

**International Competition for S&E Students and Workers:
An Evaluation of Trends and Policies in India and Southeast Asia**

Binod Khadria
Asia Research Institute, National University of Singapore, and
Jawaharlal Nehru University, New Delhi
bkhadria@yahoo.com

1. Introduction

I. INDIA

2. Indian Migration to the US: The 20th Century, Pre- 9/11 Trends

2.1 Entry of S&E Human Capital as Knowledge Diaspora:

2.2 Through the H1-B Route of the 1990s:

2.3 The Profile of Indian Diaspora in the United States:

Employment Status:

Occupation Profile:

Education Profile:

Income Profile:

A Potential Political Force:

3. The Trinity of Paradigm Shifts in 21st Century

3.1 The Primacy of Temporary-Worker Migration:

Entry of Temporary-stay Workers from India in the US

3.2 The Primacy of Student Migration:

Entry of Indian Students in the US during 2001-2003

3.3 Neutralization of the Remittances Gain:

4. India's S&E Human Capital: By Qualification and Occupation

4.1: Distribution of HRST:

5. Enrolments in Indian Higher Education: The Semi-finished Human Capital in S&E

6. Analysis of Demand for S&E Education in India

**7. Analysis of Forces behind Demand for S&E Professionals' Retention and Return: BPO
in India, and India's Diaspora Policy.**

8. Policy Changes in India and the World: Lessons to Be Learnt

II. SOUTHEAST ASIA

1. The Context

2. Flow of SEA Students to the US

3. Worker Immigration from SEA Countries in the US

4. Policies in SEA Countries:

III. CONCLUSION

REFERENCES

APPENDICES

International Competition for S&E Students and Workers: An Evaluation of Trends and Policies in India and Southeast Asia¹

Binod Khadria

1. Introduction

In the course of the 20th Century, the United States has attracted S&E human capital embodied in tertiary-level students and high-skill workers from all over the world that has sustained its widespread educational, scientific and industrial infrastructure, giving it a lead over other countries for decades. However, following the immigration restrictions that have been raised in the United States to address the security concerns of the post 9/11 phase, questions have been asked as to whether this has started undercutting the very foundation of America's comparative advantage in science and technology that it has enjoyed so far, giving way to its competitors in others parts of the world in the twenty-first century. As part of a series of country/regional studies, this paper examines the trends and policies in India and Southeast Asia, the major focus being on the former, with a view to analyzing the implication of the international competition between the United States and its contenders operating in these two regions.

I. INDIA

2. Indian Migration to the US: The 20th Century, Pre- 9/11 Trends

Highly skilled human capital in science and engineering (S&E for short, includes both workers and students) had been migrating from India to the United States since the late 1960s.² Traditionally branded as the 'brain drain' for India, the costs of such migration involving the exodus of the highly educated Indians have been evaluated as the 'investment loss' of subsidies in education financially, and as the 'skill loss' of trained personnel economically (Khadria 1990). However, the perceptions of these costs have changed in India significantly over time with shifts in the paradigm of high-skill migration. From 'brain drain' of the 1960s and 1970s to 'brain bank' of the 1980s and 1990s, and subsequently to 'brain gain' in the twenty-first century, the complete turnaround is being reflected in India's present pro-active stance towards its population overseas, incorporating a substantial scientific diaspora (Khadria 2001). Simultaneously, there have been visible competitive pressures for increasing the immigration quotas and relaxing the immigration barriers not only in the US, but also other developed countries like Canada, the UK and the EU, Australia-New Zealand, Japan, Singapore and so on (*The Hindustan Times*, March 2005).

2.1 Entry of S&E Human Capital as Knowledge Diaspora:

It was in the 1970s that the US overtook both the UK and Canada as the prime country of destination for Indian migrants (Khadria 1999). Indian immigration in the US which constituted a minuscule of less than 1 percent of total immigration from all countries during the 1950s and 1960s, registered rapid increase during the 1970s, reaching a peak of 3.8 percent that

¹ Research assistance of my graduate student Narender Thakur is gratefully acknowledged. He along with a team of my other graduate students also carried out the small-sample survey of aspiring students and the vendor interviews at an education fair in New Delhi on September 2005. The results of the survey and the interview are provided in Appendix II and III respectively.

² See Appendix I on definition of S&E, HRST etc. comparable terminologies.

tapered off in the 1980s till about 1991 but went on the upswing in 1992, touching almost 5 per cent in 1996, poised to touch a mark of 7.4 per cent in 2004 (Khadria 1999, US DHS 2004). The increase in the 1970s is generally attributed to the US Immigration and Nationality Act Amendments of 1965, fully brought into force in 1968. Within the overall kinship-emphasis in family-reunification clause of the amendments, the new legislation gave priority to highly trained and educated professionals, at least for the first seven to ten years explicitly. As a result, this modern phase of Indian immigration to the United States was distinctly different from the earlier phase that had comprised mainly the unskilled workers and labourers. Urban, educated, and ironically ‘English speaking’, masses of Indian population became distinctly visible in the US, carrying a large share of India’s human capital to the U.S., and causing ‘brain drain’ for India because, as Jenson (1988, p. 280) records, ‘Almost a hundred thousand engineers, physicians, scientists, professors, teachers, and their dependents had entered the U.S. by 1975’.³ However, since the mid-1970s till 1982, the annual number of Indians entering the US had leveled off to an average annual figure of 20,000 mainly because of the per country limit of quota in the US immigration law. Thereafter, it was the number of those exempt from this limit which added to the total—the ‘immediate relatives’ of the increasing number of Indian-born naturalized U.S. citizens. Thus, migration of highly qualified Indians to the US actually did not come down; whatever decline registered since the mid-1970s was mainly a statistical and legalistic illusion of sorts which also proved to be temporary in retrospect. India’s brain drain to the US had become less ‘visible’ rather than really declining after the mid-1970s. The 1965 amendments to the Immigration and Nationality Act thus remained the principal determinant of Indian immigration into the US for one quarter of a century between 1968 and 1992.⁴

2.2 Through the H1-B Route of the 1990s:

The 1990 Amendments, brought into effect in 1992, explicitly favoured building up of the human capital capabilities of America by fulfilling its current and future requirements of knowledge workers, finally bringing to relevance the immigration of Indians to the American labour market needs. Whatever few restrictive clauses these amendments had, like the introduction of a new definition for the highly skilled temporary workers, viz., the well-known nonimmigrant H1-B visa category, with an annual cap of 65,000 visas per year worldwide, the US Senate had to clear a bill for a limited expansion of these visas to 337,500 for the three-year period from 1999 to 2001. This was because the US had faced a decline in key undergraduate science degrees, an acute shortage of staff in high technology industries like software development, and exhaustion of the worldwide annual quota of H-1B visas too quickly in 1998, with 42 per cent (or two out of every five visas) being issued to Indian IT professionals. After 2001, as the American immigration scenario came to be determined more by the post-9/11 security concern in the U.S. and the recession that followed than by its actual labour market needs, the U.S. government has been under continuous pressure of different lobby groups, including the American industry and business to increase the H1-B visa limit once again.

³ ‘Ironically’, because in 1917 the US Congress had, against the opposition of two unsuccessful vetoes from President Woodrow Wilson, had introduced a ‘literacy test’ in English effectively to stop Indian immigrants from entering the territory of the United States (Baker 1937).

⁴ Under these Amendments, immigrants subject to a ‘numerical limitation’ of 270,000 worldwide and 20,000 per country per year were allocated to a six-category ‘preference’ regime of the US visa system—two under the ‘occupational labour force needs’ of the US economy and four under the ‘family-reunification objective’ of the US population policy.

Thus, of the three major issues of the US immigration policy viz., (a) ethnic balance in the population, (b) illegal immigration and (c) labour force needs, Indian immigration has mainly catered to the last one. The Indian knowledge workers entered the American geographical territory not only through increases in the share of ‘occupational preference’ visas issued to ‘numerically limited’ category of immigrants. In addition, they also entered through ‘limited’ ‘family preference’ visas, as well as two other unlimited ‘exempted’ categories, viz., ‘immediate relatives’ of the (India-born naturalized) US citizens, and the ‘nonimmigrant’ ‘students’ (the F categories), and ‘temporary workers and trainees’ (under the H1-B category), but with the provision of adjusting to the status of permanent residents, viz., the ‘green card’ holders subsequently.

2.3 The Profile of Indian Diaspora in the United States:

The strong profile of Indian immigrants in general supports a proposition that the human capital content in the migration of Indians to the US has been the backbone of Indian scientific diaspora formation there. No other diaspora preceding the Indian numerical rank acquired its position predominantly because of any American demand for its labour skills, which has been the main factor for admitting the Indian S&E workers at a large scale. It is hardly surprising therefore if in terms of the place in the US economy indexed by their employment, occupation, education and income of the immigrants, the Indian diaspora had continued to rank amongst the top all through the 1970s till the present. These top rankings for Indians in the US hold good not only within the Asian nationalities only, but also when compared against the averages of all other regional or continental nationalities of the world as well as that of the US nationals.

Employment Status:

As a quantitative continuation of the trend, reflected in the US Bureau of the Census, the population of Indian ancestry in the US had recorded an increase of about 125 per cent from 0.36 million in 1980 to 0.82 million in 1990. This growth was the highest not only amongst all Asians except for the Vietnamese but also one that surpassed the projected number of 0.68 million Indians in 1990. The projected number of 1 million Indians in the US for the year 2000 was touched much sooner, and by 2000 census it stood at 1.65 million, registering a 100 per cent increase in the decade since 1990 (US Census Bureau 2004). According to the US 1980 Census figures, 75 per cent of Indian immigrants aged 16 and over were in the US labour force, implying that 3 out of every 4 Indian adults were either employed or looking for jobs, the share being 95 percent employed and only 5 percent without a job. The labour market participation figure was thus significantly higher than the average of 56 percent for all immigrants, and noticeably higher than the 62 percent for the total US population too. The US Census 2000, showing a break up for men and women, put Indian men’s participation rate at 79 per cent to be higher than that of all men at 71 per cent; and of Indian women’s equal to the average of all Asian women’s at 56 per cent (US Census Bureau 2004).

Occupation Profile:

Roughly one-third of the Indian immigrants in the 1980s reported an occupation (9,258 out of a total 27,803 immigrants in 1987), the rest comprising the non-working spouses, children, other dependents and students. This has been lower than the average for all (world) immigrants at 39 per cent in 1985, and 40 per cent in 1987. However, these lower shares had been more than compensated for by an overwhelmingly higher share of Indians with an occupation in the managerial, professional, and executive professions – the most prestigious

and highly paid job categories held by the knowledge workers in the US economy. Of immigrants from India during 1975-1980, about 36 percent were reported to have an occupation in these categories, and this share was highest amongst all the *developing countries* in Asia (i.e. excluding Japan). In 1983, the share of professional and technical immigrants alone accounted for 50 percent of all immigrants in occupations, implying thereby that every other employed Indian adult in the US was holding a professional or technical (i.e. S&E) job, a fact that placed Indian knowledge workers at the top of the list of all Asian countries, *including* Japan. By 2000 Census, the hold of employed Indians over the managerial, professional and related occupations grew further to 60 percent (i.e., three out of every five employed Indians) (US Census Bureau 2004).

Table 1 provides the occupational profile of all Indian immigrants entering the United States at the close of the 20th century and beginning of the 21st. It shows that a substantial majority of Indian immigrants with specified occupations were still concentrated in two top categories, viz., ‘professional and technical’, and ‘executive, administrative and managerial’. Their proportion increased significantly during the period – not only as a proportion of all Indian migrants, but also as a proportion of each category of immigrants *from all countries*. This demonstrated the strength of the highly-skilled Indian S&E work force in the US labour market.

Table 1:
Indian Immigrants entering United States, by Occupation and Global Shares, 1999-2004

Pre-9/11	1999 (INS)			2000 (INS)			2001 (INS)		
	No.	%of Indian	%of all	No.	%of Indian	%of all	No.	%of Indian	%of all
All immig	30237	100.0	4.7	42046	100.0	4.9	70290	100.0	6.6
All occup	8016	26.5	5.7	13724	32.7	7.2	27073	38.5	11.3
Exec/adm/mgr	1112	3.7	7.1	1644	3.9	7.9	3062	4.3	11.1
Prfesnl/ tech	3492	11.6	9.4	8632	20.6	14.7	19935	28.4	23.8
Post 9/11	2002 (DHS)			2003 (DHS)			2004 (DHS)		
All immig	71105	100.0	6.7	50372	100.0	7.1	70116	100.0	7.4
All occup	42885	60.3	34.5	20560	40.8	25.0	38443	54.8	24.7
Exec/adm/mgr	All World [29277]			All World [22295]			All World [31689]		
Prfesnl/ tech	All World [79370]			All World [46495]			All World [73862]		

Source: Computed by author, using data from U. S. INS and DHS, Statistical Yearbooks, various years.

Similarly, Table 2 presents various indices of Indian professional presence in the S&E faculties in the US in 1997. It shows that in the American S&E faculties, almost 7,000 teaching faculty were of Indian origin, constituting 3 per cent of all faculty, and 15 per cent of all diaspora faculty in S&E. The largest concentration of Indians has been in engineering, followed by mathematics and computer science, where they constituted about 7 per cent and 5 per cent respectively. A noticeably significant 32 per cent or about one-third of the Indian faculty in life sciences comprised Indian women.

Table 2: Indian Diaspora amongst S&E Faculties in the US, by Teaching Fields and Gender, 1997

	Total S&E faculty	India diaspora	Indian diaspora as % of Total	Indian diaspora as % of all diasporas	Indian diaspora as % of all Asian diasporas	Female % of Indian diaspora	Indian female diaspora as % of all female diasporas	Indian female diaspora as % of all Asian female diasporas
Total S&E	224 707	6 876	3.1	15.3	23.2	12.1	26.8	12.9
Physical sciences	37 020	688	1.9	9.3	19.4	16.7	18.8	9.9
Life sciences	53 055	1 014	1.9	13.4	31.2	31.6	38.7	15.7
Math. & computer	44 375	2 086	4.7	18.3	33.0	13.9	39.6	24.5
Social sciences	65 509	1 491	2.3	15.5	32.2	6.3	10.7	5.1
Engineering	24 748	1 597	6.5	17.8	27.4	0.9	23.3	6.3

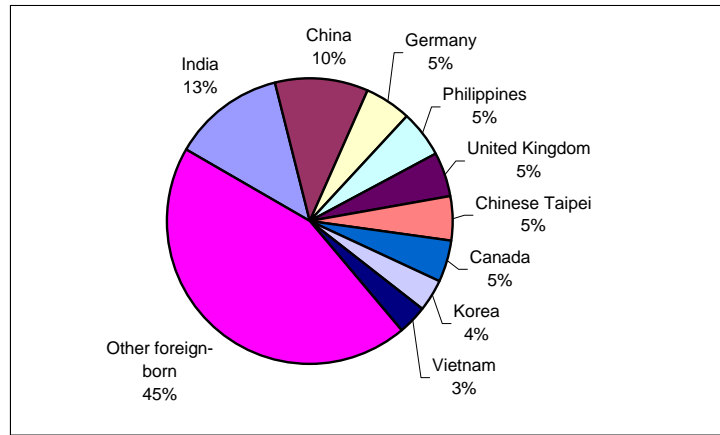
Source: Computed by author, using data from the US National Science Foundation, *Science and Engineering Indicators 2000*.

