

The Impact of Globalisation on Higher Education: Brain Drain from India to the United States

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by

Bhaskar Chaudhuri

Assistant Professor

Department of Geography

Saheed Kshudiram College

Kamakhyaguri, Dist. Alipurduar

West Bengal

GUIDE

Prof. Anil Bhuimali

Department of Economics

The University of North Bengal

March, 2018

DECLARATION

I declare that the thesis entitled 'The Impact of Globalisation on Higher Education: Brain Drain from India to the United States' has been prepared by me under the guidance of Prof. Anil Bhuimali, Professor of the Department of Economics, The University of North Bengal and Vice Chancellor, Raiganj University. No part of this thesis has formed the basis for the award of any degree or fellowship previously.

Bhaskar Chaudhuri
10.3.2018

Bhaskar Chaudhuri

Assistant Professor

Department of Geography

Saheed Kshudiram College

Kamakhyaguri, Dist. Alipurduar, West Bengal

DATE: 10.3.2018

CERTIFICATE

I certify that Bhaskar Chaudhuri has prepared the thesis entitled 'The Impact of Globalisation on Higher Education: Brain Drain from India to the United States' for the award of PhD degree of The University of North Bengal, under my guidance. He has carried out the work at the Department of Economics, The University of North Bengal.

A.R. Bhuiamali 10/3/2018
Guide Name: Prof. Anil Bhuiamali

The Department of Economics,
The University of North Bengal
P.O. North Bengal University
Raja Rammohanpur, Dist. Darjeeling
West Bengal

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Bhaskar Chandra
10/3/18

ABSTRACT

The present century of higher education is characterized by increasing mobility, exchange of ideas, application of technologies across geographies, use of English as the medium of instructions, overwhelming emphasis on science and technology subjects, more stress on interdisciplinary curricula, more private capital in higher education, digitalisation of teaching learning processes and so on. Thus, the impact of globalisation on tertiary education is visible in all countries of the world including India.

India as a higher education service provider still carries colonial legacy. The globally highest ranked universities are mostly located in the United States. The Indian students in STEM fields interested in studying science and technology subjects enroll in the U.S, universities. A vast section of the student community prefers to stay back in the U.S. after their study period is over by availing of the facilities of H1B visa and Optional Practical Training (OPT) rules of the U.S. universities. They contribute to the progress of the developed economies of the west, which is often termed as “Brain Drain”.

The intangible resources such as skill, knowledge, experience and work culture for example can be transferred to India also by direct or indirect means. However, it is not easy to prove the consequence of brain drain or brain circulation per se on the economy of India as a developing country. In the study the outward student mobility on long term or permanent basis has been considered as a loss of precious human merit which could be used for the betterment of the Indian society in general. During the research, the reputed science and technology institutions, universities and departments are selected. The feedbacks of faculties are obtained about the consequences of globalisation on their respective institutions. The students in India were accessed by participatory approach, whereas the Indian students abroad were approached by snowball sampling techniques after selecting some students. The objective of the study is to get the real picture of mobility intentions of the students, divided into two sections – the Indian scholars who are prospective migrants and the students who are already enrolled in the U.S. and are staying there on visa. The research period has been limited to 2009 to 2016. The students who study science and technology (S&T) were studied. Apart from management and mathematics, the students in S&T are mostly mobile in terms of job as well as international

enrolment. The universities in the United States are most popular in the world. The U.S. universities occupy the highest ranks in the world.

The factors controlling mobility intentions of the students studying in the U.S. campuses include income prospects, gaining experience in a developed country like the United States, H1B visa policy, optional practical training or OPT, better education and training in the U.S. universities etc. and at the same time a vast section of students were open to go back to India due to improving job opportunities in India in at least certain sectors like the information technology; whereas, the students who study physical or natural sciences are less inclined to move back to India at least in short term. India still lags behind in innovation as well as very low investment in research and development (R&D) in physical and natural sciences. In that regard the U.S. institutions occupy the niche positions. The Indian students who are pursuing their education in India are surveyed in order to know their mobility intentions. It should be noted that settling down in the U.S. is no longer a main motto of students in all the Institutions surveyed. The pull factor of the U.S. seems to be declining mainly after the recession, surfacing of other countries as their job markets is becoming diversified, the quality of higher education offered by the source countries is improving, and the governments are encouraging the potential migrants. The teaching faculties in different higher education institutions are also surveyed. They are asked about the direct and indirect impacts of globalisation on their institutions in particular and general impact as well. Although the reaction is mixed, there is a consensus that globalisation is inevitable.

PREFACE

The wave of globalisation and free market economy positively and negatively impacts our society and economy. The higher education sector has been experiencing the impact of free market capitalistic economy in India like other countries of the world. Higher education in India attracts investments from government as well as private sources, especially in science and technology fields. The key objective of the present research is to analyze the mobility intentions of Indian students, who plan to get enrolled in the Universities of United States for pursuing higher studies in STEM or science, technology, engineering and mathematics subjects, at post graduate or Master's and Doctorate levels. The students who are enrolled in the U.S. Universities in STEM subjects are also surveyed by emails regarding their return intentions to India. The study conducted in the U.S. Institutions needed snowball sampling due to distance and accessibility of the surveyed areas. The questionnaires are analyzed by applying the latent variable approach, the bivariate probit model for reflecting the behavioural tendencies of future workforce.

The exodus of skilled scientific workforce has been considered as brain drain for India, as the vast section of the skilled labour force gets absorbed in developed country economy. The study has limitations, since it is not possible to fathom the impact of brain drain or brain circulation on a developing country like India. The scientific labour pool trained in USA ultimately contributes to the knowledge base to be used by India and other developing country also.

The research is substantiated by the publications by the Institute of International Education (IIE) Open Door Reports. The study period is limited between 2009 and 2016. The primary as well secondary data was derived during the time period only. Therefore, the critical evaluations of policy issues if any are confined in the said time period.

