were given temporary leave to enter for work purpose after they had shown proof of a job in Britain (unlike in the US where it is the responsibility of the employer). It did not confer on them an automatic right to remain in the UK. Under the new rules, which were to become operational as a pilot project from April 2001, foreigners would be allowed entry on points awarded by age, education, language skills, and family ties.<sup>34</sup> The new immigration target is aimed at 100,000 per year, affecting the ethnic balance sheet in Britain. Present estimates of the population of South-Asian nationality in Britain is 2.5 million: 1 million Indian, 800,000 Pakistani, 500,000 Bangladeshis, 50,000 'others' including Nepalese. Immigration alone will contribute half of population growth in a few decades. The new immigrants are, on an average expected to be young and thus their fertility rates will be much higher.<sup>35</sup> In comparison, an average white woman has just two children. Then many whites emigrate as well.

The fact that emigration of skilled labour to the US comprises a significant proportion from the UK - a country which also receives emigrants from developing countries including India - makes Britain's emigration more of a 'brain exchange' than 'brain drain', if one were to make use of a specific distinction. Keeping this in view, it may be said that not only to UK, Indian migration of skilled labour to other developed countries like Canada, Australia, New Zealand, Western Europe (mainly Germany, and France in the EU), and now also Japan, and Singapore (relatively substantially more developed than India, though small in size and economy) too is largely a function of some kind of 'derived demand' for skilled labour from the United States. Given that the emigrating Indians' preferences and priorities too are in favour of the United States as compared to each of these countries, the migration to these countries may perhaps be described as a stopover 'intermediate' supply rather than a terminal one. This kind of 'hopping migration' has a negative effect on retention of migrants in the labour markets of Europe, particularly the recipient countries in the EU.

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<sup>32</sup> "Britain to relax immigration laws", by Vijay Dutt in London, *The Hindustan Times*, 4 Sept, 2000.

<sup>33</sup> In 1971, a blanket ban on immigration had followed racial disturbances and Enoch Powell's infamous speech that 'rivers of blood' will flow if immigrants were allowed to settle in Britain. Only asylum seekers and those claiming relatives there were allowed to seek immigration.

<sup>34</sup> British Home Minister Barbara Roche was to outline the proposals at the Public Policy Research Institute in September 2000, focusing on future shortages of skills in Britain and the development of British immigration policy in future. In the British Parliament, Tories, the opposition, dissented, saying this was to stem illegal immigration, but the changes took place.

<sup>35</sup> This may be a blessing for the UK (and the EU countries as well) where older people dominate the population structure, thereby creating an acute demand for medical professionals to look after the aged.

Therefore, countries such as Italy and Ireland, which once benefited by exporting their burgeoning populations, now urgently need immigrants to fill jobs at home. France finds it difficult to recruit enough qualified persons from the local population to maintain its public buildings. In Germany, the employers' union has said that 1.5 million more workers that are skilled are needed there. Australia already relies on foreign labour for a quarter of its workforce, Switzerland for nearly a fifth, and the US about a sixth. A British Government report released in January 2001 has been cited as having stressed that "migrants were not a drag on welfare, but contribute to its economy and culture."<sup>36</sup> As part of such paradigm shift in the twenty-first century, not only the U.K., but also some other developed countries like Germany, France and Japan, closely followed by Australia and New Zealand too, have opened up their labour markets to India's human capital - embodied both in students and qualified professionals, and the U.S.A. has increased the intake.

Apart from the 'external brain drain' of skilled people leaving India for taking up jobs abroad, there is also an 'internal brain drain'. For example, the selection of the IIT engineering graduates, and doctors in the Civil Services Examination (CSE) is called the 'internal brain drain', because the professional skills acquired by the selected ones are obviously wasted when they join the Indian bureaucracy for undertaking administrative job responsibilities. There is also a high social opportunity cost of a wasted seat because, like selection in the CSE, admission to public engineering and medical colleges is highly competitive in India. A recently conducted study based on a sample survey in two premier institutions of higher education in India - one general, and the other professional, by the author (Khadria 2001a/UPSC 2001) estimated that over Rs.10 billion (US \$1= Rs.45 approximately) are being spent by all the examinees (i.e., their families) put together (on an annual average number of 125,000 examinees) every year for aspiring to enter into the Indian Civil Service. Only 500 out of the 125,000 examinees are finally chosen. Many of these are engineers, doctors, managers trained at great public costs. Their entry into the civil service is also considered a brain drain so far as the application of their skills or the usefulness of subsidies sunk in their education is concerned - an 'internal brain drain'. A substantial number amongst those who fail to make it into the Indian Civil Service emigrate to other countries in search of jobs or higher education because they simultaneously keep trying that route to 'success' as well - leading to the 'external' brain drain.

### **3.2. Student migration**

Professionals holding post-graduate degree or diploma from Indian institutions of tertiary education are not the only ones who are considered of value abroad. Many of the Indian immigrants in the United States who fuelled Silicon Valley were educated in America at the post-graduate level after they emigrated with a first engineering degree (B.Tech/B.E.) from the Indian Institutes of Technology (IITs)/Regional Engineering Colleges/ Banaras Hindu University - all institutions of excellence. Similarly, scientists with M.Sc/M.Tech from universities like the Jawaharlal Nehru University or the University of Delhi, or doctors with MBBS from the All India Institute of Medical Sciences, and managers with Post-Graduate Diploma in Business

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<sup>36</sup> *The Economist*, March 31 - April 6, 2001. The point about culture is so important, that India may follow a cultural route to forge alliances with its Diaspora. see Section 8.1.2 (iv).

Management (PGDBM) from the Indian Institutes of Management (IIMs) have emigrated for the purpose of pursuing higher studies abroad and then entering into the labour market there.

Table A7 presents a comparative overview of brain drain estimates of various such institutions, ranging from a low of 22 percent to a high of 33 percent in the Indian Institutes of Technology, and a very high of 58 percent from the All India Institute of Medical Sciences.<sup>37</sup> Table A11 presents the number of Indian students going abroad for further studies, including women students, to countries in various continents in 1996 and 1997, by field of study. The National Science Foundation of the U.S. provides data on the number of foreign-born Ph.D. students in the US universities and those receiving degrees, by nationality, and the number of Indians has been substantial. Table A12 presents the number of Indian students receiving Ph.D. degrees in various fields with substantial proportions of them having plans to stay in the U.S. In 1997, of 1,382 doctoral degree recipient Indian students in all fields in the U.S. universities, 82 per cent had 'plan to stay' in the US, and 61 per cent had 'firm plan to stay' on in the U.S. Table A13 shows the evidence that in most cases those leaving the U.S. after obtaining their degrees also have a strong tendency to return to the U.S. as time passes by. The following sub-sections 3.2.1 through 3.2.8 present the current scenario regarding student emigration to various countries as well as the role of the Indian universities in this regard.

### **3.2.1. The United States:**

Apart from being a large market for the MNCs to sell and dump their goods and services, India is also considered a "must destination for internationally renowned educational institutions shopping for 'knowledge capital' - to woo the Indian student".<sup>38</sup> In October 2000 alone, four countries mounted education 'fairs' in Delhi (and other Indian cities), followed by two in November. Most diplomatic missions project these as ways "to facilitate the search of a foreign education to Indian citizens", but the countries also compete against each other. As the Education Counsellor at United States Educational Foundation in India (USEFI) had put it, this was also because "Indian students are rated the highest in international student community."

Host to an annual fair since 1994, USEFI exercise was in keeping with the priority accorded to international students by American Universities: "Indian students are in demand because of their merit and hard work. This makes them high achievers, thereby raising the performance level of their universities", the Education Counsellor has been reported to have said. This apart, there is also the economies-of-scale angle for the recruiting universities because of the dwindling enrolments by the relevant age group in the native population. USEFI source had also confirmed Indian student arrivals in the US to have outstripped the number of Korean student arrivals in the year 2000 - positioning India at third position after China and Japan at the first two. Before this, India (with little over 15 thousand students, and 3 thousand as members

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<sup>37</sup> These are studies on Brain Drain from IIT Madras, IIT Bombay, IIT Delhi, the All India Institute of Medical Sciences. For references, see Khadria (1999a, Bibliography). One study on brain drain from the Banaras Hindu University is ongoing.

<sup>38</sup> *The Hindu*, 26 Nov. 2000.

of student-families in 1996) has been consistently maintaining the fourth rank - only the other three countries interchanging positions amongst themselves.<sup>39</sup>

### **3.2.2. The United Kingdom:**

Recognizing the American hold over the global knowledge, the British are going all out to "retrieve a situation that has slipped from our hands."<sup>40</sup> This is how the Education Counselling Service officer of the British Council Division in New Delhi was reported to have voiced, immediately after the biggest ever British Education Fair in India, the ambitions of doubling the number of Indian student departures to the UK from the 4,000 per annum till the year 2000, over the next four years. To woo the outward-bound Indian students, the British launched another scholarship scheme to be available for the next three years. The estimated additional cost to Britain was reported to be 700,000 pounds per year.

### **3.2.3. Germany:**

Lamenting an Anglo-Saxon domination over the Indian community of students seeking overseas education, the Germans in turn used the 40<sup>th</sup> anniversary of the presence of the German Academic Exchange Service (DAAD) in India to step up their efforts in marketing Germany as an educational destination for Indian students. With plans to double the number of student arrivals from India in five years after 2000, Germany relaxed visa rules and was even trying to amend legislation for allowing foreign students to work there on completion of their studies. In addition, Germany also offered tuition-free education to Indian students, though students would have to arrange for the living costs themselves, which could be a drag on them.

### **3.2.4. France:**

"Anyone for France?" These were the words, reportedly from the French, who were hosting a fair for the third consecutive year in New Delhi in October/November 2000, for prospective students from India.<sup>41</sup> In three years, the stock of Indian students in France has risen from approximately 150 to more than 1,000 in 2001, as per the rough estimate of the Director, French Cultural Centre of the French Embassy in New Delhi.<sup>42</sup> Most of the Indian students going to France go for post-graduate level study and very few for undergraduate studies. The preferred subjects in rank order are business management, engineering, travel and tourism management, followed by science and social science.

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<sup>39</sup> See US, INS, *Statistical Yearbook*, various years. INS provides flow data on foreign students entering the US every year. UNESCO Statistical Yearbook provides stock data of foreign students in various countries.

<sup>40</sup> *The Hindu*, 26 Nov. 2000.

<sup>41</sup> *ibid.*

<sup>42</sup> The Director of the French Cultural Centre in New Delhi also provided a broad picture of the distribution of Indian students stock worldwide in year 1997. According to the comparative data generated by the Centre, the US topped the list with a share of 89 per cent, followed by Canada with 5 per cent, Australia 3 per cent, Europe 0.6 per cent, and the remaining the rest of the countries. These shares have changed in the last three years, he said. He, however, cautioned that country-wise student numbers could be quite misleading because mostly these are based on number of visas issued, and sometimes there may be double or multiple counting because the students already pursuing studies abroad get counted again and again when they return after visiting India for field work or meeting relatives etc. However, these provide a clue to the number of Indian students aspiring for study overseas in these countries.



France has of course been traditionally a preferred destination for Indian students pursuing their interests in fine arts. The French do not make any distinction between foreign and overseas students while charging tuition fee. In fact, an average Indian student in France pays equivalent of Rs.20,000 as tuition fee per year, which according to the Director, French Cultural Centre, is lower than what many other countries charge, and even comparable to what some public institutions of professional education in India charge. It is much lower than the private sector fees in India for management education. France spends 20 per cent of the total state budget on education, which is double, if not triple, the proportion of the Indian central government budget going to education. However, the aim of French education for Indian students is to establish a cultural and political bond between the two countries, and not to look at education as a product for international trade. The French are also becoming more flexible in terms of offering post-graduate courses in both French and English, though at lower levels, say undergraduate studies, courses are still taught mainly in French.

The purpose behind giving priority to India is not to induct Indian students into the French labour market and thereby cause a brain drain for India, nor is it to sell French education as part of international trade. In fact, it is mandatory for students to return to India on completion of their education, and this is made clear before a student leaves the Indian shore for studies in France. They may be, and in fact are, inducted by French companies based in India or elsewhere in the world once they complete their courses in France, and subsequently they may get a posting in France, added the Director on being probed further.

The French have created an organization called EduFrance in November 1998, which works with the French Government agencies and Ministries, viz., the ministry of National Education, Foreign Affairs, Culture and Communication and International trade, as well as with public and private institutions of higher education, including universities, prestigious graduate schools and institutes. Currently it unites 66 universities, 37 engineering schools, 20 business and management schools and 14 institutes, foundations and national centres. To help Indian students with information, French Information Resource Centres have been opened in Indian metros and a few big cities.

### **3.2.5. Canada:**

Although the Canadian endeavour in hosting educational fairs in India was only a year older than the French's, it was reported to have already led to a steady increase in the number of student arrivals from India. This is partly because the Canadians have a well known and established annual exchange programme for students and faculty of the Indian universities functioning for years under the administration of the Shastri Indo-Canadian Institute which was set up for strengthening bilateral relations with India.

### **3.2.6. New Zealand:**

New Zealand staked its maiden claim in India in the year 2000, and sought to beat the others with citizenship opportunities for successful students, besides, of course, the

promise of quality education backed by all the trappings of a developed country. Jim Sutton, the visiting trade minister, touring India to promote his country's IT and educational opportunities, held his country's view of Indian professionals as "good potential migrants."<sup>43</sup> Deputy High Commissioner in New Delhi, Haike Manning said the new policy represented a "philosophical shift" regarding migration. Rather than "controlling" immigration, the New Zealand Government was promoting the movement of qualified people to the island. In particular this meant "both Indian professionals and students." Wellington was ahead of other western countries in trying to remove obstacles. It followed a point system to grade would-be IT migrants.

Unlike most countries, however, New Zealand was awarding points for professional work experience rather than for higher education. New Zealand was also 'peddling' itself as a cheap place to get quality education. "University tuition rates are one-third to one-fourth the cost of institutions in the US", said Mr. Manning. Then, there was a "potential prize," as Mr. Sutton called it: "Finish degree in New Zealand, land a job, move on to residency and then citizenship. With changing attitude, Mr. Manning boasted that New Delhi visa office trailed only Beijing in the volume of New Zealand visas it issued."<sup>44</sup> In effect, it was perhaps the 'semi-finished' human capital of India that was being drained away under a different brand name!<sup>45</sup>

### **3.2.7. Australia:**

Australia strongly believes in internationalisation of education through trade, and considers it important for the country's international relations, cultural understanding between countries and for Australia's own education and training sector. Many Australian universities are proactive in enrolling Indian students for study in Australia. In June 1999, The Australian Vice Chancellors Committee signed a memorandum of Agreement with its counterpart in India, The Association of Indian Universities (AIU). The Agreement provided a framework for student and teacher exchange programs, information sharing, joint programmes and research collaboration (AEI-India, 1999).

Australian Universities charge full fee from Indian students. Fees vary from A\$6,000 to A\$7,000 for a six-month graduate certificate course to over A\$30,000 per year for a medical degree. Most Post-Graduate courses cost A\$10,000 to A\$20,000 per year. Laboratory and computer related courses cost more. There is no specific provision of Australian Government scholarship for Indian students. Around 300 scholarships are offered worldwide and Indian students need to compete for them. These are awarded as refund of fee by the respective universities. Students can work during vacations and earn money. There is a pre-visa assessment of students to check genuineness of studentship, financial capability for affording fees and living costs, and reasonable proficiency in English, and health insurance in Australia.

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<sup>43</sup> *The Hindustan Times*, Nov., 2000.

<sup>44</sup> The New Zealand High Commission in New Delhi was upbeat about the shot of an Air New Zealand airplane in a Hindi film while advertising his country's charm to Indians: "English-speaking, cricket-playing, with a record of tolerance and multiculturalism, and magnificent scenery."

<sup>45</sup> The term 'semi-finished human capital' with respect to brain drain of students going abroad for tertiary level of education was provided by Majumdar (1994). See also *Human Development Report 2001* (UNDP) on branding of Indian IT professionals as 'Made in India' and drawing a parallel to 'Made in Japan' quality goods - both consumer and capital goods!