Education Profile:

Education-wise, Indian immigrants in America have been better equipped with ‘human capital’ to enter the higher echelons of the US job market than other immigrants. The US Census 1980 showed that as many as 89 percent of Indian-born immigrants aged 25-years-and-over had at least high-school education and as many as 66 percent a college degree. Both these figures were well above those for ‘all immigrants’ at 53 and 16 per cent respectively, and the ‘total US population’ at 67 and 16 per cent respectively, but the differences were extremely significant for those completing college.

The US Census 2000 revealed that more than 87 percent of Indians had completed high school and 64 percent had bachelor’s degree or more compared to fewer than 25 percent for the US population (US Census Bureau 2004). The majority of them had acquired their higher education qualifications in India, particularly in the engineering and IT sectors. This explicitly presents the educational achievement of Indians in the U.S. where it is the third largest community, but education wise, it stands on the top. In 1999, India-born US residents having science, social science, and engineering (S&E) degrees were counted to be 165,000. This accounted for a substantial 13 per cent of all foreign-born residents with S&E degrees (Figure 1), the highest share for any single diaspora group in the US.

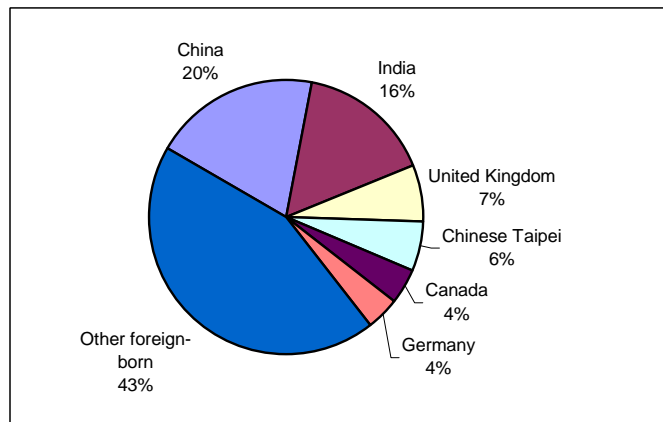
Figure 1: India-born US Residents holding S&E Degrees relative to Other Foreign-born, 1999



Source: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), Scientists and Engineers Statistical Data System (SESTAT), 1999.

As a subgroup of all S&E degree holders, the 30,000 Indian professionals holding S&E doctorate degrees had also accounted for a sizeable share of 16 per cent amongst all foreign-born American residents with S&E doctorates, second only to the Chinese diaspora in the US (Figure 2).

**Figure 2:
India-born US Residents holding S&E Doctorate Degrees relative to Other Foreign-born, 1999**



Source: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), Scientists and Engineers Statistical Data System (SESTAT), 1999.

Many Indian immigrants who fuelled the Silicon Valley were educated in the US at the post-graduate level after they had emigrated (80 percent of them to the US) with a first engineering degree of B.Tech. from the Indian Institutes of Technology. Similarly, many doctors who earned laurels in their respective fields in the US had emigrated with the first MBBS degree from the All India Institute of Medical

Sciences (Table 3). Engineers from the Regional Engineering Colleges, Banaras Hindu University and so on - all institutions of excellence had also followed suit. Similarly, scientists with M.Sc/M.Tech degrees from universities like the Jawaharlal Nehru University, or the University of Delhi; and engineer-managers with a degree in engineering followed by a Post-Graduate Diploma in Business Management from the Indian Institutes of Management (IIMs) had emigrated to pursue higher studies abroad, and then enter the world labour market in the US.

Table 3: The 20th Century Brain Drain of Graduates of Top Institutions of S&E Education in India

Indicators	Indian Institute of Technology Bombay, Mumbai	Indian Institute of Technology Madras, Chennai	Indian Institute of Technology Delhi, New Delhi	All India Institute of Medical Sciences, New Delhi
Batches of graduates	1973-77	1964-87	1980-90	1956-80
Year contacted for survey	1987	1989	1992	1997
Magnitude of brain drain	31%	27%	23%	56%

Source: author, using various institution-based surveys sponsored by Department of Science and Technology, Government of India, cited in Khadria (1999).

Income Profile:

An overall index of the economic presence of Indian immigrants in the US economy has been their average earnings. Obviously, with the high labour market participation, and placement of a majority in prestigious professional and executive occupations, Indians have earned very high average incomes. The 1980 Census figures for median annual income of immigrant workers in 1979 placed Indians at the top of the rank not only for all (i.e., including part-time workers) males (\$18,000) and full-time male (\$23,000) workers but also for full-time female (\$13,000) workers. This position had continued in the early 1980s with 60 per cent of the Indians above 15 years of age earning more than \$25,000. As per 2000 Census, amongst all Asian ethnic groups, Indian men earned the highest median income of \$52,000 and Indian women with under \$35,000 were marginally next to Japanese women above that figure (US Census Bureau 2004).⁵

A Potential Political Force:

The above profiles of the Indian diaspora show that Indian immigrants occupied high economic positions in the twentieth-century US economy from 1980 onwards. Perhaps this was largely because the initial immigrant batches of the late 1960s had by then crossed the Chiswick-threshold of 13-15 years' stay in the host country for Indians to get 'economically assimilated' into local society (Chiswick 1978). In addition to becoming a great professional force through the diaspora associations, Indian diaspora had also become a strong voting block in the United States, as India-born naturalized American citizens comprised no less than one-thirds of the immigrants. This has led Indian-Americans to become increasingly involved in the political system of the United States. Indian-American professionals have

⁵ Of the 1.7 million-strong Indian Diaspora in the US in 2001, 200,000 families are now millionaires and the median annual income of PIO is US\$ 60,093, which is substantially higher than the US median income of US\$ 38,885. Further, 67 percent of foreign-born Indian Americans have college degrees, three times greater than the US average, and out of these approximately 44 percent hold managerial or professional positions

traditionally exercised political influence through their campaign contributions, and are actively involved in fundraising efforts for political candidates on the federal, state and local level elections. In recent years, they have begun taking a more direct role in politics, as well as continuing to help through their financial contributions. There are over 1000 US-based organizations of Indians in North America. Some of them are professional associations of scientists and engineers who are involved in grass-root development activities back in India as well as in the welfare of their members in the professions.

3. The Trinity of Paradigm Shifts in 21st Century

Apparently, on the face of it, these trends of S&E migration from India to the US have become stronger in the 21st Century (See Table 1 above). In the post 9/11 world, however, when security concerns, complemented by the downturn of economic recession that burst the bubble of IT boom in the US, pre-empted all other rationales of immigration, some uncharted contours of international migration, with implications for S&E human capital have emerged, possibly beginning in 2003. Primarily, these could be discerned as three new trends in international migration of S&E human capital from countries like India, crystallizing in the short span of the twenty-first century so far:

3.1 The Primacy of Temporary-Worker Migration:

Recent findings testify that while growth rates of permanent settler admissions in the developed countries have grown slowly, temporary worker entrants have grown more rapidly in the initial years of the twenty-first century (OECD 2004). This has been the fallout of a new trend of emphasis on return migration as part of "effective migration management" policies in the receiving countries, particularly in Europe (IOM 2004). In the case of legal migration, and those involving the highly educated and qualified S&E migrants, the British work permit, the German 'green card', or the American H-1B visa, and even the proposed so-called 'GATS visa' are all examples of policies to encourage temporary migration of high-skill professionals rather than their permanent settlement.

Not only India, but other developing countries of origin too in South Asia, particularly Pakistan, Bangladesh, and Sri Lanka have been overwhelmed by the bandwagon of a return migration policy, which is apparently aimed at benefiting them. However, temporary migration has a flip side in the sense that when return is imminent, it is likely that in majority cases only the primary worker emigrates and the immediate family, comprising the spouse and the children, stays put in the country of origin. The dichotomous migration arises because of the possible constraints of the job held by the spouse and/or schooling of the children in the home country. Interestingly, under such circumstances, temporary migration entails a curtailment in S&E migration (embodied in spouses and children who also could be workers and/or students) that was taking place indirectly under the garb of 'family unification' rather than directly under 'worker migration' or 'student migration'. Increasing trend of business process outsourcing (BPO) to India has also encouraged temporary migration and return migration in recent times.

Entry of Temporary-stay Workers from India in the US

Table 4 indicates the number of H-1B and other visas issued to Indian workers in the post 9/11 period. A little over 100 thousand Indian professionals were H-1B visa holders in the US during 2001, a number which decreased to 81 thousand in the year of 2002 and further to 76 thousand in 2003. The rigid immigration policies adopted by the US and its impact can be seen in case of declining trend in the migration of Indian registered nurses after 2001. In spite of the shortage of nurses in the US, it is not encouraging migration of nurses, for example, only 9 Indian registered nurses migrate from India to the US in the year of 2003. However, 228 and 166 Indian nurses had migrated to US, in the year 2002 and 2001 respectively.

Table 4
Number of Indian Citizens admitted as non-immigrant workers in the US, by type of visa

Country of Citizenship	Registered nurses (H1A)	Workers with specialty occupations (H1B)	Industrial trainees (H3)	Exchange visitors (J1)	Intra-company transferees (L1)	Workers with extraordinary ability (O1)
India (2001)	166	104,543	62	5,374	15,531	666
India (2002)	228	81,091	96	4,866	20,413	523
India (2003)	9	75,964	136	4,732	21,748	9

Source: 2003, 2002, 2001 Yearbooks of Immigration Statistics, Office of Immigration Statistics, DHS

According to Table 4, the total number of H-1 B visas issued to Indian citizens in 2001 and 2002 were a little over 100 thousand and 81 thousand respectively.⁶ It shows a clear decline in the H-1B beneficiaries in 2002, as for all Asians and all foreigners. The total number of H-1 B beneficiaries from all countries was 331 thousand in 2001, which had declined to 198 thousand in 2002. And for all Asian countries, it declined from 245 thousand in 2001 to 126 thousand in 2002.

3.2 The Primacy of Student Migration:

The highly skilled from India have migrated not only through the 'employment gate' but also the 'academic gate' as students.⁷ More recently, figures collated by the US Institute of International Education's *Open Doors 2004* survey reveal that in 2003-04, India retained its No.1 position in the US university enrolments (followed by China, Korea, Japan, Canada, and Taiwan) for the third year in a row. Indians accounted for 13.9 per cent of the foreign students in the US, and this has continued in 2004-5 as per the *Open Doors 2005*. To serve the dual purpose, i.e. to sustain expensive higher education, and meet short-term labour shortages, both the UK and the US have adopted policies to allow foreign students in the British and American

⁶ The total numbers of H-1B visa beneficiaries from India as their country of birth (rather than citizenship), were 162 thousand and 65 thousand in 2001 and 2002 respectively.

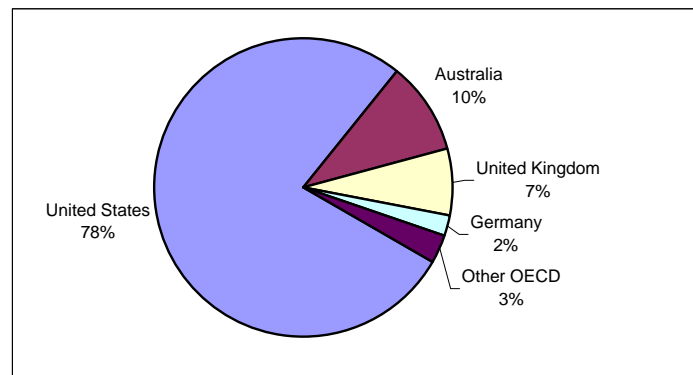
⁷ See Table 3 about brain drain from IITs/AIIMS.

universities respectively to stay on and work, rather than return to their countries of origin on completion of their degrees. The growing competition among countries like the US, UK, Australia, Canada, New Zealand, Ireland, and Singapore and also non-English speaking ones like France, Germany, the Netherlands, and Japan are bringing even the Ivy League institutions to South Asia, particularly India, to look for the cream of students.⁸

Apart from sustaining their higher-education industry through trade in educational services, these competing countries also take into account the gain in political mileage that they would accumulate in the form of a bonus when foreign students become their long-term brand ambassadors in the international political arena.

The US has been the most favoured destination country for Indian students, attracting 47,000 in 2001, which accounted for 78 per cent of all Indian students enrolled in the OECD countries (Figure 4).

Figure 4: Distribution of Indian tertiary students in receiving OECD countries, 2001



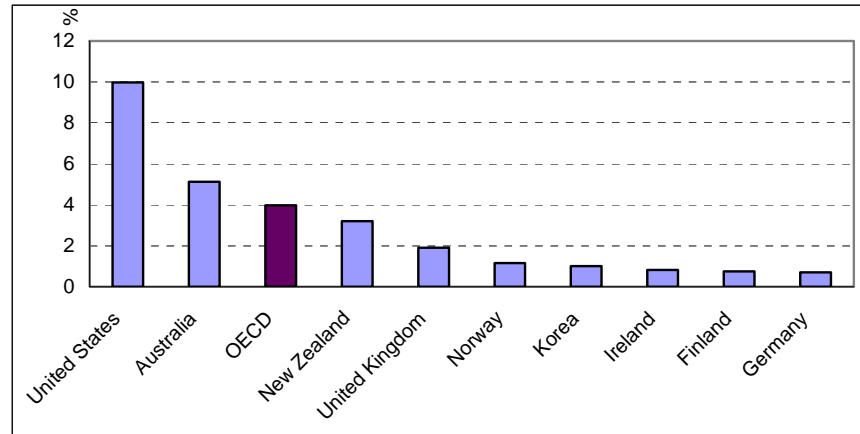
Note: Excluding data for Canada, Greece, Luxembourg, and Portugal.

Source: OECD Education database.

⁸*Economic Times*, Nov., 24, 2004. Japan has recently instituted high-valued scholarships like the Fulbright Scholarships to attract talent from India (*The Strait Times*, Singapore, March 15, 2006)

They made up a substantial 4 per cent of all foreign students enrolled in tertiary education in OECD countries in 2001 (Figure 5). In the United States, they registered a far larger share of 10 per cent amongst all foreign students. By 2004, this share of Indian students amongst all foreign students in the US went up further to 14 per cent.