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Chapter 1

Introduction

1.1 The Problem

Economic and cultural globalisation influences higher education in 21st century like never before. The international higher education is a large business enterprise. In knowledge based economies, the universities are more essential as means for cross-border links and uninterrupted international flows of human capital, information, knowledge, expertise, products and monetary capital. As a result, the strict frameworks, learning prerequisites and educational service exporting and importing countries have come closer in modern times. These developments have stepped up the comprehensive diffusion of novel public management models and instructive English. Students embrace the multi-ethnic expertise and the convention of mobility, while some remain globally mobile later in their occupations (Marginson et al. 2007). In a market driven competitive economy, set free by globalization, education assumes a rather diverse role. It can hardly afford to be conformist, inflexible and resistant to change. It has to keep track of the most recent advancements in a variety of areas and be able of constructing, engrossing and transacting latest expertise and information system that are all-encompassing across different countries of the world. Thus a paradigm shift in the structure of education with considerable importance on the productivity facets of the programme of study is important. Globalised higher education of the 21st century demands ample emphasis on research and development (R&D) (Azad, 2004). The upsurge of neoliberalism and its accompanying market financial measures have gone beyond for-profit business territory and has infiltrated to sectors e.g. higher education (Shi, 2009). The wide-reaching reorganisation of higher education has seen the change in the philosophy of education as a wholesome welfare good to one which is subject to market values (Arokiasamy et al. 2012).

Amaral (2007) mentioned that the market has emerged as a new instrument of public policy. Margaret Thatcher in the UK pioneered the extensive use of market as a tool for promoting competition between public services (which included higher education) to increase their efficiency and also to maximize the provision of social benefits. Thatcher defined the three Es for managing of the public sector, i.e. *Economy* in acquiring resources, *Efficiency* in using resources, and *Effectiveness* in achieving the objectives.

If globalisation is defined as the broadening and quickening of interconnectedness on a global scale then worldwide flows comprise not just fiscal action but more prominently in higher education possibly, human resource, communications, information, ideas, know-how, policies plus practices at organizational level. The most globalised feature of higher

education is knowledge along with research; also the most globalised facets of human resources are globally mobile doctoral students, post-doc researchers as well as other faculty. Correspondingly, international flows of knowledge, workforce and investment in higher education are not consistent or multi-directional; rather frequently they are in one direction or mostly one-way and subjugated by the stronger countries and educational establishments, chiefly in the Anglophone bloc with most of the United States. The dominant educational systems are strictly determined by the amount of national investment systems, where the USA is the biggest investor in tertiary education followed by Japan and foremost European systems. The spatial distribution of the world's best 100 research universities is unbalanced and unquestionably favours the English speaking countries. The American higher education has a noteworthy universal role that extends to the gravitational pull of human resource flows into the United States (Marginson, 2008). The changing manifestation of higher education sector in India is noticeable by the comprehensive reforms in this sector – spearheaded principally by the key funding agency like the University Grants Commission. Even in a liberal economy in India, reforms are still not all pervasive. Foreign universities have limited access in India contrary to the Gulf countries or Singapore for example. Although shifting policies permit job security of teachers engaged in tertiary education, while receiving significantly healthy pay scale, the profession of teachers allows limited academic freedom and greater academic mobility as observed in the developed countries in the West. The strategy of increasing salary is aimed at retaining intelligent people in higher education, and thus to check brain drain from higher education sector. As viewed by Naidoo (2010), while multinational tertiary education is not a fresh incidence, the stride of its worldwide development, however, is surprising. Naidoo has found *four justifications* explaining the growth in transcontinental higher education; like the *shared understanding* motivation accentuates educational, cultural, societal, and political grounds for the globalised higher education and hardly considers education as part of a pronounced economic strategy. The *revenue-generation approach* suggests the market and trade aspects of cross-border higher education. It shows income as an important factor for recruiting overseas students. The *capacity development rationale* depicts transnational tertiary education as a way of satisfying the unmet demand for education provided by local constituents apart from *building capacity and also capability* for quality education.

Brain drain as an international issue was surfaced in the post war period. During that time the United States became the undisputed leader of western science and magnet for top-

level European scientists and technicians. The term brain drain was first coined by the Royal Society of London in 1963 (Hansen, 2004: 2). In 1972 the United Nations Conference on Trade and Development (UNCTAD) pioneered the idea of the —reverse transfer technology (Resolution 39-III/1972). As a corollary, the developing countries made two vital claims. The *first* was countries devoid of qualified workers should discourage the outflow and encourage in-migration of skilled workers. The *second* claim was for fiscal compensation from the first world for reimbursing for the loss of human capital. One of the suggestions was about levying tax on skilled workers leaving their mother lands. The rich nations opposed this claim emphasizing the relevance of Article 13 regarding the Declaration of Human Rights. The UNCTAD resolution was never implemented (Hansen, 2004: 2-3). The outlook about brain drain started changing in 1978, following a publication of the United Nations Institute for training and Research. It proved the existence of return migration to home countries later. Yet, the number of highly skilled workers continued to swell (Hansen, 2004: 3).

The concept of —brain drain has been in vogue for over 30 years. A developing country like India has progressively exported some of its brilliant young people abroad. However, debates regarding skilled migration have progressively shifted its focus from brain drain to newer concepts like brain circulation, brain exchange, brain gain and so on. Human movement as travellers, immigrants or emigrants increases receptiveness and broadening of knowledge as fundamental rudiments of globalisation. These movements bond varied populations with widespread fiscal and societal objectives. Migration patterns are fashioned by market forces along with official guidelines. Openings in rich nations are strong entices, and want for staff has forced many countries to slacken entry impediments. Booming migration necessitates resources, expertise, and adjustment to a fresh culture. Migration assists in cross-border remittance, which is a key supply of overseas earnings for many sprouting economies. Remittance flows to developing nations almost quadrupled between 1995 and 2006, rivalling other categories of private financing (World Bank, 2008).

Raychaudhuri et al. (2008) are of the opinion that throughout the last decade, the services sector has witnessed unassuming wave of liberalisation owing to reduction of trade and investment barriers. Most of the World Trade Organisation (WTO) members have committed themselves to the regulations and values of the General Agreement on Trade in Services (GATS) in which Article V of GATS allows the opening up of trade in services between or among parties to a monetary integration contract. Yet, in trade in the services sector, the liberalisation of educational services has experienced insignificant development.

Education services seem to be the least committed sector in the WTO (Raychaudhuri, et al. 2008). Neither knowledge nor globalisation is a disconnected procedure; rather they are allied and enduring processes. Globalisation of knowledge has received keen interest with the revolution of information technology along with socio-economic revolutions all over the world since the late 20th century (Rahman, 2008). The accelerated pace of globalisation has opened newer vistas of higher education; as the job openings are becoming more and more specialised and the modern knowledge based economy has become. Regarding skilled migration it is assumed that student mobility forms an integral part of skilled migration. OECD (2002) has observed that student mobility is potential flow of skilled workers, either during their studies or through subsequent recruitment. Students' flows represent a form of migration of skilled labour and also a precursor of subsequent migrations, mainly of human resources in science and technology (HRST).