The number of Indian students in Australia, according to Australian Education International (AEI) sources in the Australian High Commission at New Delhi, has grown rapidly over the last few years. In 1998, there were nearly 8,000 Indian students in Australia, which increased to 9,362 in 1999, and was further expected to touch 11,280 in 2000. Of 1998 enrolments, 60 per cent were in vocational education streams and training sector, and this proportion rose to about 65 per cent in 1999; in 2000 it is expected to remain the same. The rest were in for higher education, though some of these were also given ELICOS i.e., English Language Intensive Course for Overseas Students. A few students have been pursuing school education, the number being 72 in 1999, expected to rise by 6 more in 2000. Within higher education, approximately 70 per cent students were at the post-graduate level. The number of student visas issued has been 4,886 in 1998; 4,372 in 1999 and 3,949 in 2000, cutting across all subjects and levels.

### **3.2.8. The role of Indian universities:**

Many Universities in India like the Jawaharlal Nehru University (JNU) are now signing Memorandum of Understanding (MoU) with foreign universities for exchange of students and teachers, and for this purpose deliberating upon mechanisms of credit transfer, credit exchange etc. In JNU, there is a Standing Committee to look into the proposals of foreign collaborations. It may also be noted that 'Educational Services' are now coming under the fold of General Agreement on Trade in Services (GATS) of the WTO regime. Although New Delhi is opposed to complete opening up of its education sector to foreign competition, in case India succumbed to the multilateral manipulation of events, there is every possibility that foreign universities will eventually have direct 'market access' to Indian student clientele on the Indian soil. They would then be selling their education in India through 'physical presence' at five levels: Primary Education Services, Secondary Education Services, Higher Education Services, Adult Education, Other Education Services.<sup>46</sup>

Whereas a large number of institutions and universities have set their eyes upon India as a large and growing market, it is mainly the universities in UK and US that have greater acceptability. These are followed closely by Australia and Canada. One important factor behind this is the advantage of the medium of English language in higher education of these countries, which is convenient for the Indian students. However, the issue is still quite fluid and there are many grey areas on which no consensus among the contracting parties has been arrived at yet. In fact, the Open University in England, with headquarters at Milton Keynes, enjoying an undisputed reputation of standards in Europe, will be the British flagship so far as trade in higher education through the distance mode is concerned. As an Indian counterpart, the Indira Gandhi National Open University, which has already established good reputation and acceptance in the UK with an organization called Edexcel, will be providing students with internationally accepted qualification.<sup>47</sup>

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<sup>46</sup> The technical definition of each category of 'education services' in the WTO jargon is available in WTO (1998a). See also WTO (2000b) for the US position on the issue.

<sup>47</sup> Pant (1999). See also Khadria (1999d, 2001b) on the issue of offshore universities.

A large number of management education institutions in India - both in the public and the private sectors have got into collaborative arrangements with institutions and universities in the US and the UK. In fact, some of the universities in UK, e.g., the Middlesex University in London, have their South Asia operations controlled from small offices in New Delhi. This kind of initiative should be geared towards making quality education available to relatively poorer students in the developing world. International trade in higher education under the WTO regime should for the purpose, in principle bring down the overseas traffic of Indian students going out of India for higher studies abroad at great social cost (private plus public cost).<sup>48</sup> This would happen provided the multilateral negotiations are guided by the interest of the poorer countries in letter and spirit (through properly evaluated 'Economic Needs Test'-ENT), rather than by self-interest of the economically more powerful developed member countries in the WTO. The Ministry of Human Resource Development in New Delhi, in association with the University Grants Commission, has chalked out a Guiding Framework of Policy for both Indian and foreign universities.<sup>49</sup> One difficulty faced by the developing countries agencies or ministries has been the separation of issues in WTO, e.g. temporary migration from permanent migration which, it is being argued by the developed countries, belongs to the sovereign domain of immigration laws of countries concerned and, therefore out of the purview of the multilateral domain. Moreover, some of the issues of international trade in educational services are common with the issue of 'Liberalization of Movement of Professionals' under GATS, but GATS is being handled exclusively by the Indian Ministry of Trade and Commerce.

#### **4. Impact of Migration on India**

The issue of impact of brain drain on sending home countries, most of which are also 'developing' countries, needs to be examined in the light of the shifting paradigms of the phenomenon of skilled labour migration. There are three types of paradigm shifts that are discernible, and one of them pertains directly to the subject of impact. But there are backward and forward linkages to this particular shift of paradigm with the other two shifts: a geo-economic shift of paradigm for brain drain to become more of a demand-determined phenomenon from a supply-determined one (i.e., employers determine immigration, rather than employees; in other words, pull factors become more important than the push factors), and the other, a geo-political shift of paradigm in terms of looking away from temporary, short-term and ad-hoc remedies (of the malaise of brain drain) to more sustainable long-term solutions (towards developing immunity against the negative and very negative effects of the malaise) through policy. Before we look into the various impacts of brain drain, one should, therefore, briefly mention the other two shifts.

For the geo-economic shift of the paradigm in terms of brain drain becoming more demand or pull-determined than supply or push-determined in the world labour

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<sup>48</sup> Refer to Khadria 2001a/UPSC 2001 for social cost estimation through sample survey.

<sup>49</sup> In fact, at least a few official documents in various stages of implementation, preparation and presentation indicate sensitivity to the growing importance of globalization for higher education in India: UGC (1996), Government of India (2000a), UGC (2001).

market, one may refer to the forgone discussion in Section III. Similarly, the geo-political shift of paradigm in the sphere of policy has been dealt with later in Section VII. This would be about a desirable shift away from dependency on 'return migration' of the expatriates, and towards 'outsourcing' of the expatriate nationals settled abroad for triggering/strengthening sustainable development within the home country.<sup>50</sup> Section VI would also follow the perspective of this shift, but in describing some of the policy instruments that have been already experimented with for maximizing the positive impact of the brain drain and minimizing the negative ones in India.

The shift about the impact of brain drain pertains to a change in the perception about its effects - from the first-generation 'loss-and-gain stereotypes' to what has elsewhere been called 'the second-generation effects'. The latter category comprises the potentials and possibilities that facilitate the substitution of the celebrated 'human-development-led welfare' approach with what has been defined as the approach of 'human-development-led growth' (Khadria 1999a).<sup>51</sup> Now, in an attempt to better understand the phenomenon that is undergoing change at many levels, as also to strive for some innovative instrument, particularly when it comes to initiating policy intervention by the state, one can decipher another shift in impact to be taking place. This is a shift away from what one could call the 'Ex-post Decision Domain', and towards 'Ex-ante Decision Domain' - of the prospective migrant. The latter prompts the potential/prospective migrant to follow the dictates (or signals) of the world labour market (rather than the domestic labour market and/or the traditional 'advice of the elders') while taking a decision on the choice of a subject for studies. In other words, choice of educational stream takes place in anticipation of the brain drain possibility rather than having to accept it by default when emigration provided the 'safety-valve' against acute unemployment in the domestic labour market.

Methodologically speaking, any of the three shifts should not, however, be judged to have taken place in a typical pure science manner - 'the either-or' way. Rather, the degree of their significance should be assessed through the 'more-or-less' sense of the social sciences. It owes to this reasoning that the impact of brain drain on a developing country need not be limited to its geographical boundaries. To assess the impact properly, the economic boundary of a nation should include the welfare of its citizens (e.g., the NRIs) and the former citizens (e.g., the PIOs) residing outside the home/mother country too. They themselves may or may not be poor, but their 'friends and families' back home may be poor and affected. In other words, the impact - whether positive or negative - should be looked at in both receiving and sending countries, and at the national macro as well as the micro level of the individual/family too.

The negative stereotypes are (a) the loss of skill, and (b) the loss of investment sunk in the public subsidies<sup>52</sup> enjoyed by the potential emigrant in availing the post-compulsory levels of education in the public sector, whereas the positive stereotypes

<sup>50</sup> Interestingly, UNESCO had, quite recently, come out with a policy declaration, recommending reversal of brain drain through return-migration (UNESCO 1998). This was long-cherished by developing countries like India, but notwithstanding complexity of the task, the perspective of home countries has now changed.

<sup>51</sup> In a way, this distinction may be found closely parallel to the distinction between the 'neo-classical view' of the 1970s and the 'endogenous growth view' of the 1990s pointed out by Lowell (2001).

<sup>52</sup> *Human Development Report 2001* (UNDP, p.91) puts this cost at equivalent of US\$ 2 billion a year.

are (a) the remittances, (b) the transfer of technology, and (c) the return of the migrant(s) with enhanced human capital, to the home country. Past data on these have been documented, but these reveal long-term emerging trends, useful only in a situation when there are no paradigm shifts taking place.<sup>53</sup> Nevertheless, with the radical changes that have taken place the world over recently, a more comprehensive analysis of these issues would entail further research, to be preceded by generation/collection of relevant and appropriate data in a systematic manner.

For the time being, however, let us look at the impact of brain drain in a more holistic way, depending upon what data/information/stories/perceptions are available, at the macro level and/or at the micro level for drawing the most pertinent conclusions. In fact, some of the qualitative (i.e., non-quantitative) impacts of brain drain may be better perceived for the purpose of devising new policies and strengthening some old ones only after one has surveyed some of the debates on the issue and also looked at policies that are or have been in practice. Before doing this, let us look at some of the evidences of impact in India - both positive and negative.

One of the major positive impacts of skill migration has been the remittance of foreign exchange to India. Beginning in the mid-1970s, there was rapid increase in remittances<sup>54</sup> coming from the US, Canada, the UK, present EU countries in Western Europe, Australia, but in larger proportions from West Asia where the unskilled and the semi-skilled Indian labour migrated. From all countries of the world, it reached a level of US \$2,083 million in 1990-91, further rising to US \$8,112 million in 1994-95, and US \$11,875 million in 1997-98, and finally to US \$ 12,290 million in 1999-2000. In terms of share of GDP at market prices, these constituted 0.7 per cent in 1990-91, 2.5 per cent in 1994-95, 3.1 per cent in 1996-97, and 3.0 per cent in 1999-2000 (see annexure, table A14). As a percentage of private consumer expenditure in the domestic market for the first three of these four financial years, these remittances contributed 1.3 per cent, 3.3 per cent, and 6.0 per cent respectively.

Further shares of these remittances are as follows: Of Gross Domestic Savings: 2.9 per cent, 10.3 per cent, 13.2 per cent; Gross Domestic Fixed Capital Formation: 3.0 per cent, 11.8 per cent, 14.4 per cent; Exports: 11.3 per cent, 30.2 per cent, 33.9 per cent; Imports: 7.5 per cent, 22.6 per cent, 23.1 per cent; Balance of Trade Deficit: 22.1 per cent, 89.6 per cent, 72.3 per cent; and Current Account Receipts: 8.0 per cent, 19.1 per cent, 20.4 per cent.<sup>55</sup> Thus, remittances sent by expatriate Indians have supposedly contributed positively to the Indian economy. In terms of the share sent by skilled labour migrating to the developed countries, it all depends on whether entire families have moved with the principal workers.<sup>56</sup> If so, then there is a tendency for the flow of remittances to dry up from those sources as it had happened in many a pocket in the state of Punjab in India.

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<sup>53</sup> For these past assessments of piecemeal impacts, see Khadria (1999a, Chapter 5: Hope and Despair).

<sup>54</sup> i.e., 'Private Transfer Payments in India's Balance of Payments'.

<sup>55</sup> Reserve Bank of India, *Report on Currency and Finance*, various years.

<sup>56</sup> For example, members of joint Indian families migrating to the UK or US, and settling in Southall in London, or Queens in New York, often get integrated with the local Indian community so much that links with friends and family back home in India weaken over time. This reduces their remittances flow to India as compared that of other migrants not living in these localities of integration. Over time, they send occasional gifts to relatives in India rather than regular remittances.

The host country's immigration policy has a great bearing on this. For example, it was the US immigration law's priority to 'family-reunification' over 'employment-based' immigration in the period during mid-1970s to mid-1980s that had brought the share of remittances arising from the skilled migrants to the US down as compared to those from West-Asian oil-exporting countries. It hardly needs to be mentioned that with reforms beginning in the 1990s and globalisation setting in firmly from the mid-90s onwards, the priorities of not only the US, but other host countries too have shifted from 'family and relatives' based immigration to economic need of the labour market in the developed countries. In fact, the radical change in the British immigration law in favour of issuing the work permits/visas to skilled migrants is a case in point. Remittances too may, therefore, be expected to rise to flow again from these countries to India, but their economic costs need to be assessed.

The important question about the positive impact of remittances depends on how they are used by the recipients: whether in conspicuous consumption, directly unproductive profit-making ('DUP') activities, money laundering, speculative activities, house building, marriages, or on education of the children, and in raising the standard of living? Although there are no hard evidence on the subject, it may be broadly said that the utilization of remittances by the families and friends of the skilled migrants generally have the tendency of going into relatively more productive channels as compared to the remittances which, for example were sent to Kerala by the unskilled and semi-skilled emigrants to West Asia. The West Asian remittance had a tendency to flow into marriage market and house construction activities, rather than into education, or even employment generating activities.<sup>57</sup> This also partly explains why Kerala, despite having the distinction of becoming the first fully literate state in India a few years back, also has the highest unemployment rate of 8.7 per cent in 1999-2000.<sup>58</sup> Rather, it led to worsening of the socio-economic divisions within the same villages where some families had their men folk working in West Asian countries, others not. However, one interesting area for further research on remittances would be to find out what proportion of this is flowing back to the developed countries through fee-paying students migrating to these countries. Particularly with the lowering of the entry-point for education-abroad from post-graduation and research downwards, and the possibility that these students may not ultimately come back to India with the human capital created abroad through reinvestment of the remittances that had come to India, this would put a question mark on the positive impact of brain drain through remittances.

Apart from remittances, the NRIs - particularly those residing in the developed countries and whose entire families have gradually shifted abroad - find it attractive to put their surplus money in various NRI deposit schemes, particularly the repatriable accounts in India. These offer them higher rates of interest than what resident Indians get on their deposits, apart from the flexibility of withdrawals in foreign exchange. The Indian Government floated these deposit schemes for building up India's foreign exchange reserves (see annexure, table A14). The NRIs prefer deposits to investments

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<sup>57</sup> Gunatilleke (1991).

<sup>58</sup> Even celebrated Indian studies like the PROBE (1999) report fails to capture adequately such contradictions of development and underdevelopment that creep in during the policy makers' and administrators' euphoria of riding the bandwagon of 100 per cent literacy. In fact, the high rate of unemployment has led to high rate of migration of the educated from Kerala to other parts of the country and, of nurses particularly, abroad.

in India. However, research has revealed that such funds could have been borrowed commercially at equivalent if not lower costs (Nayyar, 1994). The Reserve Bank of India (RBI) figure that have just become available show that for the decade gone by, the NRI's deposit base has grown by US \$10 billion, steadily rising from \$13.7 billion in 1990 to \$23.5 billion at the end of 2000.<sup>59</sup> In addition, the India Resurgence Bonds (IRBs) of 1997, and the India Millennium Deposits (IMDs) of 2000 mobilized another US \$10 billion, thus doubling the NRI deposit base to about US \$20 billion during the decade. Both these schemes have been considered expensive for India also because such schemes have encouraged NRIs to borrow in Europe at lower rates of interest for the purpose of drawing the substantial interest differential. Secondly, India's experience has been the large-scale flight of these deposits at the slightest instability in the country, whether political or economic.

One salient feature of the growth in NRI deposits reported by the RBI is that the rupee account including the NR (NR) RD has grown substantially.<sup>60</sup> Deposits in this account, which measure up to one-third of total NRI deposits, cannot be repatriated, meaning thereby that at least one-third of India's foreign currency deposits base (i.e., US \$7 billion) is stable as flight of capital from this account is not possible. The accretions to this account has gained momentum with the re-opening of the West Asian labour market for India's unskilled workers, the NRIs who have families back home and who prefer maintaining their deposits back home, irrespective of more attractive returns offered on investments elsewhere in the world. In contrast, the outstanding balance as well as the net inflow in the external rupee account has started to plateau out. This is because the NRIs located in the developed countries have changed their preference of deposits over investments to something else, not necessarily in India.