Figure 5: Indian students as a percentage of all foreign students, by select OECD country, 2001



Note: Excluding data for Canada, Greece, Luxembourg and Portugal.

Source: OECD Education database.

According to the National Science Foundation (NSF) data on foreign-born Ph.D. students enrolled in the US universities and those finishing degrees there, Indians have been dominant in both categories. A vast majority would have plans to stay on in the US and many of them hold post-doctoral offers to implement those plans.

Entry of Indian Students in the US during 2001-2003

Table 6 shows the migration of Indian students to the US in the period of 2001-2003. Here, the movement of Indian students doesn't seem to be very much adversely affected by post 9/11 restrictions on immigration. In the year 2001, 48.8 thousand Indian students migrated to the US followed by 48.7 thousand and 51 thousand in 2002 and 2003 respectively. Only a marginal decline of 101 was registered between 2001 and 2002, which was more than made up by a substantial increase of 2176 in 2003 over 2002. If we analyze the percentage of Indian students out of total Asian students and total foreign students in the US over the period, then

the Indian flow of students has in fact compensated for the decline elsewhere. In 2001, 12.3 percent were Indian students in the Asian population of students in the US, a share which increased to 14 percent in 2002 and remained close by in 2003. The share of Indian students amongst all foreign students in the US was 7 percent in 2001, which increased to about 8 percent in 2002 and consolidated that proportion further in 2003.

**Table 6:
Flow of Indian Students in the US (2001-2003)**

Years	Indian Students admitted in the US	% of Indian in All Asian	All Asian Students	% of Indian in All Foreign	All Foreign Students
2001	48,809	12.34	395511	6.99	698595
2002	48,708	14.05	346672	7.79	624917
2003	50,884	13.95	364753	7.88	646016

Source: 2003, 2002, 2001 Yearbooks of Immigration Statistics, Office of Immigration Statistics, DHS

Figures collated in the *Open Doors 2004*, the annual survey of the US Institute of International Education, reveal that in 2003-04 university enrolments in the US, Indian students accounted for 13.9 per cent of all foreign students in the US and retained the No. 1 position of India for the third year in a row, followed by China, Korea, Japan, Canada, and Taiwan. In 2004-05 too, India has retained its top position. Of the five top countries accounting for almost half (47%) of all international students in the United States in the year, India remained the largest sending country for the 4th consecutive year with a total of 80,466 students, a modest 1% increase over the previous year's enrollments. This rate of growth was considerably slower than the double-digit increases experienced over the past three years (12% in 2003/04, 23% in 2002/03, and 29% in 2001/02) (*Open Doors 2005*). However, this has been made up by the largest increase of 23 per cent in applications for the Fall 2006 season from India, closely followed by China's 21 per cent (*Hindustan Times*, March 26, 2006).

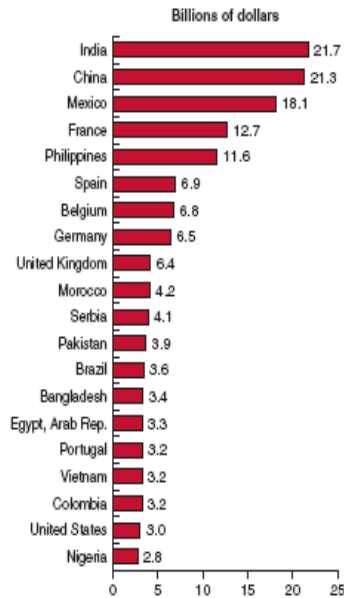
3.3 Neutralization of the Remittances Gain:

The new century has also registered a change in major source of remittances to India - from unskilled workers in West Asia to the western developed countries, mainly the US due to large scale temporary migration of workers (moving without families) and larger number of students staying on after graduation (and still supporting families back home in India). However, these visible increases in remittances from temporary workers (mainly H-1B) in the US are being neutralized through a silent backwash of student fees paid overseas by the Indian students, leading to huge financial costs for India. Latest estimates of the World Bank record very high remittances to India, putting it at the top of remittance-receiving countries. Today India is at the top of the list of countries receiving remittances from its

migrants abroad, close to ten percent of the worldwide remittances sent home by 191 million migrants⁹ (Figure 6).

Figure 6:

Top 20 remittance-recipient countries, 2004



Source: World Bank, 2005, *World Economic Outlook*, Washington D.C.

A more recent counter trend that I have drawn attention to in a BBC online debate and other fora is the backwash flow of remittances to the developed countries in the form of overseas students' fees that Indian students pay for study abroad.¹⁰ According to the *Open Doors 2004* estimates of 2003-4, for two-thirds (67.3 per cent) of the overall 572,509 international students in the US during the year, the primary funding for education in the US came from the students' 'personal and family' source, the US sources supporting only 25.7 per cent students (*Economic Times*, Nov. 15, 2004). The American economy thus reaps a handsome US\$ 13 billion annually from more than 500,000 students (565,000 in 2004-5 as per *Open Doors 2005*¹¹) who come

⁹ Population Headlines, No.310, March-April 2006, ESCAP, Bangkok.

¹⁰ During his recent visit to the UN meet in New York, the Indian Prime Minister Dr. Manmohan Singh, in fact, made an appeal to the developed countries like the UK to reduce their overseas student fees which are a multiple of the home student fees (*Hindustan Times*, Sept., 25, 2004)

¹¹ International students brought \$13.3 billion dollars to the U.S. economy in 2004-5 in money spent on tuition, living expenses, and related costs, according to the NAFSA: Association of International Educators. *Open Doors 2004/05* data from campuses indicate that nearly 72% of all international

to the US to study (*Economic Times*, Nov. 29, 2004). Similar estimates for the UK and other countries in the EU, Canada, Australia and the New Zealand would substantiate the proposition that the developed immigration countries are already on the path to capitalize on the 'trade in educational services' even with GATS not fully stepping in, and that there is now a new trend of a backwash flow of remittances out of the home countries of the migrants. Partly, the home countries' policies (or lack of policies) are also responsible for this. For example, in 2001, the Indian government, faced with a huge accumulation of foreign exchange reserve (which has now amounted close to US\$ 200 billion) allowed a US\$ 25,000 transfer of funds per annum by any single Indian citizen to anywhere in the world.

4. India's S&E Human Capital: By Qualification and Occupation

Due to its inherent nature of complete enumeration, data from the population census of India provides a unique opportunity to get detailed accounts of the number of HRST in the country. Table 7 presents results from the 1981 and 1991 censuses. It shows the breakdown of main workers stock (*i.e.* ignoring the marginal workers, who accounted for 3.3 percent of the population in 1981 and for 3.4 percent in 1991), by type of occupation, identified in the censuses of 1981 and 1991. The shaded cells in the table represent the various categories of HRST. In 1981 there were 223 million main workers, of which 7 million (3.2 percent) could be classified as HRST because of their occupation (HRSTO) and 6 million (2.7 percent) because of their qualification (HRSTE). The overlap between these two categories is called core HRST, which amounted to 2.6 million workers (1.1 percent). In 1991, the number of core HRST had risen to 4.5 million (1.6 percent) of the 286 million main workers. In that year, 10.2 million people could be categorised as HRSTO (3.6 percent) and 12.8 million as HRSTE (4.5 percent). Almost 18 percent of core HRST in 1981 were women, a proportion that had grown to 23 percent in 1991.

Table 7: Main workers by occupation and level of education, 1981 and 1991 (thousands)

Type of occupation (NCO 68)	1981			1991		
	non-HRSTE	HRSTE	Total	non-HRSTE	HRSTE	Total
HRSTO: 0-1. Professional, technical and related	4 493	2 551	7 044	5 700	4 457	10 157
2. Administrative, executive and managerial	1 787	578	2 365	1 796	1 127	2 923
3. Clerical and related	5 771	1 559	7 330	6 762	3 005	9 767
4. Sales	9 794	400	10 194	15 251	1 299	16 550
5. Service	6 663	86	6 749	8 040	282	8 322
6. Farming, fishing and related	152 434	383	152 817	189 138	1 304	190 442
7-8-9. Production, transport operators and labourers	33 386	312	33 698	43 317	1 079	44 396
10. Workers not classified by occupation	2 214	106	2 320	3 131	244	3 375
Total	216 542	5 975	222 517	273 134	12 797	285 931

Note: Excluding data for Jammu and Kashmir.

Source: Government of India, Registrar General of India, 1991 Census.

As per the Census 2001, total number of main workers in India has increased from about 286 million to 310 million during the decade 1991-2001 (Table 8).

students reported their primary source of funding coming from personal and family sources or other sources outside of the United States. The proportion of students relying primarily on personal and family funding increased by 1.5%, to 67% of all international students in 2004/05, and an even higher percentage at the undergraduate level (81%). Rising tuition costs and weak economies in some countries abroad place a substantial economic burden on students and their families, making less expensive study opportunities at home and elsewhere a more attractive option, especially at the undergraduate level. Nevertheless, Department of Commerce data continues to rank U.S. higher education as among the five largest service sector exports.

Table 8: Number of workers, 1991-2001

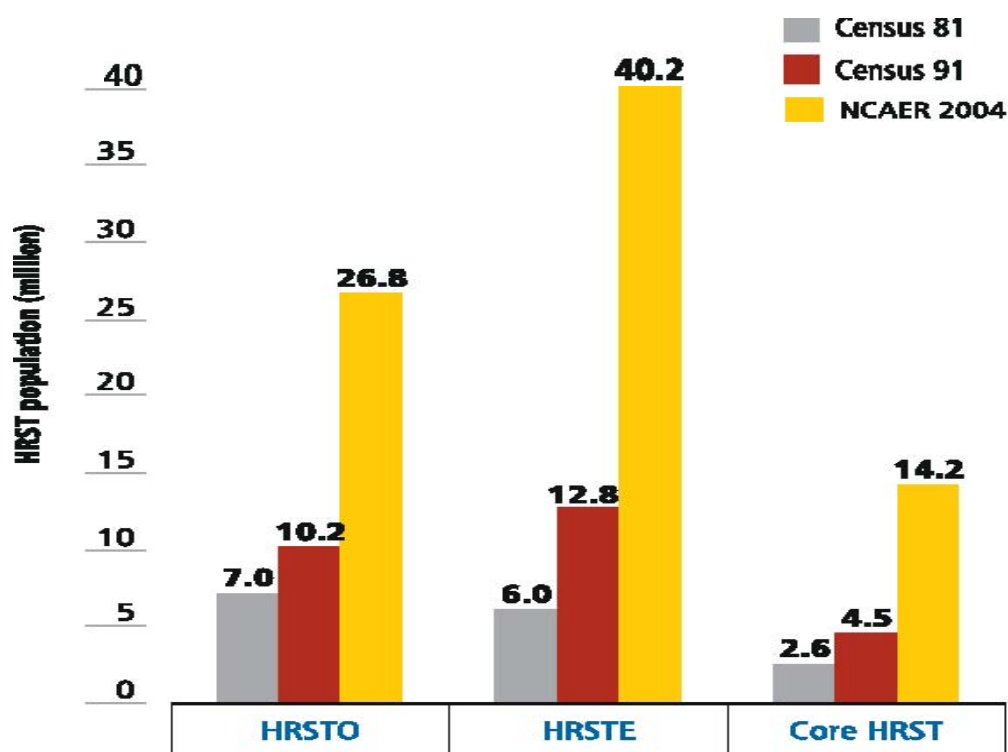
Worker category	Number of Workers('000s)		
	2001	1991	Increase/ Decrease
Main Workers	310,247	285,932	24,315
Agricultural sector	175,804	191,341	-15,536
Non Agricultural Sector	134,443	94,592	39,851
Marginal Workers	88,063	28,199	59,864
Agricultural sector	69,502	25,974	43,528
Non Agricultural Sector	18,560	2,225	16,336
Total Workers	398,310	314,131	84,179
Agricultural sector	245,307	217,315	27,992
Non Agricultural Sector	153,003	96,816	56,187

Source: Government of India, Registrar General of India, 2001 Census.

Leaving out cultivators and agricultural labourers, of 145.8 million main workers (some engaged in agricultural sector), education-wise distribution has been as follows: 32.02 million illiterate; 53.5 literate but below-matric (i.e., below 10th standard); 36.8 million matric but below graduate; 23.6 million graduate and above. Beyond this, however, 2001 Census data on the occupational distribution of workers by education level have yet not become available.

In the absence of 2001 Census results on occupation and education profiles of the population, the National Science Survey–2004 carried out by the NCAER estimated a workforce of 376 million strong workforce in India, of which 40.2 million (11.0 percent) could be classified as HRST because of their qualification (HRSTE) and 26.8 million (7.3 percent) because of their occupation (HRSTO). The overlap between these categories is called core HRST, which accounted for 14.2 million (3.9 percent) of the workforce. The number of HRSTE has grown by 9.2 percent annually between 1991 and 2004, from 6 million in 1981 and 12.8 million in the 1991 censuses (Figure 7).

Figure 7: Growth in HRST from Census and NCAER-survey



Source: NCAER, 2005, *India Science Report*, New Delhi.

4.1: Distribution of HRST:

While India had 6 million HRSTE in 1981, this figure rose to 12.8 million in 1991, and further to 40.2 million in 2004 as per the NCAER's National Science Survey 2004 (Table 9). While the total number of HRSTE, i.e., the diploma/graduate degree holders who were working, rose by 7.9 percent annually between 1981 and 1991, the figure rose faster by 9.2 percent between 1991 and 2004. As a result, while HRST-educated persons comprised 2.7 percent of the total workforce in 1981, this went up to 4.5 percent in 1991 and further to 11.0 percent in 2004. The distribution of the total HRSTE estimated for 2004 among three levels of education reveals that about 73 percent were level 6 or graduates, 18 percent level 7 or postgraduates and the remaining 9 percent diploma holders. The majority (51.5 percent) of postgraduates (level 7) were engaged in professional, technical and related activities followed by services (12.5 percent) and clerical related occupations. While 32 percent of the graduates (level 6) were engaged in professional, technical and related occupations, the remaining were almost equally represented in other occupational categories (Figure 8).