The traditional ideas about brain drain refer to emigration of skilled and talented human resource to foreign countries, as a result of several negative factors where they are living or other reasons. Proponents of brain drain theory suggest that investment in higher education is wasted as qualified individuals leave and do not return causing reduction of social capital. As a corollary, the study seeks to focus on brain circulation as an outcome of globalisation. The term brain circulation has gained popularity in recent times. The present research highlights the United States as a pull factor for talented researchers. The crucial elements of American global interface are not synchronized on a national basis, and impede the prospective of multilateral forums concerning global mobility, recognition process and other common goods. But in other national arrangements the result of Americanisation area policy issue for governments to think. For them, the main predicament is that Americanisation is sustained by exceedingly unstable global flows of the populace and cultural transfer. The United States is an awe-inspiring brain-gainer vis-à-vis the rest of the world, while most other nation states witness a net loss of research staff to the United States (Marginson et al. 2007).

Two different opinions are in vogue about the development impact of high-skilled migration. The first is brain drain, whereby the exodus of scientists, teachers, engineers, doctors and other highly expert employees reduces the human capital and monetary revenues of sending nations (Bhagwati and Hamada, 1974). Policies like restricting the flow of highly skilled people are often observed. Contrasting with this is the view of a highly educated Diaspora as a potent force for developing the local economy through remittances, trade,

foreign direct investment (FDI), and knowledge transfers, with the experience of India and China in setting up technology firms as a result of Diaspora working in Silicon Valley for example (Saxenian, 2002). Economists have also emphasized that the possibility of migrating may spur human capital accumulation, potentially leading to a net increase in the education levels of those in the home country (Mountford, 1997).

Student mobility has been categorized here as a form of migration because of the length of stay in the United States. Pastore (2008) has distinctly categorised the length of stay and types of mobility as follows: under three months short-term mobility, under 6-9 months seasonal migration (circular migration), under five years temporary migration (circular migration), over five years long-term migration. STEM or science, technology, engineering and mathematics are special focus of the thesis along with medicine. These subjects are crucial for the development of a country.

The problem may be summarized by the example of a case (Rao, 2015) where a high-end technology is exported to India, and the developed country gets the benefits because of the jobs are supported and the valuable income taxes that are paid by its workers. The business gets established there also. The Indian company importing the technology purportedly gains due to improved efficiencies in its manufacturing process, and in this process, potentially establishing its own produce more competitive worldwide. But regarding human capital, the asymmetry in the exchange is obvious, and this factor often escapes notice.

International students had played a vital role in United States' foreign policy during the era of Cold War. Providing higher education to students belonging to non-aligned countries has helped the U.S. to maintain American supremacy as a knowledge-producer, created a generation of learned elites with favourable links to the United States, and provided a skilled work force that resulted in growth in strategically important areas (Altbach, 2004:9; Brown and Lauder, 2006).

1.2 Background of the study

The issues related to globalisation of higher education have raised interest among academicians worldwide since last two decades in particular. With increasing tendencies of commoditisation of higher education, free market economy and ICT revolution; students also opt for courses offered in the developed countries where the curricula are always happening. The United States being a centre of innovation has proved to be the best country providing

higher education in science and technology. With increasing emphasis on attracting the best intellects, liberal funding in research and development (R&D) and personal scope for career advancements, the U.S. universities are very popular study destinations in the world. Quality of education influences the decision making of international students as they choose different countries as potential destinations (International Graduate Insight Group 2013). Higher education in English language has the advantage of long tradition and the provision of various courses in a global lingua franca (HEFCE, 2014). The study is done at this background.

1.3 Emergence of the problem

It is important to find out the motivation and preferences of students when it comes to studying abroad. As Campnell (2010) has viewed that the dynamics and forces of globalisation have led to radical rethinking about the role of the university in modern society. Some believe in the radical privatisation of universities and for others, it means resistance to privatisation and re-establishment of the universities in connection to concepts like public service, public good as well as service. Universities in this globalized world are increasingly connected to each other. Contemporary neo-liberal globalisation has caused the increasing demand to make profit and expand neo-liberal hegemony in higher education in the guise of reframing tertiary education as a service industry. There are several aspects of brain movement. The under utilisation of brain power of the immigrant scholars was highlighted by Batalova et al. (2008). Brain waste not only impacts the development of economy and global competitiveness of host countries, but it also intensifies the impact of brain drain in sending countries.

The science and technology has ruled the society and economy in modern world. This factor has fuelled the growth of economy and students' preferences for technical subjects, popularly known as STEM subjects. The Indian students have demonstrated their increasing preference for STEM subjects in the universities of USA. Globalisation has resulted in specialisation and super specialisation in job market. The research emerges from this background.

1.4 Significance of the study

With above 700,000 Chinese and Indian students studying in global higher education institutions, every third mobile student belongs to these two countries. The Indian student mobility is due to a subtle combination of demand and supply factors. And on the supply side, the increasing ability to afford foreign education and rapid expansion of the education

providers are important. On the demand side, aggressive marketing by universities and a wider range of recruitment options encourage the mobility of Indian students (Choudaha, 2012). The brain drain, nowadays euphemistically termed as the brain exchange, is still alive and well. Globalisation, as argued, brings in its train a globally mobile and highly educated workforce, thus creating brain exchange among countries. But (Altbach, 2012) thinks that mobility is one-way, primarily from developing and emerging countries to rich nations. Even if there is a growing flow of ideas plus capital back to their countries of origin; one cannot deny the fact that the noteworthy economic and social contribution is actually made in the country to which an individual primarily belongs to.

1.5 The Overview

Chapter two is about related literature. Chapter three thus specifically describes the objective of the study and hypotheses adopted for testing. Chapter four clearly mentions the design of the study, variables considered, the universe of sampling techniques, tools adopted and procedure of data collection. Chapter five is related to data presentation and analysis of data for to attain the research goal. This chapter deals particularly with higher education, brain drain, student mobility and remittance issues. The research findings are exhibited in chapter six. The mobility intentions of the Indian students in India are analyzed. The teaching faculties in different institutions are also accessed for their feedback regarding the impact of globalisation on higher education. The analyses of research findings are related to mobility intentions of Indian students enrolled in STEM subjects in the institutions of USA. Chapter seven concludes.