On the technology front, employment in the Indian software industry stood at some 160,000 skilled people in 1996-97. This stock went up to 340,000 in 1999-2000 and is projected to rise further around 500,000 next year.<sup>61</sup> India produces about 70,000 to 85,000 software engineers, and about 45,000 other IT graduates in a year (NASSCOM-McKinsey Report, 1999). All this determines the nation's capability to undertake research and to facilitate international transfer of technology to India. The Indian Government now plans to double the intake of IT graduates from the next academic session (2001) and treble it in the year 2002 (NASSCOM, 2000). However, all this may not be sufficient to meet the projected growth of Indian software industry. According to industry projections, the demand would rise ten-fold in the next seven years, and India would need about 2.2 million IT graduates by 2008. To this may be added the overseas demand of 0.8 million by the recent announcements from the United States, Germany, and the UK only. Against these figures, India's present combined enrolment in all streams (i.e., science, arts, commerce, engineering, medicine etc.) and subjects (e.g., physics, chemistry, information technology in science and engineering) at the tertiary level of education is about 0.38 million per year (IAMR 2000).<sup>62</sup> Besides increasing the intake over the next two years, there

<sup>59</sup> *The Economic Times*, 'NRIs still have a yen for rupee', and 'For NRIs, it is Re that matters', May 14, 2001.

<sup>60</sup> See Annexure, Table A14 for definition of NR (NR) RD.

<sup>61</sup> *The Hindustan Times*, 17 Sept. 2000.

<sup>62</sup> In-depth study of the supply side (vacancies for admissions in educational institutions, enrollments, dropout rates etc.) in relation to projected/anticipated changes in demand for skilled labour in the world labour market will be an



seems to be no tangible plan available with the Government of India for meeting the increasing demand for IT professionals.<sup>63</sup>

The Indian Institutes of Technology (IITs) are also under pressure to increase intake, but do not have the necessary infrastructure back up for it. New institutions like the Indian Institutes of Information Technology (IIITs) have just started. There will be a major shortage of high-quality technology professionals, e.g., the IIT type of graduates who can work on innovative software technologies. Already Silicon Valley in Bangalore has begun to face the crunch for such professionals: A company looking for 300 professionals in a demanding area like telecom software ended up recruiting just two dozen. Indian IT giants like Infosys and Wipro may lose their competitive edge if they are not able to recruit and then retain top class talent. The official patronage being extended by the Ministry of Information Technology (MIT) to the flight of IT professionals to lucrative foreign destinations will, it is feared by the media, spell disaster for the Indian industry: "Firstly it would lead to a shortage of quality professional at home, restricting the growth of Indian companies. Secondly, it will reduce Indian institutions like IITs and in future IIITs to hunting grounds for foreign companies. In effect, it means Indian resources (including huge public subsidies) will be spent to fulfil manpower requirements of foreign companies."<sup>64</sup>

Return migration, which has received the maximum attention lately as a panacea for brain drain,<sup>65</sup> needs to be assessed in terms of engagement of the returnees in India. Business media (weekly and fortnightly magazines in India) had given lot of focus on young NRI professionals returning to India as "angels" of venture capital and financial sector MNC executives. Even chairman of a major credit rating agency in India thought alike. What is important is the flow of NRIs returning to India and engaging themselves in ground level or 'alternative' development work rather than in promoting Indian or foreign interests of the private capital. There is some evidence of the 'returning NRIs giving more than their due' in this respect: "There was a time when, for almost all NRIs a trip to India meant visits to relatives, shopping and sightseeing. Today... many India students in the US are making time for village India.

This is partly because of the work of groups like Association for India's Development (AID) which (a student) helped to create in 1991, while working for his Ph.D. at the University of Maryland. Today, AID has chapters in 25 universities all over the US...."<sup>66</sup> Such initiatives "challenge the worship of 'speed' and 'greed'" by seeking a value structure that is different. They emphasize a rich community-based life with a material superstructure that encourages economic and social self-reliance, self-

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area of research worth pursuing in this context. This will be an important field because of the opening up of international trade in 'educational services' under the WTO regime.

<sup>63</sup> See Government of India (2000c).

<sup>64</sup> "Back to Body Shopping", by Dinesh C Sharma, *The Hindustan Times*, New Delhi 17 Sept. 2000.

<sup>65</sup> See UNESCO 1998.

<sup>66</sup> *The Hindu*, "Returning NRIs give more than their due", Sunday, Feb 6, 2000. AID now has a fellowship programme to support young NRIs willing to work with movements and NGOs in India. For example, Venkatesh Iyer, a material scientist from Penn State University, has returned to work on the problem of energy. The main purpose is to make optimum use of local resources and generate livelihood for all - giving them the opportunity to tap their potentials for contributing to the generation of India's GDP - as the author of this study would put it. Similarly, R. Sastry has returned from a job in Silicon Valley to explore how the IT revolution can be made a tool for social justice and equity.

confidence, and self-sustenance. Then there are other kinds of initiatives like "Action India" - a brainchild of Sam Pitroda and several other Chicago based Indians who are keen to pool their energies with resident Indians to hasten the development of India. Some of these residents are returned NRIs, similar to members of an association called RNRIA (Returned NRIs Association) of India based in Bangalore and having the motto of "Back to Serve". Such groups, comprising mainly the accomplished professionals rather than students, also favour a change of mindset but are not inclined to challenge the existing development paradigm.

Notwithstanding the apprehensions about remittances from the West drying up, or the shortages of IT professionals (quantitative and qualitative) being overwhelming in India, or the perspective of the returnees being unclear or conflicting between groups, the tables now seem to be turning upside down with the most recent recession in the IT industry setting in firmly in the United States. Layoff announcements in America have reached levels not seen since the downsizing epidemic of the late 1980s. Since the start of the year 2001, some 350,000 persons have lost jobs.<sup>67</sup> Unannounced layoffs are even higher. Panic is starting to spread through the 'cubicle farms'. Downturns have always brought layoffs, but this time the downsizing is different. For a start, it is coming more quickly and with less warning. Until a few months ago, the technology industry claimed some of the fastest growing companies in history. Their executives spent sleepless nights worrying about where they would find the new engineers they needed. Now, they must suddenly shift into reverse. This is the first big redundancy wave to affect mainly "knowledge workers," rather than manufacturing employees.

In one sense, this could be a lesser evil because "knowledge workers" tend to be younger, with more portable skills than, say a former steelworker. However, there are uncertain costs. They do not have unions to protect them; nor can workers sacked by dotcom companies expect much severance pay in compensation. In fact, the arrival of mass layoffs should turn the attention of both home and host countries, more of the latter, towards some controversial practices followed by even bigger firms.<sup>68</sup> Rather than laying off across the board, companies such as Sun Microsystems, Nortek and Intel ask managers to rank their employees on a bell curve, with the bottom 10-33 per

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<sup>67</sup> *The Economist*, March 31 - April 6, 2001.

<sup>68</sup> In fact, there is resentment among the NRIs in the US about abuse of H-1B visa clauses by employers. The Immigrant Support Network (ISN), a non-profit organization of immigrants from over a hundred countries, but dominated by Indian professionals is planning to canvass with Congressmen in Washington for support. Since H-1B visa is issued for a specific position in a specific company, the holder cannot look for other job opportunities, nor can the person expect to move to higher positions in the same company. Many employers take advantage of these rules and deny even annual raises. "Imagine what it does to the career of a young person doing the same job while new technologies are appearing in the IT sector all the time," members voiced their concern. Change of status to that of a Green Card holder "offers the only hope, but that takes years (*The Hindustan Times*, May 4, 2001, "Indians call H-1B un-American", by M. K. Tikku in San Francisco). "The US Superior Court in San Mateo has, however, recently ruled that any contract with H-1B visa holder for binding the person for 18 months of service in the firm is 'void and unenforceable' because it violated state competition statutes. The court in fact ordered the company Compubahn to pay the plaintiff Dipen Joshi hailing from Gujarat, India some US \$215,000 in legal fees and other expenses, rather than upholding the company's claim of US \$77,000 in fees and penalty it asked Joshi to pay because he left the company to join software giant Oracle before his contract period of 18 months was over. The ruling was considered a victory for the hundreds and thousands of H-1B professionals in the US (*The Economic Times*, 'Court Rules Contract As Violating State Competition Laws - Indian wins H1B battle against US co', by Reuters, 3 May, 2001.)

cent found wanting - a process known as 'ranking and spanking' or the 'hell curve'.<sup>69</sup> In many cases, the bottom docile is at risk of termination for performing badly, which often means no compensation. This method, which General Electric, Ford and others have used for years to tune up their workforce, is seen by some as a disciplined way to force the issue of performance to the fore. But it can be demoralizing and dangerous when applied too quickly, without objective performance criteria to back up subjective rankings. If it turns out to have a disproportionate impact on older workers, minorities, or particularly women, it can be devastating.<sup>70</sup>

A recent investigation by the *New York Times* found that hundreds employees of a computer company called Computer Associates were sacked on performance-related grounds in the past few months, even when they had an above-average track record. Perhaps the "Protectorate of Emigrants" type of safeguard (available in India to unskilled workers going out of the country for work or otherwise) for the highly educated could be thought of, particularly by the receiving country governments to make it more effective. This could be towards minimizing the risk of negative impact on the individual emigrant, and indirectly his/her dependant family (old parents, unmarried sisters, young school-going brother, and sometimes, lonely spouse), which is often found poor, in India.

What about the macro-economic impact of brain drain on the home country? There is a risk that is often talked about in the popular circles and the media, especially when immigration policies target only the highly skilled. This is the risk of the best talent being drained away from poorer countries to the rich ones. It is a misconception, however, to call this apprehension wholly true, because in the short-run it has often been the unemployed mediocre who have moved out of the country and not necessarily the best.<sup>71</sup>

What should be of concern is the current long-run implication of the contemporary brain drain on career choice of the younger generation - the 'Ex-ante Decision Domain' impact that was mentioned earlier as a paradigm shift. This takes place through distortion of educational and career choice of the younger generation towards emigration-oriented disciplines (e.g., commerce, leading to finance and management careers abroad or with MNCs in India), and away from science, medicine, teaching etc. This may also happen at an even lower level (say, for example, for undergraduate study) - to emigrate for studies abroad for ultimately entering the world labour market there. If this happens on a large scale, as in India in the last couple of years, then this will be an area in which efforts will have to be made - neither preventive nor curative, but largely managerial.

For better management of this kind of impact, more accurate projections, and mandatory career counselling for students and their parents should be introduced on a priority basis. Simultaneously, flexibility in curriculum for mid-way change of streams by the students and quick alterations in the number of vacancies at senior-

<sup>69</sup> *The Economist*, March 31- April 6, 2001.

<sup>70</sup> See Khadria 2000b, for an argument as to why women should be given better protection than usual policy of positive discrimination favouring other minority groups.

<sup>71</sup> The Kothari Commission (GOI, 1966, section 198 on 'Brain drain') had observed, "Not all who go out of India are necessarily first-rate scientists, nor are they of critical importance to the country's requirements".

secondary and college admissions by educational administrators on a year-to-year basis must be planned. Such safeguards will be extremely necessary to avoid the perils of instability in the world labour market, both by nations as well as by individual citizens who could be still in the educational pipeline or just out of it and their families. Building up of such safeguards will be extremely essential. Short of such safeguards, the risk will be that doctors or teachers who are educated or likely to be educated at great social cost (the matrix of public and private costs, direct and opportunity costs)<sup>72</sup> in the poor country, will move out to richer parts of the globe, making it tougher for the state to improve health and education of the people in the poor country.

It may be mentioned about the impact of brain drain on a poor developing country like India that without perceptions that emerge out of the debate on the subject, as well as without looking at the policies in place in such a sending country, the analysis would be a partial one. Any impact analysis, if it has to be useful for devising useful and relevant measures, should, therefore, take into account these perceptions and the policies that have been tried or would be tried.

## **5. Perceptions and Debates on the 'Brain Drain' in India**

### **5.1. On the exodus of Indian talent abroad**

Today, India is almost at the top of the list of countries so far as emigration of the "brain drain" category is concerned - to developed countries like the USA, Canada, Australia, Germany, France, Japan, and of course the UK. In Indian polity, however, brain drain does not seem to be as worrying a cause of concern for the politicians or the bureaucracy as it used to be in the nineteen seventies. Rather, the boom in the IT sector in the developed countries is being looked at as an opportunity to reap the benefits of a "brain bank" that India's brain drain was once compared with. Why did the category of "brain drain", despite having very provocative geneses in Indian political history (which of course were not at all very obvious), not find a place of priority when it came to policy implementation after independence? Rather, it was neglected to the extent that concerns about graduate unemployment did become surmount within the Planning Commission but not the brain drain by the mid-1960s.

In fact, emigration of India's so-called surplus human capital not only changed direction towards the United States of America during this time, but also swelled in terms of numbers. In the early 1990s, the political perception of "brain drain" gradually gave way to the perception of "brain bank" abroad, a concept dear to the then Prime Minister Rajiv Gandhi. Further, the emigration of Indian IT professionals in the year 2000-2001 is being looked at as the complete reversal of the brain "drain" into a "brain gain" through globalisation of the Indian talent and skills. Not merely economic, but political mileage that the NRIs and PIOs can command for India in their countries of abode has also come to the centre-stage in recent years, particularly

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<sup>72</sup> The study of costs, by undertaking sample surveys in various regions of India will be an illuminating further research as has been understood by the author of this paper in estimating the social cost of Civil Services Examination in India (see UPSC 2001/Khadria 2001a).

with liberalization, globalisation and world competitiveness becoming the agenda of the nations - whether developed or developing.<sup>73</sup>

The following statements from the present Prime Minister Atal Bihari Vajpayee's address to the Global Organization of Persons of Indian Origin (GOPIO) at New Delhi in January this year (2001) reflects the perception of the Indian polity towards the highly qualified and experienced emigrants of India settled abroad. Expressing the pride of the Indian nation on the legendary success stories of Indian entrepreneurs abroad, he is reported to have said, "From high-tech chip laboratories to curry restaurants, from renowned hospitals to famous educational institutions, from well-known research centres to leading think-tanks - everywhere you find an Indian who has overcome all odds to establish himself through skilled education and hard work."<sup>74</sup> He also said, "Many of you owe your current success to the quality education which you have received in Government-run institutions, be they Indian Institutions of Technology or medical colleges. You now owe it to your motherland to associate yourselves with India's search for rapid and enduring social change and economic progress", and again, "I would like to emphasize that we do not merely seek investments and asset transfer. What we seek is a broader relationship - in fact a partnership among all children of mother India, so that our country can emerge as a major global player." Finally, he said, "My government's policy is to assist the overseas Indian community in maintaining its cultural identity and strengthening the emotional, cultural and spiritual bonds that bind them to the country of their origin."

To quote the Secretary, Department of Secondary and Higher Education, Ministry of Human Resource Development (MHRD), GOI, "Lately new information and communication technologies have sparked off a revolution - through which we may perhaps 'get the best of both the worlds.' In fact, it is now 'being argued that the whole idea of a brain drain is a mindset of the pre-dot.com generation'.<sup>75</sup> Is it another matter that the bursting of the dotcom bubble may prompt people to shift their positions on the issue of brain drain from India? Perhaps, but not necessarily. An Additional Secretary in the same Ministry finds the term 'brain drain' misfit for describing the migration of skilled labour from India. Moreover, a Director in the Technical and Professional Education division in the same Ministry holds the view that the whole idea of brain drain is passé now. The perceptions, however, in the MHRD were different two years ago (1999): Remittances or other benefits did not neutralize the negative impact of brain drain. The emigrants had directly benefited from huge public

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<sup>73</sup> This is particularly important as regulation of foreign immigration has remained a highly sensitive issue of public policy in the United States for long (Harwood 1986; Moore 1986; Martin and Widgren 1996; Tietelbaum and Weiner 1995). Careful reading of political history reveals that this was an issue over which President Woodrow Wilson had "found himself wholly out of agreement with his Congress" (Baker 1937, 104). In 1914 the House had passed the Burnett Immigration bill, providing a 'literacy test', which was to exclude all foreigners who could not read some language, but mainly every Chinese and Indian immigrant settler in the US. Wilson in fact vetoed the bill twice before it was finally passed over his veto in February 1917. Ironically, and as if to rebuff this infamous law of exclusions, more and more educated and skilled Indians (and Chinese, of course) gradually replaced the uneducated and the illiterates, almost wholly by the end of the twentieth century. It is perhaps due to wisdom of history that the recent suggestion of the UK Home Office Minister in-charge of Immigration and Asylum Lord Rooker about making a working knowledge of English compulsory for people applying for British citizenship led to the British Government's unease rather than outright support (see "Britain says it prefers English-speaking migrants", by Vijay Dutt, *The Hindustan Times*, August 19, 2001).