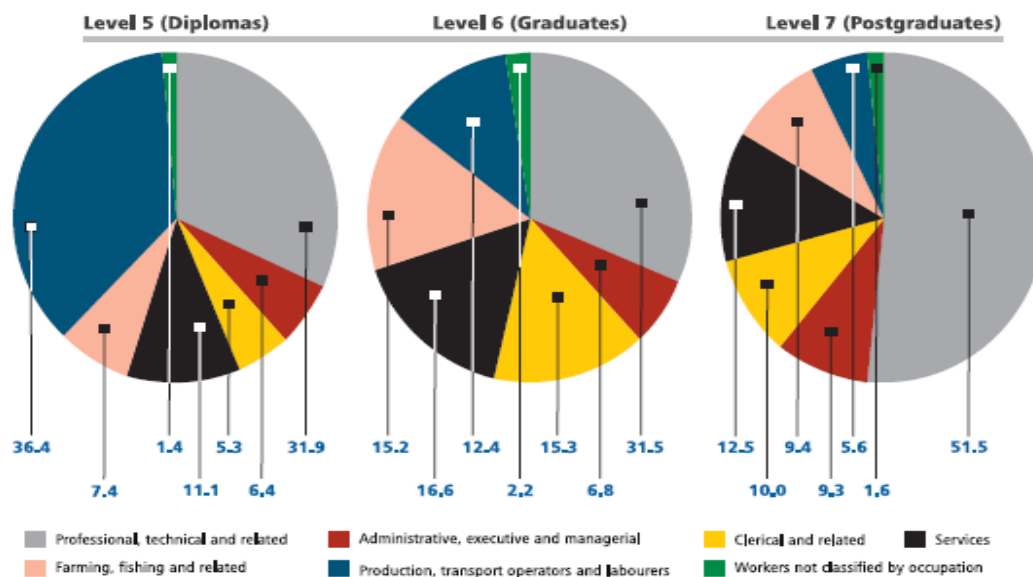
Table 9: Distribution of HRST workforce by occupation: 2004 (million)

TYPE OF OCCUPATION (NCO-68)	HRSTE Graduates (Level 5)	HRSTE Postgraduates (Level 6)	HRSTE (Diplomas) Level 7	Total HRSTE	Non HRSTE	TOTAL
HRSTO: professional, technical, and related	9.2	3.8	1.2	14.2	12.6	26.8
Administrative, executive, and managerial	2.0	0.7	0.2	2.9	4.7	7.6
Clerical and related	4.5	0.7	0.2	5.4	12.2	17.6
Services	4.9	0.9	0.4	6.2	26.8	32.9
Farming, fishing, and related	4.5	0.7	0.3	5.4	209.4	214.8
Production, transport operators, and labourers	3.6	0.4	1.3	5.4	49.3	54.7
Workers not classified by occupation	0.6	0.1	0.1	0.8	12.1	12.9
All Categories	29.2	7.4	3.6	40.2	327.0	367.2

Source: NCAER's National Science Survey-2004.

Note: Estimates for Census are based on information available for the main workers; however, NCAER's figures are based on total workforce estimated from National Science Survey 2004

Figure 8: Distribution of HRSTE Population by Level of Education (2004), per cent



Source: NCAER's National Science Survey-2004

While India had a total of seven million workers in 1981, who were in 'professional, technical and related' fields and could be classified as HRST professionals, this rose to 10.2 million a decade later, and has been estimated to be 26.8 million in 2004. As a proportion of the country's total workforce, this rose from 3.1 percent in 1981 to 3.6 percent in 1991 and to 7.3 percent in 2004. The number of such HRSTO rose by 3.7 percent annually between 1981 and 1991 and by 7.7 percent between 1991 and 2004.

While the number as well as the proportion of HRSTO and HRSTE has gone up steadily since 1981, the same cannot be said about the utilization of these resources. As in the case of all educated classes in India, there has been poor utilisation of HRSTE too. In 2004, only a third (35.2 percent) of the total HRSTE was pursuing an occupation that could be considered core-HRST. Thus, close to two-thirds of HRSTE were misemployed or underemployed. In other words, only about 35 percent of those holding HRST jobs were educationally qualified for those jobs, the rest were not, as they only had a 12th standard education or less. Indeed, this ratio has got worse with the passage of time because in 1981, around 43 percent of those who were HRSTE were employed in HRST professions (i.e., were core HRST). By 1991, this ratio fell to 34.8 and in 2004 it was more or less still at the same level (35.2 percent). In 1981, six million workers were at least diploma holders/graduates (HRSTE) and of these just around 2.6 million were core HRST (Khadria 2004b). In that year, around 1.6 million diploma holders/graduates were working in 'clerical and related' jobs. Of the total seven million HRSTO in 1981, only 2.6 million were educationally qualified for their jobs.

India's work force that does not have either a diploma or a graduate degree, that is the non-HRSTE work force, is currently estimated at around 327 million, i.e., around 89 percent of the country's work force has an educational qualification of only high school or below. However, the growth rate of this work force is declining - while the non-HRSTE work force rose by 2.3 percent annually in the 1980s, it rose at a much lower rate of 1.4 percent in the 1990s due to the fact that the work force was getting more educated. In 1981, for example, while around 97 percent of the country's work force could be considered non-HRSTE, in 1991 it fell to 96 percent. While just a little over two per cent of this non-HRSTE work force was employed in what could be called science and technology professions (i.e., of scientists, engineers, nurses, architects, teachers, and chartered accountants, among others), this rose to nearly four per cent in 2004, mostly due to the fact that the growth in this employment segment has risen amongst the fastest in the 1990s.

5. Enrolments in Indian Higher Education: The Semi-finished Human Capital in S&E

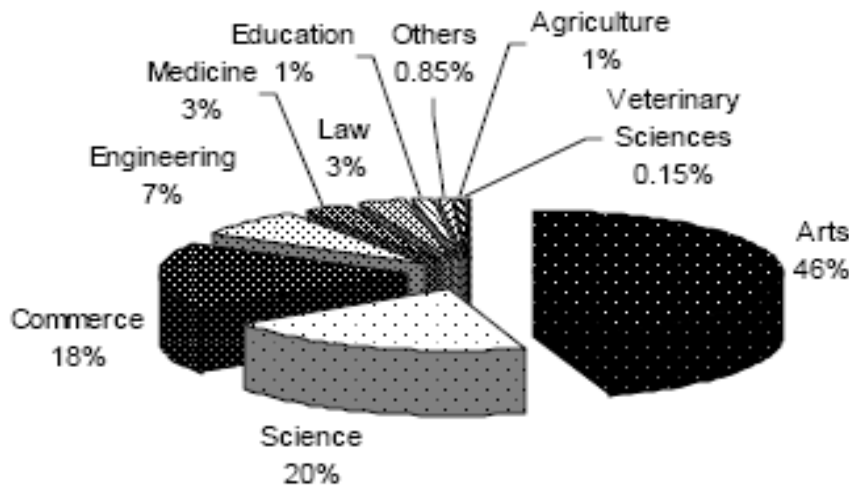
The total stock of graduates in India was estimated to be around 22 million in 2003-04 (which is comparable to 23.6 million figure of Census 2001 referred to elsewhere in this study) (Table 10). Total enrolment in higher education was 10.4 million whereas the out-turn each year was 2.5 million. Subject-wise, the enrolment share of students pursuing degrees in arts was 46 percent, science 20 percent, and commerce 18 percent. The remaining 17percent students were enrolled in professional courses (Figure 9).

Table 10: Indian's Graduate Pool in FY 2003-04

	Engineering Degree Holders	Engineering Diploma Holders	Arts Degree Holders	Science Degree Holders	Commerce Degree Holders	All Graduates
Stock (as of 2003)	1,200,000	1,750,000	11,500,000	4,985,000	5,933,000	21,986,000
Out-turn (in 2004, estimate)	155,000	130,000	1,150,000	540,000	480,000	2,460,000

Source: Institute of Applied Manpower Research, and Ministry of Human Resources Development.

Figure 9: Subject-wise enrolments 2004-2005



Source: University Grants Commission, courtesy Pawan Agarwal (2005).

The higher education structure in India has developed mainly in the public domain. Early expansion was mainly in general undergraduate lines of arts, science and commerce. 1990s brought a rapid growth of private professional higher education, leading to proliferation of professional institutions in engineering, medicine, management, law. As of now, almost four-fifth of all institutions and enrolments for professional education has grown in the private sector (Table 11, Figure 10). In the last few years of the new century, a large number of private initiatives in the field of education have received degree granting status either as deemed to be universities or even full-fledged private universities through the state legislatures.¹²

¹² A few institutions like IIPM, ISB, Amity International, Rai University, Welingkars, and Wigan & Leigh etc are using image-building elements to differentiate themselves from the rest of the crowd.

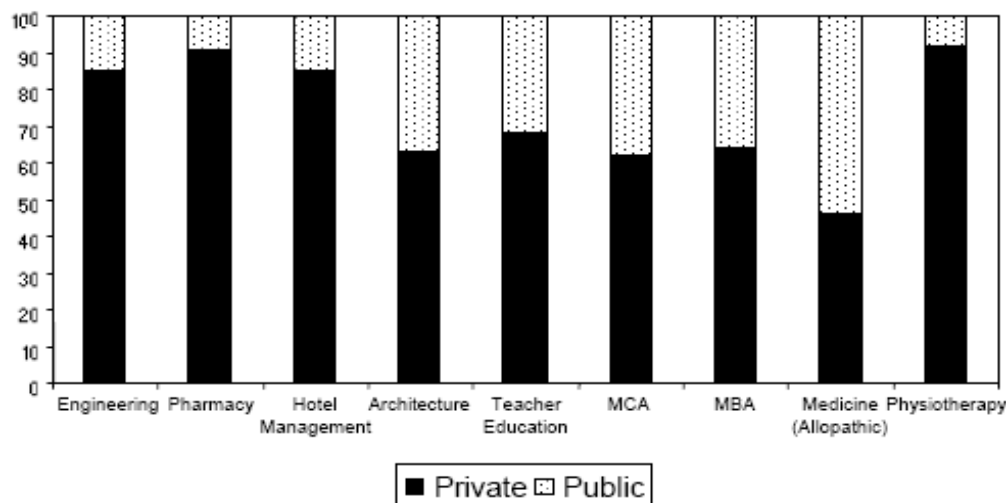
Table 11: Growth of Professional Higher Education Institutions

Name of Course	Number of Institution (1999-2000)	Number of Institutions (2003-04)	Percentage increase	Private Share (2003-04)	Public Share (2003-04)
Engineering	669	1265	89	85	15
Pharmacy	204	445	118	91	9
Hotel Management	41	49	22	85	15
Architecture	78	107	37	63	37
Teacher Education	1050	1541	46	68	32
MCA	780	1012	29	62	38
MBA	682	1254	85	64	36
Medicine (Allopathic)	174	229	32	46	54
Physiotherapy	52	205	294	92	8
Total	3730	6107			

Remarks: Many institutions (particularly for MBA, MCA and B.Ed. Programmes) have more than one of the above programmes, these have been counted more than once.

Source: *Related Professional Courses and their Websites*, cited in Pawan Agarwal (2005)

Figure 10: Relative Share of Private & Public Professional Education Institutions



Source: same as Table 11.

Table 12 presents the number of higher education institutions and enrolment as in 2000-01 and 2005-06, by types of institutions.

Table 12: Higher Education Institutions and Enrolment
(by Type of Management)

Type (by Management / Funding)		Universities		Colleges		Total Higher Education Institutions		Enrolment (in thousand)	
		2000-2001	2005-2006	2000-2001	2005-2006	2000-2001	2005-2006	2000-2001	2005-2006
Public	Government	245	268	4097	4225	4342	4493	3443	3752
	Private Aided	#	10	5507	5750	5507	5760	3134	3510
Private	Private Un-aided	21	70	3202	7650	3223	7720	1822	3219
Total		266	348	12806	17625	13072	17973	8399	10481

Source: University Grants Commission (India), cited in Pawan Agarwal (2005).

Note: Breakup by type of management for 2005-2006 is based on projections based on available trends in few states. Courtesy: Pawan Agarwal.

Most doctoral programmes in India are, however, still the mainstay of universities in the public sector. These universities have played a crucial role in granting Ph.D. degrees in S&E fields. Table 13 shows how there have been a quantum jump in this in India at the turn of the century and afterwards.

Table 13: Ph. D. Degrees Awarded in India.

Subject	1982-83	1988-89	1990-91	1991-92	1993-94	1999-2000	2000-01	2002-03	2003-04
<i>Science</i>	2,893	3,044	2,950	3,386	3,504	3,885	3,734	4,976	5,408
<i>Engineering</i>	511	586	620	323	348	723	739	833	908

Source: University Grants Commission, cited in Pawan Agarwal (2005)

There has been no significant presence of foreign education provider in S&E fields in India. Nevertheless, to meet unmet demand in some non S&E professional fields like business management, hotel management etc., a considerable number of small foreign operators have collaborated with private Indian entities, primarily operating on a profit-making principle. The big universities have primarily been trying to woo the Indian students to take admission overseas, and for this education fairs have become an annual feature of the Indian higher education scenario.¹³

¹³ We conducted a survey at such a fair that took place in Delhi in September 2005. See Appendix III on education providers interviewed.

6. Analysis of Demand for S&E Education in India

India's demographic structure in 21st century presents a unique departure from that in the developed countries in the west and the east, as well as of China. India's young population with 62 percent in working age group promises a favourable dependency ratio in the next three decades. It also creates a massive potential demand for education in the next decade. But this has also posed a number of challenges before the current cohorts of students, many of whom opt for a degree abroad.

Unfortunately, huge shortfall in trained manpower is expected in India, particularly due to non-suitability of large proportion of the graduates for the jobs available.¹⁴ India faces a paradox –high rate of graduate unemployment co-existing with huge skill shortages. To address the concerns arising from the growing graduate unemployment, the *National Policy on Education (NPE), 1986* had vouched for a program of vocational education. This was intended to prepare students for identified occupations. In pursuance to this, a scheme for vocationalization of education at the university and college level was started in the year 1994-95 by the UGC. However, present unemployment rate of graduates at 17.2% in India is significantly higher than overall rate of unemployment. Nearly 40% of the graduates are not productively employed. Of the total unemployed population of 44.5 million, unemployed graduates are 4.8 million (Census of India, 2001). This number is now estimated at 5.3 million. The UGC therefore redesigned the vocational programmes in the year 2003-04 to bring in greater flexibility, but it did not seem to be catching on.

Students' demand for higher education is normally based on their aspirations, societal and parental expectations and not necessarily based on signals from the job markets. The demand is satisfied by what is being supplied in the education market. The top ten emerging job opportunities in India, according to leading newsweekly, *India Today* (March 7, 2005), are by and large in the non S&E fields - hospitality, biotech, education and training, animation, aviation, event management, research and development, fitness consultancy, fashion designing and the NGO sector. The formal higher education in S&E streams hardly provides any openings in many of these areas.