Chapter **2**

Literature survey

2.1. Impact of globalisation on tertiary education and student mobility

Governments in Asia have heavily already invested in secondary education. Since completion rates have become better in many countries, more secondary graduates have now qualified for the tertiary study. But the industrialising economies are characterised by a lag in expanding access to higher education. This lag has led to a period of undersupply, thus fostering a strong growth in outbound student mobility from these countries. Gürüz (2008) found that foreign direct investment in combination with export-oriented development generates demand for qualifications in business, information and communication technology and skills like the English language. International student mobility is to be seen as one means of transferring skills from rich countries to emerging economies, accompanied by transfers facilitated by relocating manufacturing operations and the outsourcing of services related to business. Adopting such advanced technologies demands highest levels of skills; thus student demand for international study may be seen as a response by families to the massive amount of money paid for such acquired skills in Asian labour markets. International students in general and Indians, in particular, are in reality buying their way into the world knowledge economy. Naidoo (2010) views that FDI is a facilitator of cross-border education, and not necessarily its catalyst. Four rationales explain the growth of globalised higher education, such as 1) Mutual Understanding: The internationalisation of education is based on strengthened alliances among countries through complex networks of political and business elites. 2) Skilled Migration: Under this rationale, internationalisation attracts foreign students who are encouraged to stay back and contribute to the knowledge economy; e.g. Germany. Nevertheless, transnational programmes also facilitate student mobility to the origin country e.g., twinning programs. 3) Revenue Generation: The market and trade approach of higher education reflect income as important rationale for recruiting overseas students, e.g. The United Kingdom and Singapore 4) Capacity Building: It views international higher education as a means of fulfilling the unmet educational demand and capability for providing quality education, e.g. Malaysia, where higher education cannot meet domestic demands for higher education. Cao, (1996) found interdependence of international scientific manpower and the rise of technology in post-cold war age. Given the scale of apparent income growth from incremental migration, negative spillovers would be very big to validate restricting labour flows on international efficiency grounds. Even as research on the topic is still at a premature stage, there is as of yet no convincing proof that spillovers of such extent do exist, suggesting that it would be difficult to make an economic case in opposition to drastically increasing global migration.

These four rationales are rarely mutually exclusive. A source country is benefited from revenue generation, but the receiving country is benefited through capacity and capability building. Instead of confining the phenomenon into the north-south debate, a more balanced debate should be considered, because the impacts of cross-border higher education are wide-ranging and involve both receiving as well as source countries.

The globalisation of education has been defined by Bonk, (2009:7) as an entwined set of globalised processes casting impact on education, understandable from international discussions of human capital, monetary progress, and multiculturalism; intergovernmental organisations; ICT; dynamic role of NGOs; and multinational corporations. Knight (2004) provides a general idea of the development of the term and idea of internationalisation, elucidating that, in the framework of education; it achieved esteem during the 1980s.

The effect of globalisation on tertiary education is many-sided, thus the impacts may be summed up as below:

- the higher education arrangement, curriculum and its implementation;
- the organisation of higher education;
- the structure, function together with structure-function relations;
- the certification and assessment of higher education;
- the function of authoritarian bodies;
- the individual institutional policy and programmes
- the acts plus statutes of universities with state education acts.

The trade in education is unquestionably the most versatile one on account of its complicated character and its long-standing profits. Yet, at present efforts are in progress to build up directing principles and regulations to start free trade also in higher education. The WTO is likely to assist academic institutions plus other education providers, minus control to establish branches in other countries also, send abroad degree programs, award degrees as well as certificates with negligible control, invest in foreign educational institutions, make use of instructors for their foreign projects, set up learning and training programmes through distance method etc (Singh, undated). The General Agreement on Trade in Services (GATS) was envisaged in the Uruguay Round of GATT discussions. GATS cover more than 160 services, including education. A number of

obstructions to trade in higher education services as stated by Knight, (2006) are explicit in higher education services as shown in table 2.1.; moreover a good number of them may be phrased as —softll or —invisiblell barriers.

Table 2.1: Barriers to Trade in Higher Education Services

Mode	Barrier	Barrier types
Mode 1 Cross-Border supply	Restriction on import of electronic educational material Restriction on electronic transmission of course material Non recognition of degree in distance mode	Invisible
Mode 2 Consumption abroad	Restriction on travel based on area of study control on foreign exchange	Invisible
Mode 3 Commercial presence	Insistence on local partner Provider be accredited in home country Collaborator from formal academics Equal academic participation by local & foreign partner Disapproval of franchisee Restricting certain programmes perceived to be against national interest Limiting FDI by education providers Difficulty in approval of joint ventures	Invisible
Mode 4 Presence of natural Persons	Visa & entry restrictions Restriction based on quota for countries and disciplines Nationality or language requirements Restriction on repatriation of earnings	Invisible

Source: Knight (2006)

Globalisation is a development through which open stream of ideas, human capital, goods, services in addition to capital leads to the incorporation of markets and civilisations across geographies. Smyth (1996) argues that globalisation of capitalism has had a major impact on higher education policy and produced changes in higher education sector. In particular, globalisation has led to major restructuring of the economy, and governments have reacted —within corporatist and technocratic frameworkll to create niche technology-based industries. This has led to reform higher education with a goal to produce necessary technocrats. This strategy Smyth thinks will fail; and that if it fails, higher education will be made the scapegoat.

Cowen (1996) makes a point of similar nature concerning an ideological swing in what he recognizes as the changeover from contemporary to late-modern educational systems, whereby the well-built political as well as civic motivations of the former are substituted by the supremacy of international monetary paradigms in the latter. Hazlehurst (2011) views that during last two decades, an added flare-up in globalisation has been observed, mainly due to the growth of knowledge economies across the world. The business schools have grabbed the forces of globalisation earnestly. Wood (2010) views that the certainty of globalisation (bigger competition, unyielding pressures to innovate, fresh international markets and production choices, growing apprehensions over cultural and ecological dilapidation) have caused a common awareness that —knowledge societies, continuously developing new ideas, expertise, methods, goods and services are critical for future success. This has resulted in even better demands on universities to extend innate entrepreneurial cultures that are global in extent, such that the formation, transfer and utilisation of knowledge is continuing and developing. Similarly, the rising competition among universities and other bodies that now expand, distribute and market education are convincing academic leaders to look for exclusive ways to distinguish their curriculum from others' programs. To meet these challenges, higher educational institutions are in quest of ways to further unite their faculty, students and external society in a tactical infrastructure where ideas flow, new enterprises bloom and become flexible; and global reputation as a result increases. Knowledge expansion and the —McDonaldization of that knowledge in the global context are viewed as the key effort of 21st century universities. Internationalisation is a major factor to universities because knowledge transfers are now progressively global in nature, academic standing is more and more guided by global standing, and financial support is gradually more dependent on global issues, for instance access to cross-national research resources or tuition fees collected from foreign students. Furthermore, the competitiveness of universities in the worldwide marketplace for tertiary education is of rising magnitude for the excellence of human capital in the knowledge oriented financial system. (Barrow et. al., 2003: 3; Coulby, 2005: 24). The effect of globalisation is very much visible in educational sector. With the advent of information and communication sector, there have been changes in the Nigerian educational system also.