<sup>74</sup> *World Focus* (2001), Special Issue on Indian Diaspora - Its Positive Contribution, No.255, March 2001.

<sup>75</sup> Kaw 2000, p.5.1.

subsidies - to the tune of Rs.500,000 for a first engineering degree, and Rs.750,000 for a first medical degree in India. They should therefore be made liable to recovery by the government so that the government can plough back these resources into creating extra capacities and improving the infrastructure and facilities of higher education in India. This perception has become subdued over the last two years, particularly because it is thought that geographical boundaries are no longer effective barriers to migration of skill because the output of a knowledge worker is in any case transferable through the ICT (Information and Communications Technology).<sup>76</sup>

The Ministry of External Affairs (MEA) would refer to its own, recently estimated unpublished figures of large proportions of all doctors in the U.S. (38 per cent), all scientists in the U.S. (12 per cent), all NASA employees (36 per cent), all Microsoft employees (36 per cent), all IBM employees (28 per cent), and all Intel employees (17 per cent) in the U.S. being Indian as the sign of success of Indians abroad.<sup>77</sup> UK and some other developed countries are also identified as the destination countries where Indians have excelled, particularly with a contribution of 40 percent of doctors in the British National Health Service. Indians supposedly head 7 per cent of all technology firms in the Silicon Valley.<sup>78</sup>

The MEA officials feel that the real success of the India Diaspora, as the NRI and PIO communities the world over are called today, lies mainly in the acquisition of immense wealth by Indians in the Silicon Valley. These are mainly the skilled and qualified professionals. However, counting the unskilled labour as well, the size of the Indian Diaspora is estimated to be about 20 million today, third in rank after the British and the Chinese. Of this, the 'Asian Indians', as the NRIs and PIOs are categorized in the US Census, have numbered up to over a million, as per rough findings of the US Census 2000. The Indian Diaspora constitutes sizable number of PIOs in Fiji, Mauritius, Trinidad, and Guyana, and significant minorities in Malaysia, South Africa, Sri Lanka, Uganda, UK, USA, and Canada. As NRIs, they also have a visible presence in the countries of West Asia,<sup>79</sup> Southeast Asia, Australia, and New Zealand.

One weakness of the Indian Diaspora, however, arises from its fragmentation on subculture, ethnic, regional and linguistic basis, making it difficult for Indian overseas communities to take any uniform position on issues of concern to India. It also

<sup>76</sup> See Aneesh (2000). Also, 'Technology has made distances irrelevant', *The Hindustan Times*, 1 May 2001.

<sup>77</sup> The MEA figures are as reported by the Indian missions abroad, but as they may have been based on perceptions of expatriate Indian professionals like Arun Netravali, it is believed that these estimates suffer from an upward bias than the actual. However, these indicate that the proportions are significant.

<sup>78</sup> There is, however, evidence that highly skilled Indian professionals are given high professional position in the American/non-Indian owned organizations, but very rarely top managerial positions that are superior to professional positions in terms of authority and control (see AACI, 1993 as cited in Saxenian, 2000).

<sup>79</sup> In fact, mostly comprising the unskilled and the semi-skilled Indian temporary workers primarily in oil-rich countries, viz., UAE, Kuwait, Iraq, Libya, Bahrain, Qatar, and Oman, and others, this group has been contributing the largest share of remittances to India - larger than remittances arising in any of the 'dollar area' (North America), rest of the 'sterling area' (Britain and Australia), 'OECD area' (Western Europe), and 'Rest of Non-sterling area' (Other developing countries) - Rs.117,961 million out of the total of Rs.287,610 from all areas in 1995-96. India, with US \$7,603 million, tops the list of first ten countries receiving 74 per cent of world remittances totaling to US \$33,241 million from expatriates abroad in 1996, followed by Mexico, Portugal, Turkey, Egypt, Greece, Spain, Morocco, France, and China. The first ten countries of origin of worldwide remittances were Saudi Arabia, United States, Germany, France, Japan, Switzerland, Oman, Kuwait, Cote d'Ivoire, and Spain. (See Butkeviciene J., 'Market Access for the Movement of Natural Persons as Service Suppliers', UNCTAD, 1998 cited in WTO, 1998b).

explains the large number of associations and groups of NRIs in the United States itself. Efforts to unify these groupings have not yet met with success. What binds them together is a common cultural heritage called 'Indian'. The government is eager to establish strong cultural and emotional bonds with the Diaspora that will assist them in their efforts to maintain and enrich their cultural identity and create better mutual understanding with other communities. The government is however conscious that certain sections of well-to-do and established professionals of Indian origin (PIOs) are also supporters and sponsors of separatist activities in Punjab, Jammu & Kashmir, and even the North-East. This has also, at times, adversely affected the bilateral relations of India with those countries.

Officials in the Ministry of Home Affairs (MHA) have had certain perceptions for being cautious about conferring the right, to PIOs, of dual nationality/Indian citizenship, and financial transfer to India for charity and philanthropy. They felt that the grant of political right by virtue of dual citizenship shall be resented in India not only by the middle class and the rich, but also the poor because of the significant affluence of the PIOs vis-a-vis the Indian citizens - leading to creation of another privileged class and undesirable social divide in India. It would also put the security of India to risk because of the possibility of some such persons being recruited by foreign intelligence agencies, their entry into the police and the army, and their possible participation in facilitating the inflow of undesirable foreign funds. Regarding the flow of funds from PIOs for charity and philanthropy in India, these should pass through existing scrutiny to minimize the possibility of large scale money laundering; some senior officials in the MHA are believed to think.

Indian industry's perception about migration of skilled professionals from India, however, is now beginning to thither under the ensuing American recession in the IT industry. The industry, which is already showing signs of taking its own toll in terms of a freeze on fresh recruitment on the one hand, and layoff of the old on the other, has precipitated the return of many US-based IT professionals back to India.<sup>80</sup> Western European countries in the EU, including the UK are being looked at as a more sustainable destination for the Indian professionals, and East/South East Asia is being looked at as an emerging destination for the 'brain bank' for India to shift its 'branches' from the United States. One has to be, however, cautious and remember about these destinations as sources, also of the 'derived demand' (originating in the US) for highly qualified manpower from India, because, as mentioned earlier, these countries themselves are facing their own problems of brain drain to the United States. If so, the derived demand will also tend to dry up when the brain drain to the USA slows down globally.<sup>81</sup> Industry is also speculating on the possibility of reverse or return migration of the Indian IT professionals to India for working in companies that are being outsourced/would be outsourced by the developed-country-based MNCs for software development. There is, however, a great deal of uncertainty in the private sector on the issue.

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<sup>80</sup> Although many in the pipeline of migration have cancelled or put on hold their plans to go, there are reports of no slowing down in the issuing of H-1B visas by the US Consulate-General at Chennai in South India (*The Economic Times*, 'No slump in issue of H1B in Chennai', May 3, 2001).

<sup>81</sup> United Kingdom itself sends large number of immigrants and temporary visitors to the United States, including doctors, teachers and IT professionals.

While industry's concern is mainly with the numbers, Indian media perceives the real problem in brain drain to be that of quality of the residual manpower left behind in the rush for going abroad: "We may end up with a huge army of people doing second class, labour intensive software-development work and operations like managing call-centres and customer-services for foreign companies", churning out what is being called the 'techno-coolies'. On the great demand for Indian software professionals in Germany and other countries, the media would say, "Good for them but what about India's own requirements?"<sup>82</sup> Germany's Chancellor Gerhard Schroeder's scheme of issuing 20,000 Green Cards to computer specialist from non-EU countries, mainly India (between 7,000 to 10,000) and Eastern Europe launched on August 1, 2000 received a little lukewarm response due to street protests and the wave of xenophobia of "*kinder stat inder*" sweeping Germany.<sup>83</sup> But every time a foreign country made such an announcement or delegations came calling, one heard a plethora of statements from the IT lobby in the Indian Government and outside exulting, "India may well be on way of becoming software *superpower* of the world". However, the reality is that it may end up becoming "the IT professionals' *super bazaar* of the world". India shall be reduced to rolling out graduates and specialists for multinational corporations of the world, burning scarce resources that go into India's higher education system.

The trend of exporting Indian IT or software professionals is not new. Indian companies have been at it for the last two decades: The practice, of doing on-site software development (in the US) being called "body shopping", was predominant in the 1980s and early 1990s, mainly because the track record of Indian software companies was not proven, and the telecom infrastructure was not fully developed for undertaking jobs in India at that time. As Indian companies made their mark in executing large and complex projects, and telecom and satellite links improved, the trend of offshore software development (i.e., in India) began. This trend had augured well for the industry, boosting its export earnings a great deal.

What scuttled this advantage of India is the trend of foreign companies /countries inviting Indian professionals to work there - in a way return of "body shopping." The only difference now was that the invitations came from foreign governments, and not from individual companies. In addition, professionals were able to go on their own, instead of being sent by an Indian company to work on a project there. Therefore, this is also body shopping in a far more organized fashion, and with government sanction on the one hand and individual compliance on the other. Unfortunately, the newly created Ministry of Information Technology (MIT) does not see anything wrong in this: "We have an open policy," MIT Secretary P V Jayakrishna is reported to have declared recently. It is true that in a democratic system all citizens have freedom of movement and freedom of employment. However, such an open encouragement to flight of highly skilled human capital by an agency that is supposed to promote IT within the country could be fraught with dangerous consequences, the media thinks.

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<sup>82</sup> *The Hindustan Times*, 17 Sept. 2000

<sup>83</sup> "Children instead of Indians" was the slogan given by the leading opposition politician Juergen Ruetters, *BBC World Service News*, "German Right under fire on immigration", Thursday, 6 April, 2000, 20:12GMT. See also "IT pros may get German green cards", *The Hindustan Times*, New Delhi, 13 April, 2000.



To the question, "What does India gain as a nation?", the MIT would argue, "They will bring back technology, experience of working in a global environment and they also come back. Look, so many NRIs are coming back today." The media will retort, "Yes they will bring technology and experience, but on the terms decided by the MNCs that employ them."

There are few researchers in India working on the issue of brain drain specifically. Those interested in the broader field of international migration and are located in Delhi represent a whole range of specialization in terms of being economists, sociologists, political scientists, linguists, and so on. The focus of attention amongst them is the Indian Diaspora and its various cultural, spiritual, linguistic, and religious aspects in terms of its interaction and integration with the Indian society. Brain drain does not seem to bother them much; and even if it did, there are few hard data (e.g., on educational subsidies lost etc.) to sustain their interest in it. A few engineering and medical faculty, and even scientists have, under the sponsorship of the Department of Science and Technology of the Indian Government, taken up specific organization-based studies of brain drain in their own institutions, e.g., in IITs, AIIMS, BHU etc.<sup>84</sup> One common conclusion of these studies is that the dimensions of brain drain from these institutions have been substantial enough for the government to initiate policy intervention (see table A7).

One may mention here that national debates in India are not unaffected by the perceptions and projections taking place around the world about the growing demand for skills from the developing countries, and the prospects for India to benefit from it. For example, Susan Martin of Georgetown University is reported to say that in high-skill industries, such as software companies, demand for migrant workers in the U.S. - especially from Asia - has been remarkably high.<sup>85</sup> Tighter restrictions on migrant labour would make companies like the Microsoft shift some of their operations to Asia, possibly near Bangalore in India. Overall, the weight of the evidence is that it has been a major boon to the U.S. economy to have such a supply of labour at many levels, Alejandro Portes of Princeton University reportedly says.<sup>86</sup>

A number of shifts in political positions too reflect the growing demand for the developing country skills in the UK and the EU. In England, for example, immigrants were given the 'green light' by the British Home Minister Barbara Roche last year. Roche wished to attract skilled professionals - nurses, doctors, IT experts, customer and financial personnel. While Roche was positing a 'market-led' loosening up of immigrant legislation, the Austrian envoy in New Delhi, Ambassador Herbert Traxi clarified in India that the political ascendancy of the anti-immigration freedom Party in Austria should not be a matter of concern for immigrants. Mr. Traxi emphasized that there had been "zero" cases of immigrant bashing in Austria. "Our record in minorities have been exemplary", he said. Traxi also said Austria had a German type temporary work visa for technology workers, and said several Indian and Austrian IT

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<sup>84</sup> See Deshmukh et al (1997) for IIT Delhi, Ananth et al (1989) for IIT Madras, Sukhatme and Mahadevan (1987) for IIT Bombay, and Kalra et al (1992) for AIIMS - as referred to in Khadria (1999a). The BHU study is still ongoing.

<sup>85</sup> *The Economist*, March 31- April 6, 2001, 'Migration', p.31.

<sup>86</sup> *ibid.*

firms were working together.<sup>87</sup> Europe now is thus seemingly ready to face up to the fact that the 'Asian immigrant' no longer slots neatly into the "silent, low-paid, toilet-cleaning category" (Albinia 2000).

Britain today is said to have come a long way since the days of Enoch Powell and his 'rivers of blood' (Albinia 2000). This is largely because the generic "foreign person" whom Powell envisaged draining Britain dry has defied expectations by rising to unforeseeable economic prosperity. Today, Britain is an endless repository of Afro/Asian success stories.<sup>88</sup> Interestingly, the success stories of Indians in Britain had gone to the extent that emigration of expatriate Indian luminaries residing in Britain, to the US was, in the recent past, considered *Britain's* brain drain, and subsequently their return to Britain at substantial salary cuts as return of *Britain's* prodigal sons!<sup>89</sup>

It has been estimated that Britain will need half a million IT experts in the next ten years, and India is being viewed as a major shareholder amongst the supplying countries. Britain is also facing a reduction in the number of public sector employees - especially teachers and nurses. Consequently, 28 per cent of nurses registering in Britain in 1999 were foreign. Like many economically developed European countries, with their declining mortality and birth rates, and aging population, Britain cannot do without imported labour. Not only in Britain, but also all over the continent, there are shortages of qualified workers drawing political and media attention.<sup>90</sup>

Romano Prodi, President of the EC, identified a growing skills gap as a priority facing the European Council. The EU, he argued urgently needed to ease restrictions on labour mobility, particularly in the technology sector, which faced a shortage of up to 1.7 million qualified workers by 2003. To judge by the efforts that companies are

<sup>87</sup> *The Hindustan Times*, Sept/Oct 2000, Austrian National Day speech.

<sup>88</sup> The example of Lord Swraj Paul, the leading London-based businessman of Indian descent is a case in point. A year back Paul was reported to have exhorted NRI entrepreneurs in the US to invest in Britain, saying Europe with 400 million people offered them an enormous market and Britain could be the hub. For Indian companies, he said Britain would be the natural choice. Paul, whom British ambassador to the US Christopher Meyer had described as "the roving ambassador for British business", said, "We are especially interested in NRI investment because Britain has seen the contribution of NRIs to the British economy." Paul further added, "I keep reminding people that 18 million Indians abroad have the same GNP as the whole of India and growing faster than India's (HT, 'Swraj Paul calls for US-based Indian investments in UK', IANS in Washington D.C., *The Hindustan Times*, 15 April).

<sup>89</sup> One significant example is the migration of economics professor Amartya Sen from Oxford to Harvard and his subsequent return to Cambridge as the Master of the Trinity College. Amartya Sen was later conferred the Nobel Prize in economics - a case of Britain's brain gain! Notwithstanding this, recently Sen, as an Indian passport holder, was not considered eligible by the Australian High Commission in London for electronic visa that an American, British, Canadian, or a developed-country citizen was. Sen had to wait for time-consuming conventional visa before travelling to Melbourne for delivering the Alfred Deakin Lecture on 'Global doubts and global certainties' on May 15, 2001. Naturally, Sen voiced his conviction that while international barriers to facilitate easy trade were coming down, the barriers which prevented free human movement were going up. Sen's reaction was partly reflected in his reply to an Australian newspaper questionnaire on globalization: "The existence of these barriers is a constant reminder that the great champions of globalization cannot mean what they say when they claim to be great removers of global barriers...." To "the movement of goods and services, yes, but of people, even of mere tourists definitely not." (*The Economic Times*, 'No quick Australian visa for Amartya Sen as he is an Indian' by Paritosh Parashar in Sydney, May 16, 2001).