As a result, although there is increase in absolute numbers, percentage enrolment in science has declined at the undergraduate level from 33.2 percent in 1971 to 21.7 percent in 1997; and at the postgraduate level from 26.1 percent in 1971 to 22.2 percent in 1997. This percentage drop in students opting for science largely reflects enhanced opportunities in commerce or law. This is not unusual. In today's market driven social order, good students are rarely interested in taking basic science as their career. This trend is seen in almost all countries. However, unlike the developed countries, this would have cascading effect in India. India is not able to attract talent from outside; rather we lose nearly all talented students who happen to study basic sciences on their own or who drift to such courses in the absence of their preferred professional subjects (Lakhotia, 2005).

In spite of a large system of higher education, there are only few universities in India that compete with the world's best institutions. The recent London Times Higher Education Supplement (THES) ranking of world's top 200 universities

¹⁴ NASSCOM (2005a, 2005b)

included three each from China, Hong Kong and South Korea and only one from India (an Indian Institute of Technology at number 41 – the specific campus was not mentioned). In the Shanghai University ranking of World-class Universities, only three universities, namely – Indian Institute of Science (Bangalore), IIT (Kharagpur) and Calcutta University figure in the world's Top-500 for the year 2004. The recent ranking of technical institutions based on peer review of 2375 academics ranked seven IITs above other global technical institutions like Stanford and Georgia Tech. IITs were ranked at third spot after MIT and the University of California at Berkeley.

Though all universities are expected to have research focus and be comprehensive in their focus both on teaching and research, but data on doctorates particularly in science, engineering and medicine suggests that only a few institutions have real research focus. 85 percent of S&E doctorates come from just 20 odd universities in the country. Sustained research efforts made by the faculty are eventually reflected in recognition of their work at the national level. It is noted that only about 20 out of the 120 traditional universities have at least one fellow in one of the three science academies, namely – Indian National Science Academy (INSA), Indian Academy of Sciences (IAS), Bangalore, and National Academy of Sciences (NAS), Allahabad. Both these facts suggest that sustained research efforts are an exception rather than a rule in Indian Universities.

There is a serious and growing concern about the quality of Ph.D.s in the country. Requirement of Ph.D. for appointment and promotion as faculty member had undesirable consequences. The fact that the highest number of Ph.Ds are awarded not by the most reputed universities suggests widely varying standards of quality control for Ph.D. degree. In some universities, student is awarded a Ph.D. degree within 18 months and in others students take three to five years, sometimes even longer to complete their Ph.D. There have also been cases of plagiarism. Quality is a major issue in social science research as well. Doctoral theses in social sciences often apply a descriptive approach to specific limited topic without really relating it to a wider socio-political and economic context. There is a need for a more analytical and comparative approach in doctoral research and relating it to society, policy and economy.

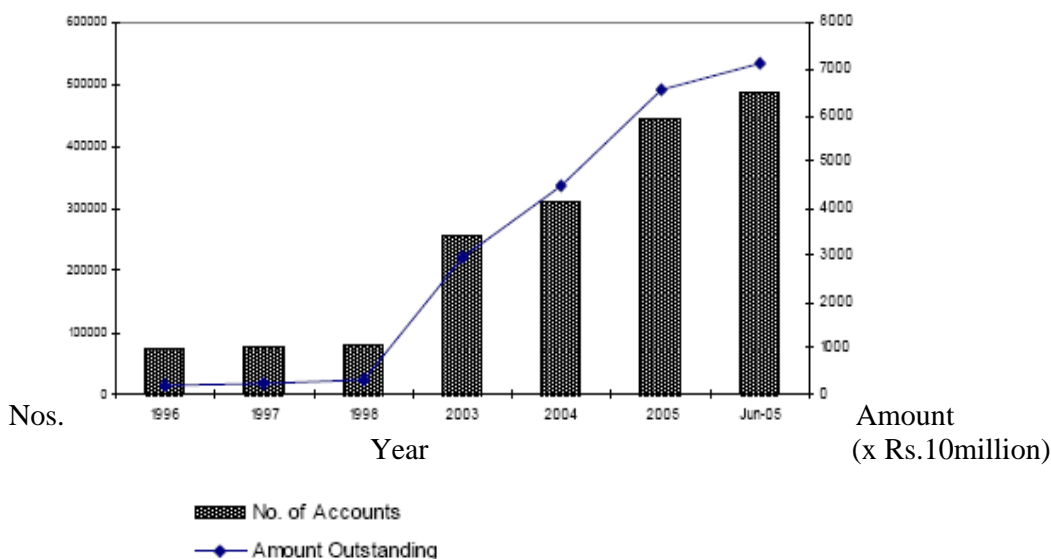
Higher education costs in India have gone up significantly in recent years. Full costs are recovered in most of the professional education, which is either imparted in the private institutions or in self-financing mode in public institutions. Cost of general higher education has also risen with many state universities having raised the fees in recent times. In addition, living expenses have also gone up with inflation. In all, but for a very small section of public institutions mainly under the central government and in a few northern states in India, higher education in India is beyond the reach of students from poor background.

There are many government schemes of scholarship and free-ships available for scheduled castes, scheduled tribes, other backward classes, and even women for higher education. These schemes have been floated by the central government and the state governments from time to time. In some cases, schemes to support weaker section of society have also been started by institutions themselves. In spite of plethora of schemes, the overall coverage is insignificant. Most scholarship schemes, being needs-blind, do not necessarily cover the poorest students. The amount of scholarship does not even cover full tuitions in many cases, particularly for

professional courses. In many cases, due to cumbersome disbursement procedures, the assistance is not received in time. There are also reported leakages in disbursement.

Education loans have not been a popular way of financing higher education in India. A National Loan Scholarship Scheme started by the Central Government started in 1963 was discontinued in 1991 because of its dismal performance, very low rate of recovery, unrealistic rate of scholarship and thin spread. In pursuance to a Supreme Court direction in 1995, the Reserve Bank of India circulated a loan scheme to all public sector banks in 1995. It started to pick up, however the education loan portfolio of banks in India remained small till late nineties. It was from the year 2001-2002, when the Government of India announced two new comprehensive educational loan schemes – one for education within India and one for studying abroad - to be implemented by the public sector banks that the education loan portfolio has grown in India.

Figure 11: Growth of Education Loan Portfolio in India



Source: Pawan Agarwal (2006).

As in Figure 11, in 2005, the public sector banks had a total outstanding exposure of Rs.71,000 million against 488,000 education loan accounts. With less than one hundred thousand students (out of 3.5 million students graduating each year) availing education loans, financing of higher education through student loans is still insignificant. Only 2-3 percent students avail of student loans. In comparison, 85 percent students in UK and Sweden, 50 percent in USA and Canada, and 77 percent in Australia had availed of student’s loans in recent years (Usher, 2005).

The entry of foreign universities through education consultants and franchisees is another development. Students can truly choose between India, England, Australia, US, China, Europe etc because of free availability of foreign exchange as well as availability of loan on easy terms. The emergence of training institutes for entirely

new career options like airlines, travel, clinical research, 3D animation, all needing to announce their arrival to the public has added to the advertising boom.

There is an absence of a well-informed reform agenda for higher education in the country. A few efforts made now and then are not rooted in the new global realities based on competition and increased mobility of students and workforce. With changing circumstances, three near certainties about higher education, viz. it was supplied on national basis to the local students; it was government regulated and competition and profit were unknown concepts in higher education, have received a serious blow. With growing student mobility¹⁵ and the global labour market for the highly skilled S&E human capital, higher education has now gone international.

7. Analysis of Forces behind Demand for S&E Professionals' Retention and Return: BPO in India, and India's Diaspora Policy.

Table 14: Indian Economy: Sector-Wise Share of GDP and Employment, 2004-5

Sector	Share of GDP	Share of Employment
<i>Services</i>	57.2	23.8
<i>Industry</i>	22.0	17.2
<i>Agriculture</i>	20.8	59.0

Source: CSO, Economic Survey, 2005

Trends of employment and growth rates of GDP in different economic sectors show that services (tertiary) sector is increasing in importance with declining importance of agriculture sector (Table 14). Emerging global occupational structure offers an opportunity for India to provide S&E workforce for the knowledge economy beyond the national borders.¹⁶ Services sector in India is growing rapidly over the last few years. Within the services sector, other business services (which include IT / ITES) have seen phenomenal growth in recent years with a significant proportion of the same coming from exports. According to World Bank (2004), India exhibits a strong revealed comparative advantage (RCA) in services, particularly software services as compared to goods. The country has leveraged its rich pool of human capital with quality educational institutions and large English speaking population. India is globally-positioned in IT-ITES sector with a CAGR of 35.3 percent over FY2000-05 amounting to US\$ 17.9 billion in FY2004-05. India is now an international services hub. It commenced with IT-enabled services - both voice & data and has now expanded to all knowledge sectors: pharmaceuticals, biotechnology, and engineering design (NASSCOM, 2005a)

¹⁵ It is estimated that 150,000 Indian students are studying abroad. Around 80,000 students are studying in the US alone.

¹⁶ Personal services, such as teaching and nursing care would continue to expand on a global scale. India can become a magnet economy attracting high skilled and high waged investment capital from MNCs, and offer high value added services to the rest of the world. This would require that India adopts an outward looking approach to reach out to the global markets and focus on sectors where it has resource advantage.

In the global knowledge economy, India is emerging as a key player accounting for 65 per cent of the global industry in offshore IT and 46 per cent of the Business Process Outsourcing (BPO)¹⁷ industry. Offshore industries have been the engine of economic growth for India for the last four years accounting for 6 per cent of the increase in GDP between 2000 and 2004, employing 700,000 people and providing indirect employment to nearly 2.5 million workers. In the next five years, India's BPO industries would play a major role in transforming India from a slow-growth to a high-growth economy accounting for 17 per cent of GDP growth. This would sustain 8.8 million jobs. This would include nearly 2.3 million direct and approximately 6.5 million indirect and induced employment¹⁸ (NASSCOM, 2005b). This is almost same as the total number of jobs in the private organized sector at present.

Today, India is no doubt at the top of the list of countries so far as emigration of S&E students and workers to developed countries like Canada, Australia, Germany, France, Japan and the United Kingdom is concerned. However, interestingly, this is not at the cost of a lowering of their migration to the United States, as it is usually believed and seen about emigration from other countries in the post 9/11 period. One reason has been that the present Indian polity brain drain does not seem to be as much a cause of concern as it used to be in the 1970s. 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. The emigration of Indian IT professionals is now being looked at as the complete reversal of the "brain drain", or a welcome fructifying of the "brain bank" into a "brain gain" through globalisation of the Indian talent and skills. Not merely economic, but political mileage that the Non-Resident Indians (NRIs) and Persons of Indian Origin (PIOs) can command for India in their countries of abode has also come to the centre-stage in recent years, particularly with liberalisation, globalisation and world competitiveness becoming the agenda of the nations – whether developed or developing. Indian government has formalised this shift of paradigm over the last four years by instituting the national celebration of an Overseas Indians Day (*Pravasi Bhartuya Divas*), and opening the doors for establishing long term relationship with its scientific diaspora. This had followed the setting up of a High-Level Committee on Indian Diaspora, which submitted its Report to the Government of India in 1999 (ICWA 2001).

The following statements from the then Prime Minister Atal Bihari Vajpayee's address to the Global Organization of Persons of Indian Origin (GOPIO) in New

¹⁷BPO generally refers to Business Process Outsourcing, the practice of running business processes sent by companies to either their own units or to other providers in offshore locations.

¹⁸ The latest NASSCOM-McKinsey Report (2005) in fact testifies an apprehension in terms of India facing huge shortage of IT-related as well as BPO-related skills. The report said that currently only about 25 per cent of the technical graduates and 10-15 per cent of general college students were suitable for employment in the offshore IT and BPO industries respectively, and estimated that by 2010 the two industries would have to employ an additional workforce of about one million workers near five Tier-I cities including New Delhi, Bangalore, Hyderabad, Chennai and Mumbai and about 600,000 workers across other towns in India (Economic Times 17 Dec, 2005). "As countries from around the world enter the market and competition for off-shoring contracts intensify, India must improve the quality and skills of its workforce," the report released at Nasscom's 'India Strategy Summit 2005' in Bangalore said. On talent supply, it said India would need a 2.3 million strong IT and BPO workforce by 2010 to maintain its current market share. The report projected a potential shortfall of nearly 0.5 million qualified employees -- nearly 70 per cent of which would be concentrated in the BPO industry. In fact the BPO industry has also started attracting foreigners to India in search of employment.

Delhi in January 2001, followed by the “Pravasi Bhartiya Divas” celebration on 9th January 2003 reflect the perception of the Indian polity towards emigrants of India settled abroad, particularly the highly qualified and experienced. 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.”¹⁹ 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.” With the recent celebration of the fourth “Overseas Indians Day” (the *Pravasi Bharatiya Divas*) on 9 January 2006, the announcement of granting an Overseas Indian Citizenship (OIC) – the dual citizenship for Persons of Indian Origin (PIOs) was finally made by the present Prime Minister Dr. Manmohan Singh.

8. Policy Changes in India and the World: Lessons to Be Learnt

Although there exists a 1983 law regulating emigration of the unskilled from India, the country has no well-defined *immigration* rule or law *per se*, either for the skilled or the unskilled. Provisions regarding entry, regulation and prevention of ‘foreigners’ into India and Indian citizenship are found in the Constitution, the Citizenship Act 1955, the Foreigners Act 1946, the Passport Act 1967, the Criminal Procedure Code and other regulations. However, the Overseas Citizenship of India (OCI) – the dual citizenship promised to the Indian diaspora by the Indian government in 2005 and conferred in 2006 is an important landmark in redefining the contours of *immigration policy* in the new millennium - not merely for India but for an ‘interconnected’ world as well. For the Indian diaspora in the Gulf – those who send large remittances back home but can never hope to become naturalized citizens of those countries because of restrictive regimes there, the Indian government announced at the fourth Pravasi Bhartiya Divas which took place in 2006 that their demand for voting rights to be exercised from abroad was under serious consideration.

The policy of dual citizenship and the promise of a consideration to grant overseas voting rights by India to the Indian diaspora gain added importance in the wake of the Report of the Global Commission on International Migration, submitted to the UN Secretary-General in October 2005, and titled as “*Migration in an Interconnected World: New Directions for Action*”. In laying down a new roadmap for action, the Report recognizes that “International migration has risen to the top of the global policy agenda.” But the Report also concludes that “*the international community has failed to capitalize on the opportunities and meet the challenges*

¹⁹World Focus (2001).

associated with it, and therefore *new approaches are required* to correct the situation” (emphasis added). The Commission concludes that “if the benefits of international migration are to be maximized and its adverse consequences minimized, then migration policies should be based on shared objectives and a common vision.”