The institutions of higher learning have two fundamental tasks in society nowadays, including: 1) informing and getting ready, not just their students, but their own communities en bloc for the challenges and occasions brought on by globalisation, and 2) being the main

supplier of the knowledge workers that communities want to carry on and thrive in the era of globalisation. Agachi (2012) in a study has found that the eminence of Romanian higher education stands on missions like worthy education, research at the global level, and services for humanity. The contest among Romanian universities is somewhat an innovative model, which has been materialized under the fresh situations of truncated funding as well as international competition etc. in recent times. Several studies reveal that the most productive globally focused plans, whilst meshing with extensive university values like exclusive scholarship, brilliance in teaching, lofty moral standards, a student centric environment, were also intended to establish a campus and community-wide international orientation. The striking global initiatives among the universities comprise outstanding visiting scholar support, distinctive degree and non-degree certification choices, characteristic overseas study programmes, elite worldwide internships, pioneering student scholarships, part-time job alternatives in the global showground; stupendous cross-disciplinary grant occasions for faculty, and gifted overseas partnerships, all of which intertwined with their particular institutional apparitions and strengths. Back in 1995, among the universities, the role of the faculty was fundamental and decisive to an institution's involvedness in the process of globalisation. Even as many globally-focused programmes tend to accomplish, along with firm support from the key leaders (as well as enthusiastic and skilled support staff), it was a dedicated, industrial faculty, which drove worldwide accomplishment. The globally focused faculty may belong to many different places, including one's own campus, institutions abroad, associations of numerous institutions etc. Students are essential to the achievement of any university's effort to globalize its campus as well as community, and students are the main reason why a university ought to hold close internationalisation. No institution is considered as an island. Alliances with local, regional, national and international communities are critical components of international educational development and a global focus. The organisation behind a university's international efforts appears to work best when it is both centralized and decentralized. Branding of the university in the international arena is a responsibility that all must understand and share.

Singapore's —Global Schoolhouse Strategy was launched in 2003, which aimed to establish Singapore as a regional hub for education, with a goal of pulling 1,50,000 international students by 2015. The multi-pronged approach resulted in expanding local provision, attracting renowned foreign education providers in branch campuses, and enhanced quality assurance and registration for local private providers by ensuring consumer

protection for students. Therefore, drawing foreign investment by encouraging concentrations of specialized services facilitating business in the global knowledge economy has become very important. FDI in R&D, accounting IT, finance, advertising, legal services and property development has become essential for survival in this competitive world. The knowledge-intensive aspects of companies' modus operandi require a highly skilled workforce and collaborations with a range of higher educational institutions. (Ziguras et al. 2011: 135-139). Hanson (2009) views that at present, labour flows between countries are governed by policies devised by labour importing countries. The gains out of labour mobility are proved by vast cross country differences in labour productivity, which the free market economy in less developed countries has been incapable to remove. If goods, capital, and technologies cannot lift poor countries' incomes to well-off country heights, then the free mobility of labour proves to be a reliable solution.

The four dimensions of a knowledge-based economy were identified by McKeon et al. (2001):

- Innovation and technological transformations are all-encompassing, and sustained by an efficient national innovation system (i.e. a set-up of institutions in the public as well as private sector whose actions and interactions kick off, import, amend and disperse innovative technologies along with practices).
- Human resource progress is pervasive: education plus training are of lofty standard, extensive and persist throughout a person's working life and beyond.
- A capable infrastructure functions, mostly in information and communications technology (ICT) that lets people and businesses to willingly and affordably access related information from around the planet.
- The business setting (i.e. the monetary and legal guidelines of government and the blend of enterprises working in the market) is accommodating enterprise and novelty.

The forces of globalisation have caused the rising demand and value of international education, thus creating an increasingly competitive worldwide marketplace for higher educational institutions. So, students seek international educational exposure for international marketability. Many institutions now collaborate on research activities across the borders to attract and retain talent and also to access new sources of funding.

As IT industry is important in STEM, Castells (1989) found four spatial implications in the IT industries. 1. There are discrete spatial divisions of labour in tandem with their own labour and functions. 2. There is a spatial hierarchy around the —milieus of innovation located in specific locations. (3) The decentralised production functions tend to drive and reproduce the spatial hierarchies. (4) The central —milieus of innovation in spite of the fact that the industry is otherwise footloose. The milieus form universities, places of higher education, e.g. Silicon Valley; government sponsored R&D sites (e.g. Cold War LA), R&D divisions of corporations already linked to technology (e.g. IBM's New York), and networks of R&D centers (e.g. Austin). Choi (1995) has shown differences in performance between international and domestic S&E researchers working in the U.S. While there was no significant difference in the number of grants, amount of grants, or success rates in getting access to grants, in both normal and fractional count of publications, and the international scientists were consistently more productive compared to their domestic counterparts. These differences may be the result of strong incentive among international scientists to engage in research.

2.2. Challenges and Commitments under WTO and GATT

WTO was set up on January 1, 1995 by substituting GATT at the Uruguay Round. As said by European Commission —the GATS is first and foremost an instrument for the benefit of business. GATS has two mechanisms: (i) The structure of agreement including 29 articles and (ii) a number of Annexes, Ministerial resolutions and so forth., plus the schedules of pledges accepted by each Member government, which connect them to permit market access and/or eliminate present limitations to market access. This accord by and large covers all the services incorporating the education services. This is an earliest multilateral accord, which provides —legally enforceable rights to trade in all services. Only the services offered wholly by the government do not fall within the purview of GATS. While the services afforded either by the Government partly, or some prices are charged, as happens in education or provided by the private players shall fall under the ambit of GATS rule. Some disagree that any institution that should make payment, like fees, ought to fall under GATS as it presently exists (WTO, 1994).