<sup>90</sup> *The Economist*, March 31- April 6, 2001, 'Migration'. It has been said that Europe's problem has been caused partly by prosperity. Healthy economies, e.g., Ireland, with fast growing hi-tech industries, have outstripped the local market's ability to furnish qualified workers. People have become less willing to work and take education for work. In France, the introduction of 35-hours working week means that more workers are needed to produce same economic output which is aggravating skilled labour shortages.

making in solving the problem on their own, the shortage seems even more severe than the EC thinks. Most obviously, Europe has too few qualified computer engineers. A recent report on migration by the OECD is mentioned to have noted that there has been a decisive shift towards temporary migration, particularly related to work. "All over Europe there are examples of specific exemptions to tough immigration laws being allowed for professions where there are shortages," said Jean-Pierre Garson, author of this report.<sup>91</sup> He said that Britain had the most innovative approach in considering to drop eligibility criteria and replace them with 'fast-track work permits' for workers in areas that suffer the worst shortages.

On the supply side, however, the choicest destination at the moment, of IT immigrants from the developing countries of Asia and particularly from India, remains the US, a country founded on the immigration ethic, and apparently more willing rather than merely demanding than old-fashioned Europe to realize the benefits immigration brings. So far as benefits to India are concerned, Saxenian's (2000) findings on the Silicon Valley entrepreneurs is that although today a growing number of skilled immigrants return to their home countries after studying and working abroad, few Indian engineers choose to live and work permanently in India. Unlike the Taiwanese Chinese, Indian engineers - if they return at all - typically do so on a temporary basis. This is due in part to the differences in standards of living between the U.S. and India, but most observers agree that the frustrations associated with doing business in India are equally important. These conclusions are no different from how it is perceived in India in general.

## **5.2. On student emigration**

The phenomenon is not new: Going abroad for higher studies has been part of the education scene for many years. What is new is that the "fledglings" are leaving the nest, younger and still younger. Barely 15, they plan.... The desire to be part of a more stimulating system of education (is one of) the factors that force the youngsters and their parents to seek alternatives outside the country. In addition to, of course, the craze for the West and all things western. The US, followed by Britain and Australia, are the favoured destinations. Unthinkable it might have been for their daughters "in their impressionable age" out of their strict supervision, this is no longer so. The information explosion has ushered in the concept of global village and played a major part in opening the windows of opportunity and influencing attitudes. The going-away-abroad-at-16 trend, as can be expected, is restricted to the elite and the upper middle class, which have the financial resources and exposure to the western style of thinking and living. This is the assessment of media in India.<sup>92</sup>

After the US, the UK is the most popular educational destination. "Economic liberalization has enabled more students to go abroad than before", an Educational Counselling Officer of the British Council Division (BCD) at New Delhi reportedly said. South Indians go for post-graduate and not so much for undergraduate studies except from Ootacamund and Kodaikanal, which have expensive boarding schools.

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<sup>91</sup>The report as cited in *The Economist* ("Bridging Europe's skill gap", March 31- April 6, 2001, p. 60) has been referred to without mentioning its title.

<sup>92</sup> *The Hindu Folio*, Mar. 10, 1998, 'The Great Exodus', by Santhanam, K. pp. 14-17.

The undergraduate market for Britain is East India where there is any number of public schools. "Relatively speaking, the number of students who go abroad for graduation is not significant," said Dr. M. Anandakrishnan, Vice Chairman of the Tamil Nadu State Council for Higher Education. Another problem is our systemic problem, he added: "Self-financing colleges levy such exorbitant charges as 'capitation fee' (Rs.3 million for an engineering seat) for instance, that it is cheaper to go abroad."<sup>93</sup> But even abroad, spurious and ghost institutions are another hazard."

In England, polytechnics were suddenly conferred autonomous university status and asked to become self-sufficient. Therefore, they resorted to enrolling students abroad. For the extremely well off young, urbanite, the American or Australian sky is the limit. For research students, GRE is the route to American fellowships. "But for the brilliant poor rural boy, owing to the extremely unfair and great Indian divide created by his countrymen, a college degree in the nearest town still remains a distant dream. This is for the superior male. The rural girl child is light years away from her smart, urban counterpart. Early marriage, a brood of children, malnutrition and male domination is all that is in store even for the brightest and the best."<sup>94</sup>

## **6. Policies in Place to Manage the 'Brain Drain'**

Policies that a developing sending country can adopt to deal with brain drain or emigration of skilled labour can be divided into four broad types: Restrictive, Compensatory, Restorative and Developmental. These would correspond, broadly, to the counterpart developed receiving-country policy options of (a) Protecting the interest of developing countries, (b) the Diaspora option of using expatriates as a resource for development, (c) Return migration and International (bilateral and multilateral) agreements, and (d) Policies to facilitate economic development respectively.<sup>95</sup> India, as a developing sending country, has experimented with almost all of them at various points in time:

### **6.1. Restrictive policy to reduce emigration of skills in short supply**

India generally does not have a restrictive policy for emigration of highly educated, trained and experienced personnel. From time to time various restrictive measures to contain the problem has been conceived, but there has never been a consensus except in the case of the medical sector - where India has certain restrictions.<sup>96</sup> In this sector too, the Ministry of Health was contemplating amendment to provide for NOC on

<sup>93</sup> The same holds true for courses in medicine in the Russian Federation.

<sup>94</sup> *The Hindu Folio*, by Santhanam, K., March 10, 1998.

<sup>95</sup> See the ILO Draft Synthesis Report (Lowell and Findlay, 2001, Section 6).

<sup>96</sup> These restrictions are in two categories: (a) Professional Trainee category - for stay up to 7 years but requires a two-year physical stay in India that cannot be waived through issue of a 'No Obligation to Return to India (NORI) Certificate. Additional time is not allowed even for sitting for examination or certification. (b) Teachers, professors, research scholars and specialists visitor status category - less stringent requirements, and NORI certificate is issued in case spouse is a foreigner or green card holder, applicant has got entire education abroad, applicant spent more than 20 years abroad, and in case applicant is above 50 years of age and worked in India for 15 years or more. NOC is given only in respect of certain identified specialties, and the list is updated from time to time. A plain paper bond of Rs50,000, legally non-enforceable, for the period of NOC is executed. There is a bar on conduct of examination by ECFMG in India for restricting the exit of doctors from India.

payment of fees of Rs. 50,000, and NORI on fee of Rs. 100,000, removal of restrictions on all specializations, and conduct of ECFMG or its equivalent in India. The issue of compulsory rural service for a few years by the doctors going abroad also came up before the committee. But it was not agreed upon by the Committee of Secretaries (CoS) because if posted in rural areas, medical graduates will lose momentum of academic pursuit and will not be able to clear through tough examination. To be able to levy fees, the Government was contemplating legislation, since under Article 265 of the Constitution of India no tax can be levied or collected except by authority of law. The MHRD was contemplating on supporting the proposal of the Ministry of Health and Family Welfare with the qualification that fee be charged only on those who stay back abroad, and this could be made operational by introducing a legally enforceable bond to be signed by the emigrating medicos at the time of departure. Further, the amount of the bond so introduced may be related to the amount of subsidy provided during education. Since this would amount to cost recovery, a new legislation was not required. However, no further developments have become known in this regard.

There is thus a history of three decades of restrictive policies in India for medical education abroad. It started initially with the objective of controlling foreign exchange outflow and optimum use of facilities in India. Later the rationale was to regulate the outmigration of doctors and derive the benefits of highly subsidized medical education provided to them for the country's poor. However, these too originated as India's *quid pro quo* response to the highly restrictive US regulations for entry of medical personnel into the American geo-economic sphere. The Indian policy of restrictions is expected to regulate the flow of doctors and is influenced by highly subsidized education provided to them. This however is effective in taking care of only the emigrating medicos who comprise only 15 per cent of the total student outflow from the country. Nearly 40 per cent of the students go abroad for engineering and technology, 25 per cent for management, and 20 per cent for other subjects. However, it is not the medical education only, not even professional education only, but the entire tertiary sector of education, which is subsidized in India.<sup>97</sup> Therefore, restrictive policy, if it has to be effectively implemented, should be devised for the higher education sector as a whole.

## **6.2. Compensatory policy to derive resources from the Diaspora**

There is no formal compensatory mechanism that India has to undertake to make good the losses arising because of migration. The policy is in terms of incentives offered to the NRIs for sending funds to India through the official channels - remittances, investments in bank deposits, occasionally floated development bonds, securities of Indian companies, joint venture and so on. Most of the incentives are in the form of higher rates of interest and lower rates of taxes for the NRIs as compared to their counterpart residents in India. In fact, the term 'non-resident' was coined for the purpose of extending tax concessions to temporary visitors abroad, so that they were not subjected to double taxation - once in the host country and again in India. Most of these schemes have attracted financial transfers to India, but have faced the scrutiny

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<sup>97</sup> See Khadria (1989), Government of India (1997) for the rationale of these subsidies in India at the post-compulsory level of education.

of efficacy in terms of going into conspicuous consumption or what Krueger, and Bhagwati would call 'Directly Unproductive Profit-making (DUP) activities'.<sup>98</sup> One can also mention the well-known Bhagwati-proposal, of 1976, of taxing the brain drain for creating a development fund that would benefit the developing countries losing their skilled labour to the developed world.<sup>99</sup> However, it could not be experimented with due to problems of multilateral jurisdiction across countries.<sup>100</sup>

### **6.3. Restorative policies to encourage and facilitate return migration through national, bilateral and multilateral schemes and agreements with receiving and other sending countries**

These are aimed at restoring, even if partially, the human capital lost through the brain drain by encouraging return migration to India, either permanently or temporarily on specific assignments. The most well known schemes under this category have been the Pool Officers Scheme for permanent returnees launched by the Council for Scientific and Industrial Research (CSIR) of Government of India, and the TOKTEN-INRIST<sup>101</sup> scheme for temporarily returning scientists launched by CSIR in collaboration with the UNDP.<sup>102</sup> Both the schemes have been quite ineffective - due to poor offers and poor implementation respectively. Private initiative was through the TOKTEN-INRIST only as even private industrial establishments were in principle encouraged to provide the placements to the returning/visiting NRIs in their R&D units. The private firms were, however, frustrated and disillusioned with the bureaucratic style of functioning of the CSIR with respect to the implementation of the TOKTEN programme in India.<sup>103</sup>

The University Grants Commission too had started a scheme of Research Scientist primarily to attract Indians abroad on offers of placements in Indian universities at levels parallel to lecturer, reader, and professor in the early 1980s, with substantial research grants apart from salaries. The scheme took-off well, but ran into rough weather due to dilution of standards for accommodating unemployed scholars from within India in all disciplines. It also led to dichotomies in the universities, where the Research Scientists were treated as 'second-class citizens' by the permanent faculty. To get over this, the UGC turned the appointments, initially made for five yearly renewable tenures, into permanent ones. However, the subsequent batches were not given the same deal; rather it was made worse for them, apart from being temporary and non-renewable after the first tenure of five years. In the original scheme, there were provisions for promotion too from one level to another after every five years, subject to evaluation of progress of work. The UGC finally ran into budget crunch, and the scheme was withdrawn some time in the mid-nineties for fresh appointments, and phasing out of the old non-renewable positions too began.

<sup>98</sup> See Krueger (1974), and Bhagwati (1982).

<sup>99</sup> Bhagwati and Partington (1976). The tax proposal is being suggested afresh in *Human Development Report 2001* (UNDP).

<sup>100</sup> It may be mentioned that Jagdish Bhagwati is himself an illustrious expatriate Indian of international repute, settled in the USA and teaching economics at Columbia University.

<sup>101</sup> Transfer of Knowledge and Technology through Expatriate Nationals - Interface for Non-Resident Indian Scientists & Technologists (TOKTEN-INRIST)

<sup>102</sup> UNDP has sponsored the TOKTEN programme in many developing countries experiencing brain drain.

<sup>103</sup> See Khadria (1999a, Chapter 6: The Silverstreaks: Voices of Experience, Expectations and Desires.)

Recently, to increase interaction with the Indian Diaspora, the Government of India has, through official notification, introduced what is called the PIO-Card for persons of Indian origin who have obtained foreign citizenship by surrendering their Indian citizenship.<sup>104</sup> The PIO scheme was notified by the Ministry of Home Affairs in the Gazette of India dated 30th March 1999.<sup>105</sup> The main features of the scheme are: Excepting for those who now hold citizenship of Pakistan, Bangladesh, and other countries that may be specified from time to time, anytime holders of Indian passports in the past; the children, grandchildren, and great-grandchildren of those who were born in India and were permanently resident in India as defined in the Government of India Act, 1935 and other territories that became part of India thereafter; and spouse of citizen of India or PIO as per the criteria of the PIO Card scheme, are all entitled to apply and get the PIO Card with validity of 20 years terminable prematurely along with a passport, by paying a fee of US \$1000 (inclusive of non-refundable processing fee of US \$250). The card extends the facility of visa waiver for entering India; exemption from the requirement of registration for stays up to 180 days; parity with NRIs in respect of all facilities available to the latter in the economic, financial and educational field excepting acquisition of agricultural/plantation properties, but not in the sphere of political rights.

The PIO Card scheme was designed to strengthen the link of the expatriates of Indian descent, including Indian-born naturalized foreign citizens, with India. A large number of PIOs had, in fact, been asking for dual citizenship from India so that they could keep their contacts with the home country with ease. The PIO Card was the second-best offer Indian Government could offer, because the proposal for dual citizenship was not acceptable for reasons of national security, and other possible abuses by anti-national and anti-social elements. The PIO Card scheme however failed to evoke an enthusiastic response. As per the Interim Report (mimeo.) of the High Level Committee (HLC) on the Indian Diaspora (set up by the Indian Parliament), on the PIO Card Scheme, and placed with the Ministry of External Affairs of Government of India, only about 1100 PIOs applied for the Card in the last one and a half years. The HLC would like to go into the analysis of poor response, and suggest changes on the validity period of the Card (making it two or three tier, rather than for a single option of 20 years- for various age-groups, regional/country-groups of people), lowering of the fee (in general, as well as according to the validity options), and making it discriminatory on the basis of a classification of countries of residence of PIOs according to the Human Development Index (HDI) rankings of the UNDP.<sup>106</sup>

<sup>104</sup> Indian citizens are not eligible for dual citizenship.

<sup>105</sup> *The Gazette of India*, Regd. No.D.L.33004/98, Extraordinary, No.63: PIO Card Scheme, New Delhi, March 30, 1999.

<sup>106</sup> In fact, the HLC has already recommended a framework of fee structure, linkages with financial deposit bonds issued by the government from time to time (e.g., the India Resurgent Bond, The Millennium Deposit Bond) for extending extra facilities, provision for Gratis Cards to eminent PIOs, and as 'keys' to the country. The specific facilitating suggestions of the Interim report are: Separate counters at international airports in India, Indian rates for entrance fee to monuments of India, issuing of driving license in India without asking for any other proof of residence - like the 'ration card', opening of bank accounts without any other identity card, and a special provision for senior PIO-Card holder, as former citizens of India - under section 5 of the Indian Citizenship Act - to re-acquisition Indian citizenship, without the prescribed requirement of residence in India. In the case of the last of these suggestion, the HLC feels that this would facilitate transfer of their pension funds to India with ease from countries that do not allow outflow of such funds unless a person acquired citizenship of another country.

#### 6.4. Policies for economic growth and development

In fact, these are not specifically aimed at brain drain *per se*, but supposedly at the causes of brain drain in terms of bridging the development gap between the developing sending country and the developed receiving country. However, these have remained only as 'paper tigers', or perhaps only as 'voice tigers', so to say, lacking in direction and being very ad hoc. These work more as attention drawing promises made by political parties in their election manifestos, with no follow up whatsoever, if the party came to power.<sup>107</sup> Examples are proposal for setting up of Science Parks where wages will be comparable to international standards and working conditions will not be repressive, Export Processing Zones (EPZs) where tariff barriers will not exist for undertaking certain production activities, and so on. In fact, what has been discussed in the next section on Suggestions pertains to Development Policy (rather than 'Developmental') only, not directly aimed at curtailing the traffic of brain drain; the discussion there is about suggestions on policies aimed at making the poor developing economies - rather the poor people in these economies - immune to the phenomenon of brain drain when large numbers of its skilled labour migrate to another country for entering the labour markets abroad directly or through the education market as students.