Irrespective of the various levels where policies relating to emigration of S&E professionals and students are adopted by India, what is important for both India as their country of origin and the US as their destination in this context is to be able to distinguish and identify the 'painful' from the 'gainful' aspects of international migration. Being aware of these tasks and the responsibility involved, India as a country of origin ought to make use of these in a 'give and take' strategy. It needs gearing up to press for international norms in the multilateral negotiations of the GATS around the issue of movement of natural persons as service providers under trade, which is just another description for promoting the temporary entry of S&E migrants. The vulnerability of the migrants as well as the instability of trends (shut and open policy of the US) are two key aspects that need be taken out of international migration.

II. SOUTHEAST ASIA

Southeast Asia (SEA) is a sub-region of Asia. The name for the region was first coined in the 20th century; and coincidentally for this paper, it was previously known as “Further India”. The sub-region includes 11 countries, with the countries divided into the mainland (also known as Peninsular Southeast Asia, or Indochina) and the archipelago (also known as Insular Southeast Asia or Maritime Southeast Asia). The mainland countries include: Cambodia, Laos, Myanmar (Burma), Thailand, Vietnam, and the archipelago nations are Brunei, East Timor, Indonesia, Malaysia, Philippines, and Singapore.²⁰ As of 2004, approximately 550 million people lived in the region, half of India’s population. The countries from which significant number of students and workers migrate to the US are mainly six, viz., Thailand, Indonesia, Malaysia, Singapore, the Philippines, and Vietnam.

1. The Context

Every year a large number of SEA students migrate to developed countries, and the US has been the favorite destination for most of them. But after 9/11, unlike for the Indian case, we find a different trend of migration from South East Asia to the US. In order to find the flow of the students from SEA, we discuss the trend of migration of students from SEA during the years of 2001 to 2003. The reason for the selection of this period is to analyze the pattern of student’s mobility only since 2001, which will show the impact of 9/11 on South East Asian student mobility to the US. The decline can be found in the case of absolute numbers of migrated students and its growth during the period. In the phase of globalization of labour, apart from the aftermaths of the 9/11, there are other determining factors too, which facilitate the movement of people toward countries other the US, aging being one such determinant

²⁰ Because of non-availability of data, East Timor and Myanmar are not included in this study. Although our tables include data on Brunei, Laos and Cambodia, the figures are negligible (less than 1 percent of SEA, and for Vietnam too they are small (around 5 percent).

in Europe and Japan. Firstly, we will analyze the trends of migration of students from SEA to the US. Secondly, we will discuss the participation of SEA professionals (H-1B visas holders) in the US.

2. Flow of SEA Students to the US

Table 15:

Flow of SEA, Asian and All Foreign Students admitted in the US (2001- 2003)

Region	2001	2002	2003
All SEA Students	40,497	33,529	35,206
All Asian Students	395,511	364,753	346,672
All Foreign Students	698,595	646,016	624,917

Source: 2003 Yearbook of Immigration Statistics, Office of Immigration Statistics, DHS

Table 15 presents the flow trend of all foreign students, all Asian students, and the SEA students entering the US during 2001 to 2003. Total number of foreign students entering the US was close to 0.7 million in the year of 2001 which declined to 0.65 million in 2002 and further to 0.62 million in the year 2003. This trend gives a holistic picture of the decline in the movement of international students from the US. All Asian students with the exception of India have also experienced similar trend of decline from 0.4 million during 2001 to 0.36 million in 2002 and 0.35 million in 2003. The SEA students flow has been consistent with both these trends, except that it experienced a marginal increase in the flow in 2003 over 2002. In 2001, 40 thousand students from SEA countries entered the US, which had declined to 32 thousand in 2002, experiencing a marginal gain to 35 thousand in 2003.

Table 16: Country-wise Number and Share of SEA Flow of Students to the US (2001-2003)

Country	2001	% of 2001	2002	% of 2002	2003	% of 2003
SEA Total	40,497	100.00	33,529	100.00	35,206	100.00
Thailand	13,146	32.46	10,433	31.12	11,727	33.31
Indonesia	11,727	28.96	7,285	21.73	8,937	25.38
Malaysia	6,225	15.37	4,504	13.43	4,943	14.04
Singapore	5,299	13.08	4,995	14.90	5,163	14.67
Philippines	2,550	6.30	2,373	7.08	2,424	6.89
Vietnam	1,268	3.13	1,705	5.09	1,793	5.09
Cambodia	190	0.47	192	0.57	168	0.48
Laos	76	0.19	32	0.10	39	0.11
Brunei	16	0.04	8	0.02	12	0.03

Source: 2003 Yearbook of Immigration Statistics, Office of Immigration Statistics, DHS

Table 16 shows the number and percentage shares of students from different Southeast Asian countries who migrated to the US during 2001-2003 period. In terms of absolute numbers, Thailand ranked first, Indonesia second, and Malaysia and Singapore third and fourth respectively. In 2001, 33 percent students, i.e. one out of every three Southeast Asian students migrating to the US were from Thailand, 29 percent students went from Indonesia, 15 percent from Malaysia, and 13 percent from Singapore. Filipino students ranked fifth, as only 2.5 thousand Malay students migrated to the US in the year of 2001. In 2002, Thailand registered a decline, although it still maintained its first rank. As far as relative ranking of foreign students flow to the US from Southeast Asian countries in 2002, relatively to 2001, is concerned, Indonesia maintained its second rank, whereas for third and fourth positions Singapore and Malaysia switched ranks because of a greater decline from Malaysia, which is an Islamic country. Filipino students have fifth rank. During 2003, Thai students gained in entry over 2002, though still below 2001. Indonesian students have also shown their improved presence in 2003, as compared to 2002. The trend reflects that, in the year 2003, slowly the US made some relaxation in its rigid immigration policies, adopted as a repercussion of 9/11.²¹ In the year 2003, out of total Southeast Asian students in the US, 33 percent students were from Thailand, 25 percent from Indonesia and 15 percent students Singapore respectively. 14 percent were Malaysian and 7 percent Filipinos amongst students who migrated from Southeast Asia to the US in that year.

Table 17: Share of SEA Students in All Foreign Students Entering the US

SEA country of citizenship of students	Year 2001 % of All Foreign (698,595)	Year 2002 % of All Foreign (646,016)	Year 2003 % of All Foreign (624,917)
SEA Total	5.80	4.88	5.63
Thailand	1.88	1.61	1.88
Indonesia	1.68	1.13	1.43
Malaysia	0.89	0.70	0.79
Singapore	0.76	0.77	0.83
Philippines	0.37	0.37	0.39
Vietnam	0.18	0.26	0.29
Cambodia	0.03	0.03	0.03
Laos	0.01	0.00	0.01
Brunei	0.00	0.00	0.00

Source: 2003, 2002, 2001 Yearbooks of Immigration Statistics, Office of Immigration Statistics, DHS

²¹ However, there is some discussion is going on about increasing the limit of cap over H-1B visas from 65 thousand to 90 thousand for Indian professionals, which is expected to be announced on the visit of George Bush in India during the month of March, 2006.

Table 18: Share of SEA Students in All Asian Students Entering the US

SEA country of citizenship of students	Year 2001 % of All Asian (395,511)	Year 2002 % of All Asian (364,753)	Year 2003 % of All Asian (346,672)
SEA Total	10.24	8.64	10.16
Thailand	3.32	2.86	3.38
Indonesia	2.97	2.00	2.58
Malaysia	1.57	1.23	1.43
Singapore	1.34	1.37	1.49
Philippines	0.64	0.65	0.70
Vietnam	0.32	0.47	0.52
Cambodia	0.05	0.05	0.05
Laos	0.02	0.01	0.01
Brunei	0.00	0.00	0.00

Source: 2003, 2002, 2001 Yearbooks of Immigration Statistics, Office of Immigration Statistics, DHS

Tables 17 and 18 provide the shares of students coming to the US from different SEA countries amongst all foreign and all Asian students during the period 2001-2003. Whereas the all-foreign numbers show consistent fall till 2003, what is noticeable is that the SEA share showed a trend of fall in 2002, followed by rise in 2003 of SEA students' share amongst all foreign student numbers, though still below the 2001 share. Singapore, the Philippines and Vietnam showed consistent gains in their shares over the period, whereas Thailand, Indonesia, and Malaysia followed the SEA general trend of fall in 2002 followed by gain in 2003. Singapore also gained in rank over Malaysia. Globally speaking, individual country-wise within the SEA region, only two countries viz., Thailand and Indonesia, had a share of 1 to 2 percent of all foreign students in the US, two others viz., Singapore and Malaysia having close to 1 percent of all foreign students in the US. Within Asia, however, as Table 18 shows, the shares of SEA region as a whole and of the individual countries was double their share in the world.

3. Worker Immigration from SEA Countries in the US

Table 19:
Nonimmigrants Admitted by SEA Country of Citizenship,
H1A, H1B, H3, J1, L1, O1 Visas: 2001-2003

SEA Country of Citizenship	Workers with specialty occupations H-1B Holders (2001)	Workers with specialty occupations H-1B Holders (2002)	Workers with specialty occupations H-1B Holders (2003)
SEA Total	14,277	13,202	11,625
Philippines	5,556	5,509	5,247
Malaysia	3,004	2,479	1,854
Indonesia	2,136	1,488	895
Singapore	1,913	1,938	1,889
Thailand	1,556	1,671	1,541
Vietnam	83	96	91
Brunei	18	13	-
Laos	6	4	-
Cambodia	5	4	-
Others*	-	-	108

Source: 2003, 2002, 2001 Yearbooks of Immigration Statistics, Office of Immigration Statistics, DHS

*Note: Other category includes very small South East Asian countries, viz., Brunei, Cambodia, and Laos etc. Yearbook 2003 has changed the methodology.

Table 19 provides information about the flow of H-1B visa holder professional workers, who migrated from SEA countries to the US over the period 2001-2003. There has been a fall in the total number of professionals migrating from SEA Countries as a whole to the US over this period. In terms of country rankings within SEA region, contrary to student rankings, the Filipino professionals are at the top, in terms of participating in the US labor market, followed by Malaysia, Indonesia, Singapore and Thailand. While Philippines, Malaysia, and Indonesia experienced consistent decrease over the three-year period, Singapore and Thailand experienced gains in 2002 over 2001, although neutralized by fall in 2003. The most significant fall was registered by Indonesia and Malaysia, the former a country experiencing militant terrorism in the post 9/11 period.

4. Policies in SEA Countries:

During 2001-2006, Singapore has also emerged as favorite destination for international students to demand higher education in. These days, growing number of such students from India think that they will have better chances to migrate to the US through Singapore, and therefore enroll themselves in Singapore with a target to go the US for further higher education. On its part on the supply side, Singapore too is

providing high quality of education at competitive prices which is less than other developed countries viz., the US. For example, at \$16 thousand approximately (Rs. 0.75 million), an MBA degree from Singapore still costs 30 percent less than what it would cost in an equivalent US university²². Employing this as a peg to pull in more students, Singapore government has also introduced a subsidy of \$ 1600 (Rs. 75 thousand) for a section of meritorious Indian students.

Other South-East Asian countries have followed suit in trying to attract Indian students for higher education. Three countries in particular, Singapore, Malaysia, and Thailand attract overseas students from Asia. Singapore and Malaysia are attracting Australian universities to set up campuses. Thailand is also a destination for technical education.

III. CONCLUSION

In India, investment in education has been a determining factor in sustaining the migration of S&E students and workers to the US, operationalising the demographic advantage of a younger population, and the opportunity of worker turnover through H-1B and BPO. (total number of migrants increasing but turnover of faces hidden due to lack of data on return migration from the US).

In the case of students what is of concern is the long-run implication of the contemporary opportunity of migration to the US or its competing countries on the career choices of the younger generation - the 'Ex-ante Decision Domain' impact. 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 S&E careers in 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 to protect them from the vulnerabilities of migration.

The vulnerability of migrants is not limited to unskilled people. The system ensures that all migrants are kept exposed to vulnerability of one kind or the other, as it provides continuity and flexibility to the labour market in terms of a 'safety valve'. Therefore, attention to policy protection cannot be limited to the correction of specific situations. It must question the system that continues to produce situations of exploitation. For one reason or the other, the policy discourse in migration stops at the legislation of recommendations; when it comes to prescription of the laws and procedures the entire focus is on how to stop the exploitation of the migrants, mostly irregular and illegal migrants, in the hands of the vested interest groups operating in the migration space. Enough has been said about such exploitation, and about the loopholes in the policies for effectively combating such exploitation - be it because of 'feminization, privatization, or regionalization', the three contemporary features of labour migration the ILO identifies as not being adequately provided for in the ILO Labour Conventions or national immigration laws - challenging traditional efforts to regulate migration. The systemic vulnerability that is generated in the developing

²² The Hindustan Times, 3rd November 2005

home countries of legal migrants begins one step earlier, in the practical implementation stage of policy: Literally at the doorsteps of the foreign consulates that issue the visas or the entry permits for the migrants' entry into their countries. The humiliating experience that the so-called 'off-white' people (the ladies, the elderly, and the gentlemen alike) of the so-called 'third-world' (erstwhile) are more often than not subjected to in their own lands by the 'whites' and their 'brown sahibs' manning the consulates takes place only because that had never been a "white man's disease".²³ The indignation of queuing up in a hostile environment - natural as well as man-made - outside the gate of the consulates in India is degrading enough for many of these migrants to become vulnerable to any kind of misbehaviour, insult, threat, and exploitation that could be in store in the new land or on the way to it. The migrant could be utterly alone and vulnerable to the uncharted contours of a journey, which is made further uncertain by the frequently changing policies, legislation, quotas, and the practices of the so-called "migration management" in a destination country like the United States in the post 9/11 phase. Stability of policy, and dignity in the practice of that policy are perhaps two key elements which would go a long way in making migration policy 'user-friendly' not only in a developing country like India but equally in other spaces too. The latest humiliation of an eminent India scientist at the US consulate in India, which called for damage control at the level of the American Ambassador, followed by a call and provisioning by the visiting American President for collaboration between Indian and American S&E professionals would possibly be a case in point to learn the first lessons of policy formulation from.

REFERENCES:

- Agarwal, Pawan (2005), Higher Education in India: Need for a Strategic Paradigm Shift and Framework for Action, Working Paper No. 179, Indian Council for Research on International Economic Relations, mimeo.
- Auriol, L. and J. Sexton (2001), "Human Resources in Science and Technology: Measurement Issues and International Mobility", in OECD (2001), *International Mobility of the Highly Skilled*, Paris.
- Baker, R. S. (1937), *Woodrow Wilson—Life and Letters: Facing war, 1915 -1917*, vol 6, Garden City, New York, Doubleday, Doran & Co.
- Chiswick, Barry R. (1978), 'The Effects of Americanization on the Earnings of Foreign-born Men', *Journal of Political Economy*, 86, pp. 897-921.
- Economic Times, The*, New Delhi issue, various issues as cited in the text.
- GCIM, (2005), "*Migration in an Interconnected World: New Directions for Action*" Report of the Global Commission on International Migration, Geneva.