The broad modus operandi of commitment under GATS is that —countries submit their schedules under five sub sectors of education and four modes of supply of education (WTO, 1998). Singh (undated) views that the four means of supply of education include cross-border Supply; consumption out of the country; profit-making

presence/franchisee besides twinning programmes. The design is of an open, international marketplace where services, resembling education, may be traded to the top bidder. GATS cover the international educational services whose educational organizations are not solely provided by the public sector or those that have profitable principles. In India, exemption in education from the application of GATS is not possible since education at all stages, predominantly at higher education, is not completely free; i.e. some fees are paid. According to UNESCO (2006) the academic profession is fundamental to the modern university. Nevertheless, the professoriate has stern problems like worsening of salaries and working situation, augmented responsibility, and other stresses. The trademark of the modern University is mass right of entry. Higher education makes both private as well as public goods. Though there will be camaraderie, each society will identify its public good in its own way. Recently, the public good characteristic of the university is retreating, yielding place to market forces and private profit. Private higher education is the top growing sector of postsecondary education internationally, and tertiary education systems are fairly miscellaneous across the world. Globalisation has internationalized higher education a propos the dynamics as well as patterns of student mobility. Research universities are essential establishments in the new knowledge-based financial system.

Neoliberalism first emerged as a distinguishing strand of liberal ideology in the 1940s with a key influence from the 1970s (Gamble, 2007). As an ideology, its major doctrines can be summed up as —free-market individualism, private property, constitutional order, and the minimal state (Robertson and Scholte, 2007: 865). Neoliberalism indicates specific policies for comprehensive governance (Robertson and Scholte, 2007). The scope of neoliberalism is not limited to the monetary sphere, nonetheless, but has been extended to the political, cultural along with ideological fields. The expression neoliberal globalisation is applied because neoliberalism has been entrenched in globalisation since the 1950s. The scheme of free market economy was widely promulgated by Margaret Thatcher and Ronald Reagan after 1980 and this still has deep influences in modern political, economic as well as cultural systems. Under the disguise of globalisation, neoliberalism has turned out to be the prevailing philosophy and has been embraced by the world (Zheng, 2010). As documented in the Department of State (2013) of the United States press release, the U.S. and India announced 21st Century Knowledge Initiative in November 2009 to fund institutional enterprises between Indian and U.S. higher education institutions, through exchanges of faculty and research and innovation partnership in the areas of import.

Moreover, climate change, food security, sustainable health as well as public health received attention. Each side committed US\$5 million for the resourcefulness, leading to grant awards of up to US\$250,000 to nominated projects.

The other controls from neoliberal globalisation on tertiary education and ISM are—a vision of students as human capital (Apple, 2000:60). Besides, neoliberal globalisation, endorsed by multilateral or bilateral activity, has influenced higher education and ISM. As Torres et al. (2006: 10) argue, the World Bank and the OECD have advocated more privatisation and decentralization of education, which include a thrust toward privatised and decentralised education. The neoliberal globalisation suggests four most important reforms for universities correlated to a) competence and accountability, b) accreditation as well as universalisation, c) international competitiveness, and d) privatisation. Two of the core bases of globalisation are information along with innovation, and they, in sequence, are greatly knowledge intensive. The enormous movement of capital is dependent on information, communication, and knowledge in the global market. Since knowledge is decidedly moveable, it lends itself to globalisation without difficulty. There is evidence that globalisation enhances the demand for education and also the quality of education by ways like *economic*: increasing payoffs to tertiary education in an international, science based and knowledge based market make university education a bare —necessity to acquire —good jobs. This, in sequence, transforms the stakes at subordinate levels of schooling, and radically alters the meaning of secondary schooling. The next part is *socio-political*: demographics or the changing family institution and democratic principles increase demands on universities to offer access to groups that conventionally have not attended higher education (Carnoy, 2005). Globalisation and internationalisation of higher education and student mobility across geographies is imperative area of study in the present context mostly because of the pressing requirement of generating skilled human capital in modern knowledge economy. Building a modern labour force necessitates teaching 21st century skillfulness. This 21st century expertise must embrace the aptitude to solve comprehensive problems by thinking ingeniously and generating innovative ideas from several sources of information (Silva, 2009). The past nine years have observed a 53 percent increase in enrolment in higher education leading to 153 million university students internationally (Labi, 2009). On the flip side, Altbach (2012) in a recent paper views candidly about the realities of brain drain and the pitfalls of globalised higher education. Globalisation heralds a time of an internationally mobile and exceedingly knowledgeable workers causing brain exchange among nations. But

the current events suggest that mobility, is in one direction, typically from developing as well as rising economies to better-off nations. There is an increasing stream of ideas and funds back to countries of origin, however it is undeniable that the major monetary and social input is made in the country where a person is first and foremost located. The unpleasant truth about globalisation; as he argues is that it remains exceedingly imbalanced. Even as brains may not be drained permanently, they are nevertheless drained off, with the likelihood (not that normally put into service) of returning to their origins.

Under the financial weight in the present circumstances, universities in the industrialised countries decided not to continue to maintain international students, particularly with a waning number of scholarships presented by governments. Overlaid upon these reactions surface a novel discussion of educational markets along with institutional restructuring associated with the apprehensions of revenue creation for universities, constructing institutional profile and reputation, bringing diversification of the campus, and the improvement of human capital for a rapidly globalizing market. The variable imaginaries have been portrayed as —driven largely by developments in information and communication technologies, globalisation has given rise to new forms of transnational interconnectivity. It has implied that while people continue to live in particular localities, these localities are increasingly integrated into larger systems of global networks¹. As a range of freely related ideas, the neo-liberal ideas of globalisation entails the expansion of market associations through which citizens, societies, institutions, and states are nowadays assumed to be interconnected globally. It speaks of the rule of international ‘free trade’, applying it uniformly to both goods as well as services, comprising education, which was once known for its national disposition only (Rizvi, 2011: 693-700). According to the OECD Policy Brief (2009) several issues contribute to the movement of human resources in science and technology (HRST). On top of economic inducements, such as chances for healthier pay and career progression and right to use better research aid, mobile talent also expects greater quality research structure, the prospect of working with —starl scientists and more liberty to debate. Policies vis-à-vis research, ethics in addition to intellectual property also impact their selections. The researches of Wildavsky (2010) discloses a rising number of countries are striving to produce a choice group of —global universitiesl that are proficient of contending

¹ Rizvi also mentions the text in quotation in ‘Making a Difference’, Australian International Education’ by Davis Dorothy & Mackintosh Bruce, UNSW Press.

with the foremost American institutions. The examples are cited from the French and German cases battling with educational egalitarians in an effort to fashion European Ivy Leagues.