### 7. Conclusions and Suggestions

#### 7.1. On policy reforms and measures available

One thing that may be said in conclusion about the skilled labour force in India is that there are always a large number of people in this category of population who seek work in the world labour market of the developed countries. Those actually making it to participating in the world market may not form a large proportion of the highly educated segment of the Indian population, when counted across disciplines and levels of educational qualifications.<sup>108</sup> Some of these aspiring people accomplish their desire or choice by directly entering the labour market abroad after having completed their higher education in India; sometimes they also acquire work experience for a couple of years in the home country before taking up jobs abroad. And the rest go through the education route: They emigrate for pursuing higher education abroad, and often do not permanently return to India for work on completion of education. Instead, they then enter the labour market of the host country by changing their visa-status. The two components of emigrants together constitute India's brain drain.

The impact of both these streams of brain drain on India as a developing country, and on its average resident - 'The Celebrated Man-in-the-street' (or 'T. C. Mits', as he/she has been euphemistically described sometimes) who, in the context of the present paper, has certainly remained poor until now - has, in theory, been seen to be largely negative and rarely positive. The perceptions about brain drain, in different segments of society too in India, have remained pessimistic - partly because the theory has

<sup>107</sup> Of late, however, the Indian judiciary has begun taking the government to task for non-performance on promises made, e.g., the universal primary education until the age of 14. (See Majumdar, 1998)

<sup>108</sup> See Sukhatme (1994).



taught us so, but mainly because policy makers in India have given up on the phenomenon for almost half a century now despite reminders and warnings by various Commissions and Committees set up by the government itself.<sup>109</sup> The pessimism has actually been misplaced without our realizing that a faulty methodology has been adopted in assessing the effects of brain drain.

The focus has remained all along on variables like labour-market shortages rather than loss of average labour productivity, on flows of remittances and finance capital into the home country rather than their utilization in productivity-enhancing activities, on transfer of technology embodied in capital goods rather than in 'learning-' or 'healing-materials' imported, so to say, and finally, on flows of return migration as a mark of integration into the world economy irrespective of whether for maximizing the objective functions of the returnees' employer MNCs or the social welfare function of the home country, and so on. The correct and appropriate methodology would be to look at the potential 'return' from human capital - the contribution that each citizen as a participant in the active labour force of the country can make to produce the GDP, given his or her full potential productivity. Policies too would then have to be reoriented for effecting the 'return' of human capital - through formation of high-quality and healthy skilled personnel within the country. The 'return' need not necessarily be aimed at achieving this by relying on return migration of those who supposedly have a significantly higher average productivity - due to their high-quality knowledge and healthy physique that a high standard of living abroad allows people to maintain.<sup>110</sup> What remains is the other natural question: 'Return' of a higher productivity - whether endogenously created (through skill or human capital formation *at home*) or exogenously-driven (through return migration of the expatriates *from abroad*) - to what end?

Both the components of India's brain drain viz., workers and students migrating abroad cease to take part in contributing to the generation of India's gross domestic product (GDP). This is what one could define as the composite loss of productivity per capita due to brain drain. One could consider this better as a holistic index of brain drain (at the micro level of a single individual) than the disaggregated concepts like 'skill loss', 'investment loss', etc. (at the macro level of the community, society or the economy) that, as said earlier, theory had taught us and we got used to while assessing its impact, and thinking of the remedies.

In providing a signal towards remedial policies, one could consider this superior because a loss in per capita contribution to GDP due to emigration can be thought of being recovered not merely by high rates of remittances and/or return migration, but their ultimate utilization in productivity enhancing (rather than 'DUP') activities. Aiming at endogenous skill formation or, in other words, human capital formation for raising the average productivity of the resident population which has not emigrated (and continued to contribute to the generation of the GDP), the NRIs can contribute

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<sup>109</sup> Although I have referred to the observation made by the Kothari Commission (1964-66) to the effect that brain drain was not so alarming, there was an assertion, saying, "But the problem is of sufficient importance to merit a close and systematic study" (Government of India 1966).

<sup>110</sup> In fact, this may provide some clue to solving the well-known "American-labour-is-three-times-more-productive-than-the-rest" assumption of the Leontief Paradox, which found the American exports having high labour intensity despite America being a capital-abundant country in terms of factor endowments.

from outside, to this process of restoring and resuscitating the average productivity of the Indian masses, by raising the productivity of each of the individuals. Such a policy would then lead to true globalisation of India's human capital in terms of fulfilling both the conditions of (a) global physical presence of India's skilled human resources, and (b) return of gains from that global physical presence into India.

The developed receiving country government like the British can join hands with the NRIs and PIOs settled in the UK and elsewhere, the Indian government, the private sector and the civil society in India, other developed countries and the various multilateral forums in strengthening such an endeavour. Remittances, NRI investments in India, and return migration will be only one type of component amongst all the resources that UK could mobilize towards pulling up the average productivity of the Indian labour and putting it at par with the best in the world.<sup>111</sup> This would be a long-term strategy and a difficult one, but being one-point and holistic, it could be fine-tuned with the stated objective of the DFID, the British government agency for international development: To work towards sustainable development in preference over transitory improvements in the conditions of the poor in India.

The levers of such a policy strategy too will have to be limited in number. Mass education and mass health - just the two prime movers will have to be focused upon to raise the average productivity of the people of India, in India - not merely of those in the labour force, but also of those who are likely to enter the labour force after attaining age 15 as well as those who would have gone out of it at age 65. They will then become better producers in terms of their contributions to the GDP, will subsequently earn better, raise their standard of living, and finally become better consumers.<sup>112</sup> This will in turn make India a better and larger market backed by purchasing power with the masses. The NRIs, and countries like the UK, in the EU - which have economic and trade interests in India - will have available to them a strong market to sell their goods and services in.

The pervasive underachievement, of what Leibenstein (1978) would call 'the X-efficiency', and depicted cursorily in Section II of this paper earlier, can be reversed only by sustained efforts in enhancing the average labour productivity in India. The UK can help in attaining this objective through directing its ODA fully in the fields of education and health. Apart from adopting this as a general strategy of poverty eradication through globalisation of skilled human resources of India, the British Government may also consider the following measures as specific policy recommendations arising from this country case study. It needs to be mentioned though that further detailing of each of these measures would involve brainstorming between the DFID and the other stakeholders. Some of the measures may be interrelated, and overlapping upon one another.

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<sup>111</sup> Some members of the Planning Commission of India seem to be of the view that this would lead to improvement in the quality of employment and therefore productivity and earnings. Even the *World Development Report 1996* may be quoted, "In the end what matters is people.... *Labour productivity, critical for economic growth*, depends on workers' knowledge, skills, motivation, and health" (World Bank 1996, p.66, emphasis added). ... 'A well-educated, healthy work force is essential for economic growth" (p.123.).

<sup>112</sup> See NSSO (2000b) for current levels of household expenditure on consumption in India.

### 7.1.1. Specific measures by the UK government:

- (i) The UK government, in collaboration with the NRIs, can set up Career Counselling Cells in either the British Council offices in India or extend technical assistance to the Indian universities for the purpose so that choice-distortions are minimized for young students in schools and colleges, and their parents. This will help prevent erosion of productivity due to long periods of unemployment (waiting) or sudden layoffs.<sup>113</sup>
- (ii) The UK government, in co-operation with the EU can think of raising certain new safeguards - perhaps some kind of a European social security instrument - for protecting the interest of the individual migrants settled in their countries. This would indirectly also protect the concerned developing country against the perils of global market-driven layoffs like mass return of expatriates which takes pace due to recession of the kind that is presently taking place in the US. Such a measure will bring in an element of certainty in the migration phenomenon of skilled labour. Dubious practices of contracts and layoffs should be well defined, listed for transparency, and publicized when being investigated into.<sup>114</sup> Even discrimination perpetrated by institutionalised racism in the UK which prevent immigrant professionals from career advancement, especially evident in the health sector, should have state safeguards against it.<sup>115</sup>
- (iii) The UK could charge a lower overseas fee for students from India and those other developing countries that supply skilled professionals to Britain - those trained in the home country as well as those very students completing their studies in Britain. It could make the offer on condition that the beneficiary student diverts a part of the saving on fee to development funds in the home country in local currency, specifically to pay for the cost of education of a poor child.<sup>116</sup> This will provide Britain too a competitive advantage in its international trade in educational services. More specifically, Indian and similar foreign medical students in the UK may be asked to pay the savings into health sector development in the home country, specifically to sponsor a poor patient identified in a primary health centre (PHC). To some extent, these

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<sup>113</sup> For example, bio-informatics, the science that deals with genetic information, has been attracting the maximum attention from India lately. With promises of huge business potential, most industrial players want to offer bio-informatics as service. This has, in fact, created quite a scramble on campuses. But academicians warn that the so-called bio-informatics boom has all the makings of another dotcom bust waiting to happen. "I am worried about the number of students that are rushing into bio-informatics service companies these days, since most of the companies do not have viable business models" says Padmanabhan, former director of Indian Institute of Science, Bangalore. Worse still is the mushrooming of a number of bio-informatics training centres. Most charge between Rs.50,000 and over Rs.100,000 and are run by inexperienced staff. Academics fear that students may end up getting lured by the prospect of making quick money and may actually be putting at stake more than they would have bargained for (*The Economic Times*, 'A Word of Caution', 30<sup>th</sup> April, 2001).

<sup>114</sup> This could be towards minimizing the risk of negative impact on the individual emigrant, and indirectly his/her dependant family (old parents, unmarried sisters, young school-going brother, and sometimes, lonely spouse), which is often found poor, in India. Perhaps the nodal agency, if set up for the purpose, may be called the "Protectorate of Immigrants".

<sup>115</sup> See particularly, Wrencl and Modood (2000).

<sup>116</sup> Refer to Hadrian (1995) for the prototype of a scheme called 'FENCE', suggested for banishing the incidence of child labor in India through a financial incentive for universalisation of primary education at the poor household level, against the pledging of the child's time in school.

would amount to compensating a home country like India for the brain drain of its scarce skilled human resources, by contributing in the building up of future human capital stocks.

- (iv) The UK can invite overseas investments from NRIs from all over the world for collaborating with it in taking up development projects of technical assistance to India. NRIs who are risk-averse to invest in India would particularly welcome this move. There could be an emotional appeal to the NRIs in the US and elsewhere in 'Returning Resources to Britain for Return of Human Capital to India'.<sup>117</sup> For this, the UK government may further publicize the DFID India's India Development Programmes accordingly (DFID, 1999). The NRIs could be reminded of the role their resources would have, in the words of the US President Bill Clinton while visiting India in March, 2000, for working towards a 'bigger purpose', not merely towards 'bigger profits'.
- (v) The UK may admit, through the American type lottery of limited visas, but meant for admitting, unlike the US visas that admit rich investors, a poor Indian family for immigration in the UK and being dependant on the British state for health and education - the two prime movers of labour productivity - until it becomes affluent, and then returns to India. The family may then be asked to support another poor Indian family through education and health in India. This should, in principle have a multiplier effect on poverty reduction in India through globalisation. This need not begin on a very large scale, but given sufficiently long period it would bear the required results.
- (vi) The UK can empower Indian women in terms of raising the labour productivity of the girls and women through education and health. Indian immigrant teachers and doctors admitted into the UK/EU may for this purpose be required to go back to India for limited periods, say of three to six months every three years or so only for helping in the rural areas/urban slums. If the average urban Indian woman could be made a better producer and income earner, then the economic pressure on educated men (as husbands/fathers) for migrating abroad may become less. Moreover, working women will have the constraints of getting leave from their employers, in coordination with their men partners' leave, for going abroad. On the other hand, this will also open more and direct opportunities for working women to participate in the global labour market.<sup>118</sup>
- (vii) Temporary migrants like the software professionals face certain disadvantages on account of their assignments, a critical one being a myriad of taxes imposed by the host countries.<sup>119</sup> The disadvantage is partially reduced by the Double Taxation Avoidance Agreement (DTAAs) between India and many of these countries. But these cover only federal taxes, not state/municipal taxes, and mandatory contributions towards social security (in the US)/National Insurance (in the UK). India has the Provident Fund that is closest to social

<sup>117</sup> Refer to the appeal of Lord Swraj Paul to NRIs in the US, cited earlier in a footnote in Section 5.1 of this paper.

<sup>118</sup> I have, in section 3.1 of this study, suggested that labour force participation of emigrant Indian women in the US as a host country is more significant than women's labour force participation as sedants in India.

<sup>119</sup> *The Economic Times*, 'Sharing your pie', by Rohini Venugopal, 5 May, 2001.

security but not quite. The UK may initiate agreement between India and the EU, US etc. for rationalizing the social security contributions by temporary immigrants. It can also persuade the Indian government to consider social security contributions paid abroad to be considered as deductible expenditure for the purpose of income tax assessments in India.

### **7.1.2. Specific measures by the Indian government:**

- (i) Indian higher education system should be revamped to make it more flexible for the purpose of change of streams midway in accordance with the long-term changes in the labour market. At the moment, there is no possibility of changing from Arts or Commerce to Science at the undergraduate level without undergoing loss of academic year. Similarly, mid-term exit and entry should be allowed for students to experiment with the labour market while one is pursuing higher studies, particularly at the post-graduate and research levels.
- (ii) Leave rules in the research institutions as well as in the colleges and universities for the faculty should be more accommodating to foreign assignments so that the person concerned is not forced to resign and go. There are real recent cases of which the author is aware where the institution gives an assurance (but no guarantee) of fresh job offer after return but not the leave, even with loss of pay. Even under genuine assurances, there is every possibility that the skilled professional involved in such a situation would not hesitate to stay on in the host country when he has no commitments and no strings attached to his employing institution in India.
- (iii) The Indian Government should enable and encourage joint appointments in India and abroad for teaching and research faculty of the best Indian universities - part of the year being mandatory to be spent in India. This may be extended to medical colleges and other professional institutions like AIIMS, IITs etc. This would reduce the tendency of the skilled labour to sever the connections with the Indian labour market once for all. In fact, this may help cross subsidize the Indian higher education system by the host countries if the appointees are given minimal pay in India, but substantial tax benefits on their foreign income.
- (iv) In the context of the Indian Diaspora, the Indian Government may also adopt a cultural route to development of education and health in India for attracting the resources at the command of the NRIs and the PIOs the world over and involving their participation in the development programmes.<sup>120</sup> This would also have the support of the receiving or host countries like Britain where a recent British Government report stresses that "migrants were not a drag on welfare, but contribute to its economy and *culture*."<sup>121</sup>

The above suggestions are, nevertheless, no substitute to the policy of long term commitment to mass education and mass health specifically aimed at raising the

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<sup>120</sup> See Khadria (2000a)

<sup>121</sup> *The Economist*, March 31 -April 6, 2001 cited earlier; emphasis added.

average productivity of the Indian labour. The Indian government must come out with specific indices of identification and measurement of the average productivity at short intervals, followed by short-term corrective measures for neutralizing the brain drain by adopting a choice of strategies mentioned above.

## **7.2. Areas for further research**

- A. Brain drain, or skilled migration, having a history of just about half a century, has drawn little scholarly attention in the debates on citizenship and state policy formation. For the sending country, most of the focus in the literature has remained on the theoretical possibilities of loss/gain from the brain drain and their quantitative estimations. Even these concerns of researchers have seemingly become dated. The new century, and subsequently the new millennium have brought a sudden spurt of interest in brain drain in the wake of the attention that is being accorded to the transnational movement of Information Technology (IT) professionals - adding a new dimension to the formation of 'transnational communities'. International and national development agencies like the UNESCO, the International Labour Organization (ILO), and the Department for International Development (DFID, UK) have renewed their efforts to understand the phenomenon in its contemporary structure so as to devise appropriate remedial policies. It is in this context that the task of tracing the geneses of "brain drain" through the Indian political history and its perception in Indian civil society seemingly becomes an important researchable proposition.
- B. There could be a valuable and interesting research on an entirely new aspect of remittances - on its repatriation (or rather re-repatriation) to the developed host country from India in the form of overseas student fees that an increasingly larger emigrating student clientele of the Indian genre is liable to pay today. Towards this, an assessment of the per capita student fee and the per capita remittances by emigrants would be a very telling index of this particular category of loss-gain from the brain drain.
- C. Just like inflow and outflow of remittances will provide the net picture of remittances for India, there could be research on in-migration and out-migration of skilled Indian labour from the UK, particularly including return to India. What is required is hard data on how many and what proportions of Indian skilled professionals in the UK emigrate to the US and other countries including the EU, what proportions remain in the UK, and what proportions return to India. Similarly, data should be generated on what proportions Indian students in Britain move out after completing their studies. In addition, data on second-stage migration of Indians to Britain - of professionals as well as students from third countries should be collected for the purpose of deriving the 'net flows' of the Indian brain drain in the UK.
- D. Another area of prospective research could be to estimate the current social cost of skilled labour migration to the home country vis-à-vis the current social benefit to the host country.<sup>122</sup> There are some figures quoted in the literature sometimes on

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<sup>122</sup> Refer to Khadria 2001a/UPSC 2001, for a prototype of social cost estimation.

brain drain from developing countries vs. foreign aid by the developed countries, belittling the latter as compared to the huge benefits derived by the developed countries by way of savings in educational investments.<sup>123</sup> This should in fact be an on-going exercise so that one gets the clear picture regularly for deriving lessons for bilateral and multilateral agreements and dispute settlements.