²³"Both malaria and AIDS are creating havoc in Africa and India (the subcontinent). They wouldn't have reached the levels they are if they were a white man's disease...." Branson further said in Delhi, "The creation of wealth is fine. But the businesses need to pay back to the society in a number of ways." (The Hindustan Times, Nov. 29, 2004). Even the 21st century paradigm shift in international migration from the work-seeking mode by the citizens of countries of origin to worker-seeking mode by the 'wealth-creating' employers in the countries of destination has not have led to a change of attitude of the this genre of diplomats manning the embassies and the high-commissions in the developing countries.

- Government of India (1986) *National Policy on Education (NPE), 1986*, Ministry of Human Resource Development, New Delhi.
- Government of India, *1991 Census*, Registrar General of India, New Delhi.
- Government of India, *2001 Census*, Registrar General of India, New Delhi.
- Hindustan Times, The*, New Delhi edition, various issues, as cited in the text.
- ICWA (2001), Report of the High-level Committee on Indian Diaspora, Indian Council for World Affairs, New Delhi.
- IOM (2004), *Return Migration: Policies and Practices in Europe*, IOM International Organization for Migration, Geneva.
- Jenson, Joan M. (1988), *Passage from India—Asian Indian Immigrants in North America*, New Haven, Yale University Press.
- Khadria, B. (1990), "Patents, Brain Drain and Higher Education: International Barriers to the Diffusion of Knowledge, Information and Technology", *Social Scientist*, Serial No. 204, vol. 18, no. 5, May, pp. 3-18, New Delhi.
- Khadria, B. (1999), *The Migration of Knowledge Workers: Second-Generation Effects of India's Brain Drain*, Sage Publications, New Delhi.
- Khadria, B. (2001a), "Shifting Paradigm of Globalization: The Twenty-first Century Transition towards Generics in Skilled Migration from India", *International Migration*, Special Issue: International Migration of the Highly Skilled, vol. 39, No. 5, pp. 45-71.
- Khadria, B. (2001b), "Offshore Universities and the Paradox of Factor-Endowment and Factor-Use in Trade-in-Services", paper presented at the *Sixth Biennial Oxford International Conference on Education and Development: Knowledge, Values and Policy*, 19-21 Sept. 2001, Oxford.
- Khadria, B. (2002), "Skilled Labour Migration from Developing Countries: Study on India", *International Migration Papers* 49, International Labour Office, Geneva.
- Khadria, B. (2003): "Case Study of the Indian Scientific Diaspora" in, R Barre *et al* eds., *Scientific Diasporas: How Can Developing Countries Benefit from Their Expatriate Scientists and Engineers?* Institut de Reserche pour le Developpment (IRD), Paris.
- Khadria, B. (2004a), Migration of Highly Skilled Indians: Case Studies of IT and Health Professionals, *STI Working Paper 2004/6*, OECD, Paris.
- Khadria, B. (2004b), Human Resources in Science and Technology in India and the International Mobility of Highly Skilled Indians, *STI Working Paper 2004/7*, May, OECD, Paris.
- Khadria, B. (2006), "Tracing the Genesis of Brain Drain in India through its State Policy and Civil Society", in Nancy Green and François Weil, eds.,

Citizenship and Those Who Leave: The Politics of Emigration and Expatriation, University of Illinois Press. Forthcoming.

Khadria, B. and Eric Leclerc (2006) ‘‘Exode des emplois contre exode des cerveaux, les deux faces d’une m me pi ce ?’’, *Autrepart :Revue des sciences sociales au sud*, No. 37, Special issue on La Migration des Emplois Vers le Sud, IRD Editions, France.

Lakhotia, S. C. (2005), ‘India’s ambitions to be a world leader in S & T depends upon a drastic overhaul of the university system,’ *Current Science*, 88, 11, June 10.

NASSCOM (2005a), *The IT Industry in India: Strategic Review 2005*, National Association of Software and Service Companies, New Delhi.

NASSCOM (2005b), *Extending India’s Leadership of the Global IT and BPO Industries*, Nasscom-McKinsey Report 2005, National Association of Software and Service Companies, New Delhi.

NCAER, 2005, *India Science Report*, National Council of Applied Economic Research, New Delhi

OECD, 2004, *Trends in International Migration: Annual Report 2003 Edition*, Organisation for Economic Co-operation and Development, Paris.

Strait Times, The, Singapore, as cited.

U.S. National Science Foundation, *Science and Engineering Indicators 2000*.

U.S. Census Bureau (2004), ‘We the People—Asians in the United States’, Census 2000 Special Reports CENSR-17, December, Department of Commerce.

U.S. Department of Homeland Security, *Statistical Yearbook*, various years, Washington D.C.

U.S. INS, *Statistical Yearbook*, various years, Department of Justice, Washington D.C.

Institute of International Education (2004), *Open Doors 2004: Report of International Educational Exchange*, Washington D.C.

Institute of International Education (2005), *Open Doors 2005: Report of International Educational Exchange*, Washington D.C.

Usher, A. (2005), *Global Debt Patterns: An International Comparison of Student Loan Burdens and Repayment Conditions*, Toronto, Education Policy Institute.

World Bank, 2005, *World Economic Outlook*, Washington D.C.

World Focus (2001), Special Issue on Indian Diaspora—Its Positive Contribution, No. 255, March.

APPENDIX-I

Human Resources in Science and Technology (HRST)

The *Canberra Manual* (OECD, 1995) defines HRST as people who fulfil one or the other of the following conditions:

- they have successfully completed education at the tertiary level in an S&T field of study;
- they are not formally qualified as above, but are employed in an S&T occupation where the above qualifications are normally required.

The *Canberra Manual* definition is based both on notions of educational qualification and of occupation and therefore covers a very broad population with either tertiary-level education or an occupation in a field of science and technology (S&T). S&T is understood in a very broad sense, covering all fields of education and occupation, including social sciences and humanities. Tertiary level education is defined using the former ISCED definitions:

ISCED category 5: "education at the tertiary level, first stage, of the type that leads to an award not equivalent to a first university degree".

ISCED category 6: "education at the tertiary level, first stage, of the type that leads to a first university degree or equivalent".

ISCED category 7: "education at the tertiary level, second stage, of the type that leads to a postgraduate university degree or equivalent".

ISCED was revised after the release of the *Canberra Manual*; categories 5B, 5A and 6 of the new ISCED-97 may be considered as the new equivalent of the former categories 5, 6 and 7.

S&T occupations are defined using the following ISCO-88 categories:

- 122 Production and operations department managers.
- 123 Other department managers.
- 131 General managers.
- 21 Physical, mathematical and engineering science professionals.
- 22 Life science and health professionals.
- 23 Teaching professionals.
- 24 Other professionals.
- 31 Physical and engineering science associate professionals.
- 32 Life science and health associate professionals.
- 33 Teaching associate professionals.
- 34 Other associate professionals.

Occupations in India are classified according to the National Classification of Occupations 1968 (NCO 68), which is close to ISCO-68. HRSTO includes certain managerial occupations (122, 123 and 131), which have been defined in ISCO-88, but for which there is no direct conversion to ISCO-68. These occupations are part of division 2 as well as parts of the other divisions in ISCO-68. Therefore, when talking about HRST in this document, managers are excluded, and reference is only made to professionals, technicians and associate professionals (major groups 2 and 3 in ISCO-88, group 0-1 in NCO 68).

The advantage of the double educational/occupational classification is that it allows an analysis of both the supply side of HRST, in terms of qualification (coined with the term HRSTE), and the demand side, in terms of occupation (HRSTO). Its drawback is that, by definition, it does not allow for homogeneous measurement because the two classifications are based on different premises, and it is too broad to meet specific analytical needs. Hence the need to define subsets of interest within this broad population. This was extensively done in the *Canberra Manual* and has been further refined in subsequent studies.

Source: Auriol and Sexton (2001), as cited in Khadria (2004b).

APPENDIX-II

A Small-Sample Survey of Student Aspirants to Migrate Overseas from India

This sample survey of aspirants for international migration was undertaken in an educational fair of educational providers in New Delhi in September 2005. In the liberal environment, the educational providers were busy attracting students from the different countries including India. In recent time, India has emerged a big market of students for the educational providers. In the liberal environment, there are number of promotional and orientation programmes like education fairs, international seminars, conferences etc. organized to exhibit the quality of education supplied by international and national education providers and attract the students from India. For example, different Indian government departments and private agencies participated in an international exhibition and conference on September 8-10 in New Delhi. This sample survey was an attempt to analyse the impact of September 9/11 on the migration of Indian students to the US and other countries.

Table A1 presents the total number of 22 interviewed aspirants by their highest educational levels. Thus, half of the respondents were graduates, 14 percent post graduates and 36 percent senior secondary school passed - all aspiring planning to migrate abroad for their further studies.

Table A1
Highest educational qualification of aspirant respondents

Highest educational qualification of Aspirants	Number of Aspirants	Percentage
Senior Secondary	8	36.36
Graduation	11	50.00
Post Graduation	3	13.64
Total	22	100.00

Table A2 reveals the field of specialization of aspirants: 59 percent come from the commerce field, some standard 12th class passed, others Bachelor of Commerce (B.Com.) degree-holders, and planning to get further/post graduate degree or diploma from intuitions of higher learning abroad. The remaining 41 percent respondents belonged to other fields like mathematics, biological sciences, humanities, business administration, electronics, home science, hotel management, and accountancy.

Table A2
Size of the sample by fields of specialization

Field of specialization	Number of Aspirants	Percentage
Mathematics and Biological-Sciences	2	9.09
Humanities	1	4.55
Commerce	13	59.09
Business Administration	1	4.55
Electronics	2	9.09
Home Science	1	4.55
Hotel Management	1	4.55
Accountancy	1	4.55
Total	22	100.00

Table A3 presents the level of education they were opting to go abroad for, with 32 percent for graduation degree; 59 percent for post graduation degree; and 9 percent for others like diplomas, PhD degree, etc.

Table A3
Level of courses opted for overseas

Level of Course	Number of Aspirants	Percentage
Graduation	7	31.82
Post Graduation	13	59.09
Others*	2	9.09
Total	22	100.00

*Others indicate Diploma in 3-D-animation, Research

Table A4 reveals that 37 percent aspirants were aspiring for further professional education in business administration and management, i.e., mainly for Masters in Business Administration (MBA), because of a huge demand in the labour market with high salary jobs.²⁴ Thus, 64 percent aspirants were planning to go abroad either for MBA degree or vocational diplomas/degrees that will increase the probability of getting jobs in future. They were ready even to finance themselves for the expensive overseas degrees and diplomas. The others, 36 percent aspirants were planning to get their further education in the fields of medical sciences, commerce, computer science and engineering, and research etc. 9 percent aspirants had plans to go abroad to get their education in the hotel management, related to vocational diplomas/degrees. So if this 9 percentage points are added to 64 percentage points, then 73 percent aspirants were planning to go abroad for professionals and vocational diplomas/degrees, reflecting their job and career preferences in those areas.

²⁴ A topper of Indian Institute of Management (IIM) graduate gets an offer of US\$ 181 thousand (Rs. 8 million) per annum in the recent time.

Table A4
Areas of specialization overseas for further education

Area of Specialization	Number of Aspirants	Percentage
Medical sciences	1	4.55
Art and Music	1	4.55
Commerce	1	4.55
Business Administration and Management	8	36.36
Computer Science and Engineering	1	4.55
Mathematics	1	4.55
Hotel Management	2	9.09
Research	1	4.55
Vocational degree/diploma*	6	27.27
Total	22	100.00

*Vocational degree/diploma includes Diploma in Aviation (Commercial Pilot's license), Diploma in Commercial crockery and Patisserie, Diploma in 3-D-Animation, Diploma in Ticketing and Tourism/Hospitality, Diploma in Journalism, Diploma in Advertising etc.

Table A5 illustrates the preferences for different destination countries. This table shows that the US was still the most preferred destination for Indian students, though with time, as competition was increasing, other destination countries were also being preferred. The pattern of choice preference for different destination countries was such that 36 percent aspirants gave first rank to the US, 23 percent to Australia, and 18 percent to the UK. This reflects that Australia has also emerged as a favorite destination for Indian students along with the US and the UK. Adding these preferences to 77 percentage points for the west together, the remaining 23 percent aspirants gave first rank to countries like Singapore, Canada, New Zealand, Germany and/or Switzerland. Thus, countries like Singapore, New Zealand are gaining in importance for Indian students and these two countries as well as Australia and the UK are coming out as great competitors for the US in the changing global scenario of higher education.

Table A5
Choice preference across destination countries, by first rank given by aspirants

Country of First Preference	Number of Aspirants	Percentage
US	8	36.36
UK	4	18.18
Germany	1	4.55
New Zealand	1	4.55
Australia	5	22.73
Canada	1	4.55
Singapore	1	4.55
Malaysia	0	0.00
Other Country-Switzerland	1	4.55
Total	22	100.00

Table A6 provides details about the prime motivators for Indian students in their decision for overseas migration. Relatives and family in India and abroad were the prime guiding forces, for the aspirants' higher learning overseas. 59 percent aspirants were persuaded by their family and relatives residing in India and overseas and 18 percent aspirants were influenced by their friends. So, the personal contacts were the main force in determining the migration decision - family, relatives, and friends thus motivating 77 percent of the respondents. The remaining 23 percent aspirants were motivated by their teachers and other contacts.

Table A6
Prime motivator in deciding preferred country/course of study overseas

*Motivator (s)	Number of Aspirants	Percentage**
Relatives and Family in India	9	40.91
Friends	4	18.18
Teachers	2	9.09
Relatives and Family abroad	4	18.18
Others	3	13.64

*Some aspirants have given multiple preferences. ** Percentage out of Total aspirants

Table A7 describes the reasons for not opting to continue higher studies in India. 62 percent aspirants felt that overseas education was of relatively better quality, with better prospects for getting jobs in India with foreign degrees/diplomas, and even to stay on abroad after finishing degrees. A lesser number of aspirants were giving their underperformance in the entrance test of the best Indian institution of higher learning, and not being able to get admission in India, i.e., just 9 percent.

Table A7
Reasons for being not interested to pursue higher study in India

*Reasons	Number of Aspirants	Percentage
Could not get admission in preferred course/ Uncertain	1	4.55
Could not get admission in preferred university/Institution/Competitive	1	4.55
Better education abroad.	5	22.73
Better post-education job-market from overseas degree/diploma	7	31.82
Changing immigration policies for students to stay on abroad and work after finishing degrees there.	2	9.09
Any Other reason(s) – relatives and family stay abroad	6	27.27

*Some aspirants have given multiple preference, ** Percentage out of total aspirants

Table A8 presents the prospective sources for meeting the expenses of higher educational overseas. In the recent times, as banks in India have become more liberal in as an important source of finance for the aspirants, 68 percent out of total aspirants

thought they would finance their higher education abroad through bank loans. 41 percent aspirants were to receive financial support from family. As ‘other’ financial sources, 36 percent aspirants were looking for foreign scholarships.