Loose regulations of tertiary education, growth of institutional self-rule, and the introduction of added market mechanisms are applied by governments to make institutions more receptive to fresh demands, snowballing competition and market prospects. A stronger stress on the specific paybacks of higher education and user-pay methods inspires a bigger role of private funding and providers. As stated by NCITE, (2000); the U.S. higher education in addition to training, have a significant stake in up keeping that their remunerations as an industry are suitably represented, both for national information purposes as well as their international trade discussions. Altbach (2006) finds the effects of globalising higher education summarised as *The Academic Profession in the Era of Globalisation* where the academic profession is central to the modern university. But, the professoriate faces several problems like decreasing salaries and working conditions, greater accountability, and also other pressures. *Access and equity* are major issues. The hallmark of the 21st century tertiary education is mass access. *Higher education and social cohesion* are vital since higher education produces both private plus public goods. Despite some commonalities, each society defines its public good differently. Recently, the public good angle of the university have retreated yielding place to market dynamics and private benefits. *The private and public mix in the development process* is an obvious offshoot of 21st century higher education. Emerging international model for the research universities are sophisticated central institutions in the new knowledge economies, and many countries are facing challenges of developing and sustaining them.

2.3 Population trends, international migration and brain drain debates

The factors controlling the Indian student mobility to the U.S. may be linked to the U.S. policies like short American study time, with Master's courses lasting 1 or 2 years. And most importantly successful foreign students traditionally have had a fair chance to bag an allowance to stay further in the U.S. In early 2000, the U.S. congress discussed a Brain Act (Bringing Resources from Academia to the Industry of our Nation Act) offering foreign students the scope to receive a work permit in the U.S. provided a U.S. employer willing to pay a fee of US\$ 1000 can hire graduate students (Straubhaar, 2000). According to Lavakare (2007) over the years, the widespread characteristic of the Indo-U.S. education has continued to be the topmost goal of the Indian students to pursue study in the United States and for the academic circles and professionals to view the U.S. for original fields of research and

knowledge creation in sophisticated areas of technology. The U.S. is looked at as a prospect to proficient and financial development of the academia. For Indians, the U.S. has all the time offered innovative opportunities for education as well as research in cutting edge areas, with a growing admittance to the budding international job market. In the current decade of globalisation of economy in India, smart job offers in India's corporate sector have given a new face to the mobility of Indian students many of whom now consider returning to India to engage in demanding and rewarding assignments in the emergent transnational sector in India.

Since 1990s, skilled labour migration has been growing swiftly. Skilled migrants; frequently defined as those holding a tertiary degree or inclusive specialised job skill – consist of architects, monetary professionals, accountants, engineers, scientists, technicians, teachers, researchers, health professionals, chefs and experts in information technology (IT, including computing experts, computing engineers, management professionals etc.) (Vertovec, 2002). Students from low-income to middle-income countries often study abroad for long duration to pursue whole academic programmes (Ziguras, et al., 2011). Internationally mobile students are distinguished with citizenship, permanent citizenship and educational background. North America and, Western Europe (NA-WE) are the most coveted destinations because the lion's share of the HSM as well as the ISM belong to third world. HSM settled within this region constituted 30.2 percent of the total (Dunnewijk, 2008).

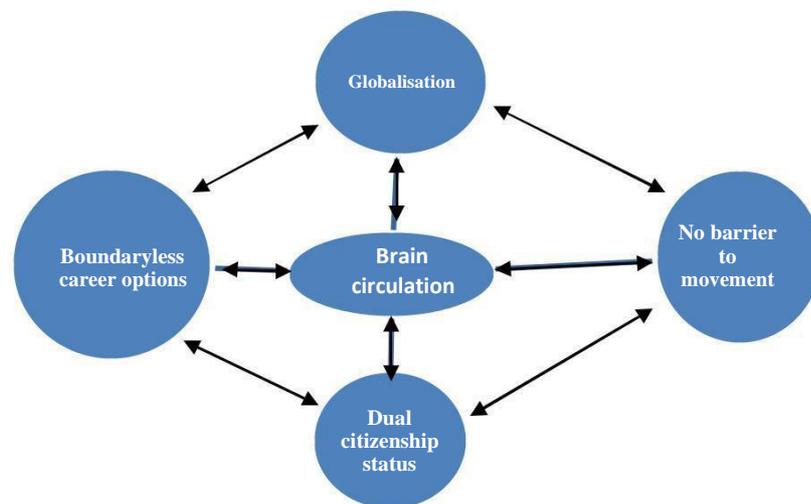
Human migration and mobility from developing to developed region has become a key concept of brain drain and brain circulation literature in last few decades. As a proponent of brain drain debate, Bhagwati and Hamada (1974) argued that the fiscal cost was predominantly vital, with several developing nations subsidising education with the hard earned money of taxpayers, and at the same time the high-skilled persons who leave the country hardly contribute back into the tax arrangement. More lately, much of the apprehension has been with the hypothetical externalities health and education trained people have on the welfare of others in their societies. The possible significance of such externalities, complementarities, as well as economic costs in reality strikes us as imperative monetary questions. It was mentioned by Rizvi (2005), also, that a great proportion of global students did not go back to their native places to engage in the developmental responsibilities, leading to the phenomenon of 'brain drain'. The term —brain drain‖ gained popularity in the late 1960s when growth of skilled migration from developing to developed regions gathered momentum. The industrialised nations, by drawing meagre skilled labour, were following

policies that were expensive to poorer countries in short and long term. The outlays were not only the result of output and service creation, but also counting on the means in which education was funded through added monetary costs linked with public financial support to education. A variety of policy suggestions, mainly focussed on taxation, was floated, although none were ultimately put into action. Part of this may be ascribed to possible complications related to execution measurement (including impermanent migration and migration related to education enrolment in developed world) and vagueness about the welfare consequences (Commander et al. 2001). Brain-drain has become a significant factor of global politics and educational scholarship. A growing number of developing countries are taking into account their highly skilled people abroad as a prospective talent for national progress. Transformed policies are accordingly being developed with the aim of pick up these expatriated faculties. Above and beyond the repatriation return alternative generally endorsed in these policies with uneven success, and a second one has lately emerged, called the Diaspora option. The so-called brain drain is a major problem in the case of Africa, characterised by severe lack of skilled people like doctors and engineers often hinder progress of the continent. Of the total African emigrants to USA, about 74 percent are well educated experts. Certainly this truth makes it obvious that uneducated African migrants to USA are trivial (Maru, 2008). It is striking, that immigrants from Africa comprise chiefly of well educated persons (about 95,000 of the 128,000 African migrants) (Carrington and Detragiache 1999). Findlay (2001) finds that the multinational corporations have their head offices in the capital metropolises of the developed part of the globe, whereas most labour intensive production and service work systems are situated in branches in developing countries. All these factors have demanded an escalating intensity of skilled labour migration between —sites of controll in the industrialised world and other parts of their worldwide organisation. Kalça et al. (2012) view that the developing countries endeavouring to raise their physical capital stock by overseas funds cannot find a sizeable resource in terms of human capital due to factors like brain drain.