- E. In-depth study of the supply side (vacancies for admissions in educational institutions, enrolments, dropout rates etc.) in relation to projected/anticipated changes in demand for skilled labour in the world labour market will be an area of mapping research worth pursuing in this context. This kind of mapping will be an important field because of the opening up of international trade in 'educational services' under the WTO regime.

### **7.3. Suggestions regarding data**

The suggestions regarding data on skilled labour migration or the brain drain should be read in conjunction with the suggestions on areas for further research presented in the preceding sub-section. Moreover, complementary data should be generated by India, by the receiving host countries, and by multilateral agencies.

- (i) As far as Indian data are concerned, Indian sources do not provide much information at present on emigration as a whole, and practically none for skill emigration. The census is a complete enumeration of the population and its characteristics in a country, and it should now be possible for countries like India to incorporate in it questions on migration - whether any member of the family is a resident abroad or a returnee from abroad and the details about these. This would provide valuable primary data on skilled labour migration along with family perceptions on the question of 'brain drain'. Short of a census, survey is the second-best alternative for identification and estimation of a phenomenon during an inter-census period. India already has the National Sample Survey Organization that undertakes such exercises. In terms of hard data, some estimates could be made for the unskilled emigration from the Protectorate of Emigration, but even in that category, not all who get their passports stamped actually finally make it to their cherished land abroad. Nevertheless, such data would give an idea about the number of 'potential emigrant'. For generating such data on skilled labour migration and its perception as brain drain, pre-departure survey and collection of data along the line of studies undertaken for Filipino and Korean emigration to the US will be a valuable method for acquiring otherwise difficult-to-get information in India.<sup>124</sup> For this, the UK, EU, and the US can think of making it mandatory, in their India based missions, for passengers holding one-way ticket for travel to these countries or those going for more than six months to fill-in pre-departure questionnaire at the time of delivering the visa (i.e., after issuing it) - to be kept sealed until the actual departure of the person concerned.

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<sup>123</sup> See UNDP (2001, p.91).

<sup>124</sup> See Appendices in Carino et al (1990) for the Filipino, and Park et al (1990) for the Korean survey.

- (ii) Receiving countries like the US, the UK should in their census collect information on return migration of the immigrants to their countries of origin.<sup>125</sup> In fact, this could have been thought of earlier as the US has already completed its decennial census in the year 2000. Nevertheless, receiving countries may devise well-researched questionnaires to be incorporated in the next round of census enumeration; those countries which are still to undertake census in the later part of the year 2001 may still think of including skill migration questions in their domain of enumeration.
- (iii) In the context of the globalisation, a re-classification of occupations can be made in generic terms, cutting across both ILO's International Standard Classification of Occupations (ISCO-88), and the WTO's Professional Services Sector Classification (MTN/GNS/W/120) for coordinated collection of data on skilled labour migration from developing countries.<sup>126</sup> The US INS Statistical Yearbook is a very valuable source of data on immigration to the US, and perhaps this can be used as model to compile immigration and emigration data by countries. With further additions and amendments in the formats, depending on the convenience and suggestions of the countries concerned, a universal format should be designed for comparability and compatibility: For example, there could be a format to document what proportion of overseas Indian professionals are actually using the concerned host country as a stopover for work or further studies in the US - for the purpose of, say, deriving global flows of the Indian brain drain. Apart from compilation of data for each country separately, this would help bringing out, perhaps, a World Skill Migration Yearbook every year, possibly under the charge of the ILO, or any other competent international agency. Such an initiative will help countries like India in making a beginning in the generation of relevant data.
- (iv) An important step in generation and publication of data would be gender-wise statistics on migration by fields and levels of educational qualifications. This is an area where there are significant gaps in the Indian database like, for example, we did not have gender-wise break up of emigration of Indian students to different continents in table A11 though we had them by field of study.
- (v) Since all compiled data take time in publication, current data on all the parameters mentioned above should be made available, through some kind of a Datawatch Service created for collection and distribution of data at short intervals, perhaps under the aegis of established networks like the Asia-Pacific Migration Research Network (APMRN).

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<sup>125</sup> The US INS and Census provide data on outmigration from the US, but not return migration to countries of origin. See Khadria (1999a, fn 4 in Chapter 5).

<sup>126</sup> Refer to WTO (2000a, ANNEX-A) for a bird's-eye-view of the distinction between the two. A generic typology of workers vis-à-vis their occupational classification in the brain drain as attempted in Khadria (1999a, Fig. 1.1) may be used as a prototype for developing a more operational classification.



#### **7.4. Concluding remark**

Apart from the suggestions on policy interventions, further research, and generation and collection of data, migration (including skilled labour migration or the "brain drain") as a subject of social science inquiry should be incorporated into the syllabus of the secondary school education in both developing and developed countries, so as to sensitise young citizens about its importance in globalisation and its role in the removal of poverty.<sup>127</sup> With expanding coverage of education, this would also go a long way in inculcating tolerance and compassion in each and every individual of the emerging generations - the two main values that are likely to become indispensable for learning to co-exist with dignity in a globalise but competitive world. At the higher level of education, the British Government could also think of sponsoring, on a limited scale to begin with, the setting up of a social science research centre exclusively for the study of brain drain and skilled labour migration from India and other developing countries in one of the leading universities of India, either on its own or through multilateral assistance.

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<sup>127</sup> In fact, under the UNESCO's initiative in three developing countries, efforts are on in India, Fiji and Thailand to consciously incorporate migration topics in secondary and senior secondary school syllabi (See NCERT 2000).

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## Annexure

Table A1. Comparative Labour Force Characteristics in India and Selected Countries: 1999/2000

BRAIN DRAIN (SURVEY 2000)			SERVICES SECTOR EMPLOYMENT	OVERALL PRODUCTIVITY (1999)		LABOUR PRODUCTIVITY (1999)		PRICE/QUALITY RATIO (SURVEY 2000)		HEALTH, SAFETY, & ENVIRONMENT		EMPLOYEE TRAINING (SURVEY)		SOCIAL RESPONSIB- LITY (SURVEY)	
RANK (1 - 47)	COUNTRY	STD SCORE (0 - 10)	% OF TOTAL EMPLOYMENT (1999)	GDP/ PERSON EMPLOYED		GDP/ EMPLOYEE PER HOUR		DOMESTIC BETTER THAN FOREIGN		MGMT. TAKES CARE (SURVEY)		HIGH PRIORITY IN COMPANIES		PVT. BUSINESS TAKES CARE	
				US \$ 000	PPP \$ 000	US \$	PPP \$	RANK (1 - 47)	SCORE (0 - 10)	RANK (1 - 47)	SCORE (0 - 10)	RANK (1 - 47)	SCORE (0 - 10)	RANK (1 - 47)	SCORE (0 - 10)
1	USA	8.524	74.3	69.5	62.5	36.29	32.60	2	6.9841	14	7.181	12	6.762	15	6.646
6	GERMANY	7.153	62.1	58.4	51.5	34.39	30.30	5	6.7711	8	7.690	9	7.082	19	6.400
7	IRELAND	7.119	57.6	61.1	58.0	34.31	32.56	19	5.9661	19	6.700	18	6.333	22	6.167
9	JAPAN	6.900	63.0	67.6	45.8	36.10	24.45	4	6.9600	23	6.364	6	7.313	27	5.879
10	SWITZERLAND	6.857	69.1	66.3	47.7	35.64	25.62	6	6.7347	9	7.673	7	7.306	14	6.653
11	AUSTRIA	6.700	63.0	55.4	51.4	32.08	29.74	1	7.1186	3	7.933	13	6.600	2	7.593
13	UK	6.343	71.7	52.0	44.9	28.25	24.39	28	5.2600	17	6.900	28	5.780	26	5.880
14	THAILAND	6.329	33.1	3.9	10.8	1.47	4.83	30	5.1163	31	5.581	35	5.163	36	5.395
18	AUSTRALIA	6.229	73.6	44.7	50.4	25.13	28.33	15	6.0412	12	7.361	16	6.474	17	6.515
21	ISRAEL	6.038	78.9	46.6	49.8	21.91	23.42	25	5.4118	26	6.000	20	6.192	32	5.692
23	BRAZIL	5.917	50.9	11.1	15.7	5.83	8.26	36	4.7391	24	6.167	22	6.043	24	6.042
24	FRANCE	5.802	70.9	62.6	56.4	35.94	32.35	14	6.1573	21	6.489	21	6.089	25	6.000
25	SINGAPORE	5.738	70.9	45.0	42.8	22.21	21.10	3	6.9836	11	7.443	2	7.770	5	7.377
26	ITALY	5.624	61.3	56.5	58.8	31.03	32.29	22	5.6905	37	4.976	44	4.376	38	5.200
27	MEXICO	5.556	56.2	15.5	24.5	7.29	11.48	35	4.7677	27	5.838	30	5.735	21	6.222
30	S. KOREA	5.429	61.1	20.3	33.3	9.02	14.79	31	4.9714	34	5.200	29	5.771	39	5.029
32	MALAYSIA	5.257	44.5	9.0	21.8	4.18	10.09	23	5.6571	29	5.657	26	5.913	30	5.714
33	TAIWAN	5.200	54.5	30.7	42.6	13.46	18.66	16	6.0000	20	6.533	31	5.729	23	6.067
35	TURKEY	5.111	34.0	8.6	17.9	3.80	7.92	29	5.1746	33	5.290	33	5.387	28	5.871
36	ARGENTINA	4.661	71.5	23.4	34.0	11.15	16.23	41	4.3415	45	4.574	37	5.041	40	4.959
37	INDONESIA	4.531	40.5	1.7	5.9	0.79	2.80	40	4.3830	40	4.898	36	5.102	45	4.163
38	SWEDEN	4.421	71.7	58.2	46.9	31.89	25.71	16	6.0000	5	7.789	4	7.553	9	7.026
39	CANADA	4.355	74.0	43.7	50.7	23.46	27.21	7	6.5902	10	7.516	17	6.355	11	6.774
40	CHINA	4.000	26.7	1.4	23.0	0.69	2.87	46	3.6322	18	6.733	19	6.289	20	6.292
41	NEW ZEALAND	4.389	67.4	30.6	38.7	16.30	20.60	9	6.3273	6	7.754	14	6.491	7	7.193
42	INDIA	3.291	21.8	0.8	4.8	0.37	2.15	45	3.9250	46	4.152	43	4.436	43	4.709
43	VENEZUELA	3.286	69.9	11.6	14.6	5.79	7.30	47	3.0476	39	4.952	40	4.667	37	5.268
44	PHILIPPINES	3.179	43.9	2.6	9.4	1.18	4.21	44	4.0702	32	5.474	23	5.964	29	5.789
45	RUSSIA	2.337	51.2	2.8	15.2	1.50	8.09	39	4.4304	47	2.902	47	3.457	47	3.415
46	COLOMBIA	2.280	56.5	6.4	17.4	2.93	7.95	43	4.2000	36	5.080	38	4.840	35	5.440
47	SOUTH AFRICA	1.932	66.1	17.1	41.7	8.39	20.20	34	4.8667	22	6.367	27	5.800	18	6.433

Source: IMD 2000, *World Competitiveness Yearbook*, Lausanne, Institute of Management Development. *Various tables* collated by the author.

Notes: Italicised column heads present 'hard data' acquired from international and regional organizations, private institutions and national institutes. Roman column heads present results of Executive Opinion Survey through in-depth questionnaires. Some countries have common rankings and equal STD score values.

**Table A2. Labour Force Characteristics of India vis-a-vis United Kingdom and United States of America, 1999-2000**

Country	Population, 1999	Labour Force in Population (15 - 64 year olds), 1999	Growth of Labour Force, (Average annual compound rate) 1994-1999)	Proportion of Female Labour Force (47-country Ranking) 1999	Domestic availability of skilled labour relevant to the economy (47-country Survey Ranking; Ten-point scale score), 2000	Sectoral distribution of labour force in employment Agr:Ind:Ser (47-country Ranking), 1999	Employment prospects (growth in employment/ growth of population) 47-country Ranking, 1999	Average Number of working hours; 47-country Ranking, 1998	Unemployment rate of labour force; 47-country Ranking 1999
India	987 million	48.0%	9.9%	33.1% (Rank 44 <sup>th</sup> )	Rank 12 <sup>th</sup> Score 7.367	60:18:22 Labour Force: 419.6 million (43.2% of population) Rank 27 <sup>th</sup>	1.0000 Rank 38 <sup>th</sup>	2254 hours Rank 5 <sup>th</sup>	5.8% Rank 17 <sup>th</sup>
United Kingdom	59 million	49.8%	0.8%	44.4% (Rank 18 <sup>th</sup> )	Rank 26 <sup>th</sup> Score 6.360	2:26:72 Labour Force: 27.3 million (46.5% of population) Rank 14 <sup>th</sup>	1.0070 Rank 32 <sup>nd</sup>	1839 hours Rank 29 <sup>th</sup>	6.1% Rank 19 <sup>th</sup>
United States of America	373 million	51.3%	1.1%	46.2% (Rank 7 <sup>th</sup> )	Rank 13 <sup>th</sup> Score 7.216	3:23:74 Labour Force: 133.0 million (48.7% of population) Rank 9 <sup>th</sup>	1.0117 Rank 23 <sup>rd</sup>	1916 hours Rank 21 <sup>st</sup>	4.3% Rank 12 <sup>th</sup>

Source: IMD 2000, *World Competitiveness Yearbook*, Lausanne, Institute of Management Development. *Various tables* collated by the author. Note: Excepting for Survey Ranking and Ten-point scale data, all other Rankings are of 'hard' country-wide data.

**Table A3. Skill Profile of the Labour Force in India by Occupation, Education and Sex, 1981 and 1991**

(Thousands)

Education	Year	Illiterate		Literate till Primary		Middle school		Secondary		Graduate and above		Total main workers	
Occupation		Persons	Female	Persons	Female	Persons	Female	Persons	Female	Persons	Female	Persons	Female
0-1. Professional, Technical and Related	1981	173	44	523	63	585	133	3212	753	2551	452	7044	1445
	1991	181	41	769	117	674	172	4076	1171	4457	1027	10157	2530
2. Administrative, Executive and Managerial	1981	131	12	452	7	345	4	859	13	578	18	2365	54
	1991	155	23	354	14	335	10	952	27	1127	54	2923	128
3. Clerical and Related	1981	11	-	1007	30	1034	21	3719	245	1559	176	7330	472
	1991	19	1	982	69	1356	64	4405	367	3005	414	9767	915
4. Sales	1981	2516	530	3374	97	1759	22	2145	23	400	7	10194	679
	1991	3576	704	4247	204	3241	77	4187	76	1299	31	16550	109
5. Service	1981	2967	959	2052	190	866	39	778	18	86	3	6749	1209
	1991	2940	1086	2193	311	1374	110	1533	94	282	20	8322	1621
6. Farming, Fishing and Related	1981	106749	33036	32336	2932	8415	437	4934	107	383	3	152817	36515
	1991	122375	44169	39961	5681	16169	1492	10633	509	1304	39	190442	51889
7-8-9. Production, Transport operators and Labourers	1981	14115	3212	10958	795	4381	187	3932	106	312	8	33698	4308
	1991	15339	3663	12902	1306	7732	491	7344	293	1079	46	44396	5799
10. Workers not classified by occupation	1981	1257	234	427	27	203	9	327	14	106	7	2320	291
	1991	1083	228	433	25	562	13	1053	20	244	14	3375	301
Total	1981	127919	38027	51129	4141	17588	852	19906	1279	5975	674	222517	44973
	1991	145668	49915	61841	7727	31443	2429	34183	2558	12797	1645	285931	64274

Source: Government of India, Registrar general of India, 1981 and 1991 Census.