Table A8

Sources of financing study abroad

*Source(s) of Finance	Number of Aspirants	Percentage
Parents	9	40.91
Bank-Loan	15	68.18
Domestic Scholarship	0	0.00
Foreign Scholarship	8	36.36
Any Other Source	0	0.00

*Some aspirants have given multiple preferences, ** Percentage out of total aspirants

Table A9 depicts the distribution of 14 aspirants’ reasons for selecting other countries rather than the US. 43 percent aspirants preferred other countries because of their parents and relatives were staying in those countries, the most important reason among ‘*other reasons*’ mentioned. 29 percent aspirants were deterred by the higher student-fees structure in the US In course of the survey, we noticed that ‘family and relatives staying overseas’ and higher student fee (in aggregate comprising 72 percent) in the US were the prime factors in determining the choice against the US. 21 percent gave preference to other countries due to the rigid immigration policies adopted by the US in the aftermath of 9/11, along with possible intensification of terrorism there.

Table A9

Prime reason for preferring any other country instead of the US

(For those who did not prefer the US as a destination for their education)

Reason (s) of preference	Number of Aspirants*	Percentage**
Courses not available in U.S	1	7.14
High fee structures	4	28.57
Terrorism	1	7.14
Immigration laws	2	14.29
Family and relatives abroad	6	42.86
Total	14	100.00

*Some aspirants gave multiple preferences, but the most important reason was registered. ** Percentage of 14 total aspirants.

Note: These 14 aspirants preferred countries other than the US.

Table A10 reveals the reasons for the US as a favorite destination for migration and stay. 32 percent aspirants thought that the US provided good quality education and 23 percent aspirants thought they could get good jobs after getting education in the US. 32 percent mentioned other reasons viz., ideal for research, possibility of staying permanently in the US, better quality of life in the campuses and around etc.

Table A10
What do you think about the US as a destination to pursue further education?

Factor(s)	Number of Aspirants	Percentage
New Technology	2	9.09
Higher quality of education	7	31.82
Better economy	2	9.09
Job prospects	5	22.73
Any other reason*	7	31.82

** Percentage out of total aspirants

*Any other reason includes better hospitality and management, better quality of life, higher possibility of staying permanent there, ideal for research.

*** Multiple responses given.

Table A11 reveals that a major chunk of the sample aspirants (i.e., 73 percent) felt that 9/11 negatively affected the US immigration policies and as a result students were facing many problems in getting their visas.

Table A11
Negative attitude of the US towards immigrant students after 9/11

Response (s)	Number of Aspirants	Percentage
Yes	16	72.73
No	6	27.27
Total	22	100.00

APPENDIX-III

Interviews of the Educational Providers

Besides the survey of a small sample of 22 from among the students coming to the education fair, we also spoke to five amongst the vendors who were the education providers, posing before them a maximum of ten questions each. The interviews presented below are self-explanatory of the situation.

Educational Provider I:

1. Name of the organization: University of Windsor.

2. Country: Canada

3. What are the fields of studies provided by your institution?

Ans. We mainly provide Bachelor's level education in Biotechnology, Engineering, and Business Management.

4. How are you attracting the students from India and South-East Asian countries? Could you specify some of the important strategies to attract the students?

Ans. There are different strategies like advertising, direct access, and our customer care services.

5. After 9/11, is there any decline in competition to you from the US? Yes/No. If yes, then how?

Ans. Not at all, there has been no decline after September 11. In fact, the global competition has increased after that unfortunate incident. Now there are larger numbers of people who want to go to America from India. However, other global players like British, Canadian and Australian educational institutions also have tried to capitalize the opportunities provided by the process of globalisation of higher education at world level. They have intensified their activities.

6. Have you experienced any increase in educational demand for your institution from the Indian, South- East Asian and Singaporean students? Yes/No. If yes, then how?

Ans. Yes, there is a significant increase in the educational demand from India and South- East Asian countries but not from Singapore. Not because of September 9/11, but globalisation is the main reason for that increase.

7. Are you facing any challenge/ competition in the sphere of higher education from Singapore in the recent time? Yes/No

Ans. No.

8. Please specify the approximate number of students enrolling in your institution per year?

Ans. Approximate number of students from India is over 350 per year.

9. What is the main source of financing for the education of the students enrolled in your institution?

Ans. Family.

10. How many public and private universities are there in Canada? Does your institution offer any scholarship for students?

Ans. There are no private universities all are government universities. Yes, we do offer scholarships but to a very small extent and that also to a creamy layer of students who score very high in TOEFEL, GRE etc. The amount of such scholarship is \$500 thousand per month, a very small amount of money.

Educational Provider II:

1. Name of the organisation: USEFI (United States Educational Foundation in India).

2. Country: United States.

3. What are the fields of studies provided by your institution?

Ans. Basically, we are the facilitators. We facilitate the students in getting their higher education in America. Students, who approach us, come from various educational backgrounds but a large number of them want to go there for bachelor's degree or post-graduation in subjects like- Bio-technology, Bio-engineering, which are on the top of ranks, followed by Business Management and Advertising and Media and other.

4. How are you attracting the students from India and South-East Asian countries? Could you specify some of the important strategies to attract the students?

Ans. We try to reach students in schools, colleges by giving a valuable guidance for their future and ask the students to be the member of our library and also give them the required information about the USEFI activities. Through our process of providing better educational prospects in the universities of the US, students feel flexibility and variety of courses with hands on training and along with all that they can stay there in or outside the campus and work there. All this makes US education attractive.

5. Have you been facing competition from the other educational providers/countries? Yes/No

Ans. Not really, in fact the U.S. is on the top in providing education to foreign students. It is one base from where degrees are globally accepted.

6. After 9/11, have you experienced any decline in educational demand for your institution from the Indian and South-East Asian students? If so, why; if not why not despite the tightening of visa issuance and procedures? Where are Indian students going instead of the U.S.? To S-E Asia/Singapore, Australia-New Zealand, UK, Western Europe, Eastern Europe and Russia? Canada?

Ans. No, there is no such decline in the educational demand after September 11. Initially it was just a psychological factor. However, it is true that some precautions are being taken by the government of the U.S.; but there is no decline in educational demand. Even today, the US tops the list of education providing countries, and India is the top sending country of students followed by China and Korea.

7. Do you find, or have you experienced any increase in educational demand through your institution from the Indian, South-East Asian and Singaporean students? Yes/No? If yes, then how?

Ans. Yes, definitely, there is an increase in the educational demand for the US based institutions from all over the world. It can be very well proved, if we compare the number of students enrolled last year (2004) and this year (2005). Number of students enrolled in 2004 was approx. 73 thousand to 79 thousand. Number of students enrolled in 2005 is approx. 80 thousand

8. Are you facing any challenge/ competition in the sphere of higher education from Singapore in the recent time? Yes/ No. If yes, then how?

Ans. No, we don't think so. We are at the top in facing global educational demand.

9. What is the source of funding for the education in the US for Indian students?

Ans. Most of the funding comes from the universities, which are the primary sources and some agencies in the US are offering good amount of funding. But again for all that students need to go through the normal procedure of open competition for all. At the undergraduate level, it is not more than \$ 4thousand - \$5 thousand but depending upon how good your scores are, how good is your academic ground and how good you are as an individual, as the admission committee evaluates you, it depend on that. On the whole, admission is given only after evaluating the individual holistically, but one needs to have a strong economic background also.

Educational Provider III:

1. Name of organization: Royal Agricultural College.

2. Country- England, U.K.

3. What are the fields of studies provided by your institution?

Ans. We provide undergraduate and post graduate courses mainly in agriculture, business, rural land management, equine studies and property management, MBA etc.

4. How are you attracting the students from India and South-East Asian countries? Could you specify some of the important strategies to attract the students?

Ans. We attract students through exhibitions and agencies in India. Our agencies are in different states of India like one in Kerala, eight in Hyderabad, one in Gujarat and one in Punjab. In China we have one agent, and he is working very hard for us. Another agent is in Malaysia, but there is no agent in Singapore as yet. Sometimes, we also use advertisements on newspaper, Internet, etc. to attract the students.

5. Have you been facing competition from education providers in other countries? Yes/No?

Ans. No, as we are specialized in our field, we do not face much competition.

6. After September 11, is there any decline in competition for you from the side of US? Yes/No. If yes, then how?

Ans. No.

7. Do you find/Have you experienced any increase in educational demand for your institution from the Indian, South-East Asian and Singaporean students? Yes/No
If yes, then how?

Ans. Yes, definitely there is an increase in the educational demand for our institution from all over the world. In a survey it is found that, we are recognizable for our very high rapport teaching and high quality standards in the research work and now people are also becoming more ecology conscious.

8. Are you facing any challenge/ competition in the sphere of higher education from Singapore in the recent time? Yes/ No. If yes, then how?

Ans. No, not at all.

9. What is the source of financing for the educational fee of the students outside the UK?

Ans. In the UK, educational institutions like ours have to work very hard to fund themselves. We have a conference centre where lectures are delivered on how to generate income and we get packages from the state also because ours is a government University College. The fee of postgraduate course is 8.5 thousand pounds and we offer scholarship up to 3000 pounds. Some Indian government agencies and sometime British Council also offer scholarships. In the educational fee structure, we are just covering the cost of the lectures, maintenance and other facilities for the research etc. The government checks the educational institutions on regular basis so we have to keep certain quality criteria and that justifies the level of fee.

10. Please specify the approximate number of students enrolling in your institution per year?

Ans. Approximate number of students coming per year from around the world including China, South Africa, South America, Western Europe is 120. Approximate number of students from South East Asia is 30-35.

Educational Provider IV:

1. Name of organization: INTI (International Group of Colleges) comprising colleges in Hong Kong, China, Indonesia.

2. Country: Malaysia.

3. What are the fields of studies provided by your institutions?

Ans. We have Business Management, Engineering, IT, Art & Design, Hotel Management, Applied Sciences, No Medical.

4. How are you attracting the students from India and South-East Asian countries? Could you specify some of the important strategies to attract the students?

Ans. We rely on agencies, promotional Seminars, Franchise, and through advertisements etc. In India, we are working with one of our agency, named INTI (International Group of colleges) located in Pune.

5. If yes, which are the countries posing competition for you in this field? What advantages do you/they have over them?

Ans. Yes, and the main competitor is the University of Singapore. However, the advantages we have over them are: we have low fee structure, short duration courses, academic support with strong partnership in UK, US, like if students want to get their degree from US, they can complete their part I and part II of graduation level in Malaysia and the remaining part III in the US or UK, and our degrees are internationally recognized.

6. After September 11, is there any decline in competition to you from the US? Yes/No? If yes, then how?

Ans. Yes, there is obvious decline in the competition. Not much as an after effect of September 11, but as the US currency has gone through some fluctuations, students

have stopped going to US. US currency is much stronger now, earlier students had to spend \$20-25 thousand for the bachelor degree, but now they have to spend much more, which is only because of current deflation or the devaluation of that currency. So, I won't agree with the statement that September 11 has made an impact on the decline in the educational demand in US.

7. Have you experienced any increase in educational demand for your institution from the Indian, South-East Asian and Singaporean students? Yes/No? If yes, then how?

Ans. Yes, there is an increase in the educational demand for our institution but mainly in the Engineering field.

8. Please specify the approximate number of students enrolling in your institution per year from abroad.

Ans. Approximate number of students from India is 50 per year; from Africa/Southeast Asia it is 150. Approximate number of students from Indonesia/Singapore is 500, from China it is 850, and from rest of the world 1100

9. Apart from India, do you also participate in such educational fairs in Southeast Asian countries? Yes/No.

Ans. We do participate in such educational fairs in other South-East Asian countries, Middle East countries, and African countries, in fact everywhere in the whole world.

Educational Provider V:

1. Name of organization: U 21 Global, first virtual university which has got 16 universities from four continents of America, Australia, Europe and Asia. It was founded in 2003. It is online.

2. What are the fields of studies of studies provided by your institution?

Ans. Currently we have MBA programme, Master of Information System, Master in Travel & Tourism. All three are online.

3. How are you attracting the students from India and South-East Asian countries? Could you specify some of the important strategies to attract the students?

Ans. Actually, we deal with people who are working professionals in such fields with minimum of 3-4 years of experience. We are not looking at freshers. We go to corporate, companies, conferences, seminars, presentation etc.

4. Have you been facing competition from the educational providers/ countries?

Ans. No, not at all because ours is a first time experiment of its own type. In India, it is the first institute of such type where we provide such courses online. However, we do find such courses abroad but they are in the campus and the cost of such courses is ten times more than ours.

5. What is the fee in all the four countries?

Ans. For MBA courses or for any other course it is approximately \$12000 for India, for the US it is \$30,000, Australia it is \$25000, Singapore it is \$20,000.

6. After September 11, is there any decline in competition for your institution for the Indian and South-East Asian students? If so why; if not why not, despite the tightening of visa issuance and procedures? Where are Indian students going instead of the US? To S-E Asia/Singapore? Australia-New Zealand, UK, Western Europe and Russia? Canada?

Ans. I don't think it makes any difference, so there is no decline in the competition. People who want to go to US are going to US. The impact might be for the minorities i.e., one in hundred, but for general students it does not make much of a difference. As far as restrictions imposed in the issuance of visa for the US, there is no such problem for students who have scored very high and are academically very strong. On the whole, students who prefer the US go to US only.

7. Please specify the approximate number of students enrolling in your institution per year from abroad.

Ans. Approximate number of students from India is 200; from Singapore, it is 700; and from rest of the world it is 1600.

8. What is the source of financing in providing education abroad?

Ans. At present, only those parents are sending their children abroad for the education, who have money with them. It is the family only, which is the main source of financing education abroad. In earlier times, there used to be so many scholarships to attract students, but now the number of scholarships is declining. Sometimes, people take educational loans from the banks to send their children abroad to pursue further education.

9. Do you mean that only those people, who can afford the educational fee, which is the elite section of the society, can pursue their education abroad?

Ans. No, I don't mean that; in fact, it is mainly the middle class who knows the real value of education abroad. Whereas, there is a top class of people who want to send their children abroad after class tenth only.

10. Do you know the approximate number of students going abroad per year from India?

Ans. It is approximately 250,000 students who are going abroad every year. And among them, approximate number of students going to US per year is 75,000; to UK 28,000; Australia 15,000; and to Singapore and Germany about 3,500.