Note: Excludes the states of Assam in 1981 and Jammu and Kashmir in 1991. Totals may not tally due to rounding off.

**Table A4. Number of Higher Education Institutions in India, 1991-2000**

Type of Institutions	Universities, Deemed Universities, & Instns. Of National Importance	Degree Level & Above, General	Degree Level & Above, Professional & Technical: Agriculture & Forestry	Degree Level & Above, Professional & Technical: Engineering, Tech. & Arch.	Degree Level & Above, Professional & Technical: Medicine	Degree Level & Above, Professional & Technical: Veterinary Science	Degree Level & Above, Professional & Technical: Teacher Training	Below Degree Level, Professional/ Vocational & Technical
Year								
1991	184	4,862	80	351	346	N.A.	474	5,739
1997	228	6,759	90	607	437	46	697	6,542
1998	229	7,199	90	N.A.	474	32	848	6,561
1999	237	7,494	N.A.	N.A.	N.A.	N.A.	818	6,556
2000	244	7,782	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Source: Government of India, Ministry of Human Resource Development, *Technical Education in India - Survey of Facilities*; Medical Council of India; Dental Council of India; All India Council for Technical Education; University Grants Commission; Nursing Council of India.

**Table A5. Enrolment of Persons and Girls in Indian Higher Education, by Faculty and Level, 1999:**

(Thousands)

Faculty	Arts, Graduation (1999)	Science, Graduation (1999)	Commerce, Graduation (1999)	Arts, Post-Graduation (1999)	Science, Post-Graduation (1999)	Commerce, Post-Graduation (1999)	Doctoral Research (1999)
Total Enrolment	3332 (55.8)	1277 (21.4)	1360 (22.8)	306 (59.4)	127 (24.6)	83 (16.0)	46 (68 in 2000) (100.0)
Enrolment of Girls	1490 (62.8)	449 (19.0)	432 (18.2)	135 (64.7)	50 (24.0)	24 (11.4)	14 (100.0)

Source: Government of India, Ministry of Human Resource Development, *Education in India; selected Educational Statistics*.

Note: Figures in parentheses are percentages; these are percentages of graduation, post-graduation, and research enrolments separately.

**Table A6. Admissions and Output of Professional Educational Institutions in India, 1990s:**

(Thousands)

Faculty	Diploma in Engineering & Technology (1999)	Degree in Engineering & Technology (1999)	Medicine (Allopathy) (1992)	Dentistry (1998)	Agricultural Sciences (1997)	Natural Sciences (1997)	Diploma in Nursing (1998)
Total Enrolment	100.9	85.4	14.8	3.3	99.1	1387.3	N.A.
Out-turn	82.3	72.2	14.5	2.6	N.A.	N.A.	13.3

Source: Government of India, Ministry of Human Resource Development, *Technical Education in India - Survey of Facilities*; Medical Council of India; Dental Council of India; All India Council for Technical Education; University Grants Commission; Nursing Council of India.

**Table A7. Comparative Overview of Brain Drain Estimates of Graduates of various Indian Institutes**

Institution Indicators	Indian Institute of Technology Bombay, Mumbai	Indian Institute of Technology Madras, Chennai	All India Institute of Medical Sciences, Delhi	Indian Institute of Technology Delhi, New 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 In India	501 179	429 184	402 200	460 316
Out of India	322	245	202	144
Magnitude of Brain Drain	30.8% (+/-2%)	25-28%	56.2% (+/-1.3%)	23.1% (+/-1.5%)

Source: Government of India, Department of Science and Technology sponsored institution-based survey studies as cited in Khadria (1999a).

**Table A8. Occupational Profile of Indian Immigrants in the U.S., 1986-1996**

Occupational group Year group/ Share	Professional and Technical	Executive, Administrative and Managerial	Clerical and Administrative Support	Sales	Service	Farming, Forestry and Fishing	Skilled Workers	Total with Occupation	Occupation not specified	Total Immigrants
1986-90	19,160 (13.7)	8,292 (5.8)	3,982 (2.8)	1,989 (1.4)	6,453 (4.5)	4,646 (3.3)	3,583 (2.5)	48,105 (33.8)	94,035 (66.2)	142,140 (100.0)
1991-93	20,395 (16.7)	6,174 (5.1)	2,719 (92.2)	975 (0.8)	2,965 (2.4)	18,875 (15.8)	1,263 (1.0)	53,366 (44.0)	68,574 (56.0)	121,940 (100.0)
1994-96	19,603 (17.1)	6,246 (5.5)	2,390 (2.1)	1,489 (1.3)	3,487 (3.0)	3,567 (3.1)	1,613 (1.4)	38,395 (33.5)	76,133 (66.5)	114,528 (100.0)
Percent Share of Asian Immigrants, 1994-96	22.0	14.9	11.5	10.2	7.4	17.5	2.7	13.0	13.3	13.3
Percent Share of All Immigrants, 1994-96	9.7	7.5	3.8	3.7	2.2	8.4	0.6	4.5	4.8	4.7

Source: Tables 3.20 and 3.25 in Khadria (1999a); data from the U.S. Immigration and Naturalization Service.

**Table A9. Indian Persons and Women amongst Science and Engineering Faculty in U.S. Higher Education, by Teaching Field, 1997**

Region of origin of faculty	Total S&E	Physical Sciences	Life Sciences	Math & Computer Sciences	Social Sciences	Engineering
Total Science & Engineering	224,707	37,020	53,055	44,375	65,509	24,748
%	(100.0)	100.0)	(100.0)	(100.0)	(100.0)	(100.0)
U.S. origin	179,689	29,598	45,502	32,976	55,870	15,753
% of total faculty	(80.0)	(80.0)	(85.8)	(74.3)	(85.3)	(63.7)
Foreign origin	45,009	7,422	7,553	11,399	9,639	8,955
% of total	(20.0)	(20.0)	(14.2)	(25.7)	(14.7)	(36.3)
Female	6,447	1,156	2,043	1,182	1,845	221
% of foreign persons	(14.3)	(15.6)	(27.0)	(10.4)	(19.1)	(2.5)
Asian origin	23,559	3,541	3,250	6,315	4,630	5,823
% of total	(10.5)	(9.6)	(6.1)	(14.2)	(7.1)	(23.5)
% of foreign	(52.3)	(47.7)	(43.0)	(55.4)	(48.0)	(65.0)
Female	3,104	612	826	730	876	60
% of Asian persons	(13.2)	(17.3)	(25.4)	(11.6)	(18.9)	(1.0)
Indian origin	6,876	688	1,014	2,086	1,491	1,597
% of total	(3.1)	(1.9)	(1.9)	(4.7)	(2.3)	(6.5)
% of foreign	(15.3)	(9.3)	(13.4)	(18.3)	(15.5)	(17.8)
% of Asian	(23.2)	(19.4)	(31.2)	(33.0)	(32.2)	(27.4)
Female	832	115	320	289	94	14
% of Indian persons	(12.1)	(16.7)	(31.6)	(13.9)	(6.3)	(0.9)
% of Asian female	(26.8)	(18.8)	(38.7)	(39.6)	(10.7)	(23.3)
% of foreign female	(12.9)	(9.9)	(15.7)	(24.5)	(5.1)	(6.3)

Source: Computed and compiled by the author from National Science Foundation, *Science and Engineering Indicators 2000*, vols. 1 & 2, Tables 4-46 to 4-48., United States. Note: Data includes first job of post-secondary teaching at four-year colleges and universities in the U.S.; does not include faculty in two-year or community colleges, or those who teach as a secondary job.



**Table A10. Number of British Work Permits Issued to Immigrants from India, 1995-1999**

Year	1995	1996	1997	1998	1999
No. of Work Permits Issued	1,997	2,679	4,013	5,678	5,663

Source: U.K., Overseas Labour Service, courtesy Allan M. Findlay.

**Table A11. Number of Indian Students going Abroad by Field of Study, Sex and Continent, 1996 and 1997**

Sex, Continent	Women		Persons		America		Europe		Asia		Oceania		Others	
Field of Study	1996-7	1997-8	1996-7	1997-8	1996-7	1997-8	1996-7	1997-8	1996-7	1997-8	1996-7	1997-8	1996-7	1997-8
Engineering & Architecture	103	96	1073	1014	1029	647	269	174	4	20	157	153	14	20
Science	109	128	631	789	407	471	80	141	2	6	136	148	6	23
Technology & Industry	36	35	381	325	162	77	53	38	4	2	148	205	14	3
Commerce, Business Admn. & Management	179	292	1777	2592	556	561	323	432	56	80	792	1494	50	25
Arts	89	127	235	302	136	152	50	96	4	6	43	41	2	7
Agriculture & Forestry	12	6	80	11	23	5	23	3	41	-	-	3	15	-
Medicine, Pharmacy, Dentistry & Vet. Sc.	116	102	907	607	334	45	425	502	4	7	95	45	49	8
Law	3	16	43	55	8	14	32	39	-	-	2	2	1	-
Banking Services	3	1	38	15	15	4	16	2	-	-	7	9	-	-
Fine Arts	34	29	69	62	47	45	11	14	-	-	11	3	-	-
Others	119	229	792	962	305	401	118	196	10	25	308	314	51	26
Total	803	1061	6426	6734	3022	2422	1418	1637	84	146	1714	2417	188	112

Source: Compiled by author from Government of India, Ministry of Human Resource Development, *Indian Students and Trainees Going Abroad*, New Delhi.

**Table A12. Indian Doctoral Recipients from U.S. Universities with Plans to Stay in the U.S., by Field of Study, 1990-97**

(Figures in parentheses are percentages)

Year	All fields			All Sciences & Engineering			Natural Sciences			Engineering			Social Sciences		
	Ph.Ds	Plan	FirmPlan	Ph.Ds	Plan	FirmPlan	Ph.Ds	Plan	FirmPlan	Ph.Ds	Plan	FirmPlan	Ph.Ds	Plan	FirmPlan
1990	881	586 (66.5)	470 (53.3)	709	467 (65.9)	371 (52.3)	319	220 (69.0)	180 (56.4)	314	211 (67.2)	162 (51.6)	76	36 (47.4)	29 (38.2)
1991	924	689 (74.6)	518 (56.1)	752	554 (73.7)	408 (54.3)	304	225 (74.0)	174 (57.2)	357	272 (76.2)	191 (53.5)	91	57 (62.6)	43 (47.3)
1992	1,072	880 (82.1)	609 (56.8)	860	703 (81.7)	485 (56.4)	365	307 (84.1)	220 (60.3)	405	335 (82.7)	222 (54.8)	90	61 (67.8)	43 (47.8)
1993	1,139	920 (80.8)	577 (50.7)	932	759 (81.4)	462 (49.6)	382	315 (82.5)	200 (52.4)	448	368 (82.1)	209 (46.7)	102	76 (74.5)	53 (52.0)
1994	1,289	1,049 (81.4)	662 (51.4)	1,065	871 (81.8)	536 (50.3)	474	389 (82.1)	251 (53.0)	480	402 (83.8)	235 (49.0)	111	80 (72.1)	50 (45.0)
1995	1,425	1,179 (82.7)	746 (52.4)	1,206	1,003 (83.2)	632 (52.4)	499	417 (83.6)	281 (56.3)	572	489 (85.5)	292 (51.0)	135	97 (71.9)	59 (43.7)
1996	1,500	1,264 (84.3)	882 (58.8)	1,276	1,084 (85.0)	753 (59.0)	520	454 (87.3)	316 (60.8)	625	539 (86.2)	376 (60.0)	131	91 (69.5)	61 (46.6)
1997	1,382	1,131 (81.8)	839 (60.7)	1,173	968 (82.5)	714 (60.9)	484	403 (83.3)	287 (59.3)	584	486 (83.2)	374 (64.0)	105	79 (75.2)	53 (50.5)

Source: National Science Foundation, *Science and Engineering Indicators 2000*, vols.1 & 2, Tables 4-42., United States.

Note: Foreign doctoral recipients are on temporary visas. Natural Sciences include physical, earth, atmospheric, oceanographic, and biological sciences. Social sciences include psychology, sociology, and other social sciences. Those who 'plan to stay' think that they will locate in the U.S.; those with 'firm plan' have a post-doctoral research appointment, or academic, industrial, or other firm offers of employment in the U.S.

**Table A13. Indian Doctoral Recipients of 1992-93 in U.S. Universities in Science and Engineering still working in the U.S., 1994 - 97**

Year	(Per cent)				
	All Sciences & Engineering	Physical Sciences	Life Sciences	Engineering	Social Sciences
Number of Indian Ph.D. recipients in the U.S. in 1992-93	1,549	423	237	740	149
Percent in the U.S. in 1994	77	72	70	85	56
Percent in the U.S. in 1995	80	77	75	89	56
Percent in the U.S. in 1996	82	80	82	89	58
Percent in the U.S. in 1997	83	81	79	90	58

Source: National Science Foundation, *Science and Engineering Indicators 2000*, vols.1 & 2, Tables 4-44., United States.

Note: Foreign doctoral recipients are on temporary visas. Physical sciences include earth, atmospheric, and oceanographic sciences, mathematics, and computer sciences. Social sciences include psychology, sociology, and other social sciences.

**Table A14. Flow of Remittances, and Stock and Flow of NRI Deposits in India: 1991 - 2000**

Private Transfer Receipts (Remittances to): India 1990/91-1999/2000				Outstanding NRI Deposits in India, total of various schemes, 1990/91 - 1999/2000		Net Inflows, total in various NRI Deposit Schemes 1990/91 - 1999/2000	
Year	US \$ million	INR million	%,GDP	US \$ million	INR million	US \$ million	INR million
1990/91	2,083	37,367	0.7	13,986	274,000	2,136	38,330
1991/92	3,798	98,149	1.5	13,549	403,040	577	14,120
1992/93	3,964	112,608	1.6	15,015	469,920	2,163	66,300
1993/94	5,287	165,821	1.9	16,230	509,160	2,185	37,800
1994/95	8,112	254,742	2.5	17,166	540,660	2,057	30,570
1995/96	8,539	287,684	2.4	17,446	599,270	948	40,990
1996/97	12,435	442,083	3.1	20,393	732,040	3,305	126,920
1997/98	11,875	439,293	2.8	20,369	804,600	1,153	73,440
1998/99	10,341	434,940	2.5	21,301	903,910	1,776	74,720
1999/00	12,290	532,800	3.0	23,098	1,008,656	2,141	93,497

Sources: Reserve Bank of India, *Report on Currency and Finance*, various years incl. 1998-99; *Handbook of Statistics on Indian Economy 1999; Annual Report 1999-2000*; Central Statistical Organization, *National Accounts Statistics 2000*, Ministry of Statistics and Programme Implementation, Government of India. *Collated and calculated by the author.*

Notes: (1) Private Transfer Payments from India are negligible figures of two-digit US\$ million and three-digit INR (Indian Rupees) million.

(2) The various schemes for NRI Deposits in India are: Foreign Currency Non-Resident (Accounts) - FCNR(A); Foreign Currency Non-Resident (Banks) - FCNR(B); Non-Resident (External) Rupee Accounts - NR(E)RA; Non-Resident (Non-Repatriable) Rupee Deposits - NR(NR)RD; Foreign Currency (Bank and other) Deposits - FC(B&O)D; Foreign Currency (Ordinary) Non-Repatriable Deposits.

(3) All NRI Deposit figures are inclusive of accrued interest and valuation factor.

**Contributor**  
**(contact details)**

Dr. Binod Khadria,  
Professor of Economics and Chairperson  
Zakir Husain Centre for Educational Studies  
School of Social Sciences, Jawaharlal Nehru University  
New Delhi 110067  
India  
Tel: (91 11) 6183517(Home); Office: (91-11) 6107676,  
(91-11) 6167557 Extn 2416  
Email: [bkhadria@yahoo.com](mailto:bkhadria@yahoo.com)

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