The present emphasis on circulatory migration of skilled persons may be highlighted in this literature review. The students after receiving industrial knowledge develop into skilled migrants often moving from one country or region to another. Concerning brain circulation, Daugeliene et al. (2009:49) views that in today's knowledge society, although the one-way ticket is still considered important, globalisation has ensured the temporary workflows almost common-place. Brain exchange has allowed both the sending and

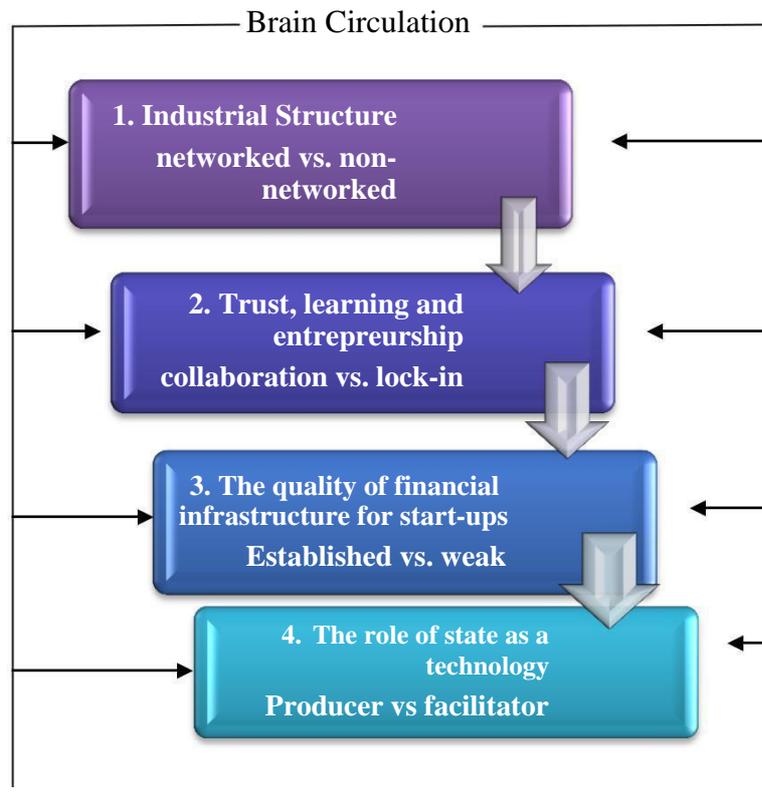
receiving countries to benefit from the specialised experiences of expatriate professionals – and not only from their remittances. Brain circulation is thus a multifaceted phenomenon, covering the movement of highly skilled human resource among different countries and institutions, with the purpose to create, share and spread knowledge and thus stimulate the knowledge-based economies. Hence, it is important to comprehend the factors having a considerable impact for surfacing, expression and consolidation of brain circulation worldwide. As Tung (2008), mentions brain circulation becoming achievable on account of quite a few key developments (Fig. 2.1):

Figure 2.1: The factors stimulating brain circulation



Source: Tung (2008)

Figure 2.2 Structural factors of brain circulation



Source: Yun-Chung, 2007

Yun-Chung (2007) stresses upon four main structural factors of the brain circulation construction in Fig. 2.2. These four structural elements focus on highly skilled people working in two different geographies and these organizations are required to team up when inspiring brain circulation (in this case Silicon Valley and Hsinchu). 1) There ought to be a decentralised industrial system with well-built division of labour and novelty among networked firms. 2) The agglomerated financial systems between the two places, firms must support free enterprise and knowledge between the firms on the regional plane. Equally, high-tech firms have to try to stay away from being locked into the social relations while continuing the collaborative division of labor and inter-firm learning in the high-tech sector (e.g. Hsinchu – Silicon Valley). 3) Venture capital is important to technologically uncertain establishments with super-profit compensation when it does Initial Public Offering (IPO) or is obtained by other corporations. 4) The function of the state in supporting technology transfer must be considerable. Governments ought to finance private sectors, since they put more importance on their innovation, thus stirring economic development and its competitiveness. Brain circulation has received considerable attention in international policy

circles as Vertovec (2007) stresses those multiplicities of policy-makers in national and international institutions advocate actions to ease the movement of highly skilled people, working both in their native soil and in foreign countries. Their thought is that brain circulation could be handled in methods that bring recognizable —win-win-winl consequences; to be precise, payback for receiving countries by meeting labour market deficiencies, for sending countries through assuaging remittances for progress, and for migrants through offering service and control over the utilisation of their salaries. The circulation of knowledge-workers is also being recognised as a possible answer to a number of challenges involving modern-day migration.

The diaspora option has come under full completion in relation to migrations of highly skilled human resources. As a brain gain policy it differs from the return opportunity in the sense that it barely focuses on the physical repatriation of the citizens living and working out of the country. Its purpose is the remote enlistment of the Diaspora's resources and their association to the country of origin's programmes. The surfacing of international computer software industry has facilitated electronically skilled emigrants to circulate their skills back to home countries. The growth of software industry in Bangalore, India, has made probable for the Indians trained in the United States, often green card holders, to initiate their individual firms in India or start ups rather than take less significant positions in Silicon Valley.

The brain drain literature is full of contradictory resources. Sahay (2003) argues that in the case of the Indian Diaspora, human migration has hardly resulted in Brain-Drain but Gain as brain drain from India during 1990 to 2000 hardly impeded the economic growth. The Indian Diaspora in the U.S. did not stimulate the growth rate in the United States during the phase vis-à-vis other diasporas. Nevertheless, the Indian Diaspora has contributed towards the progress of India. Economically influential as well as politically well-connected Indian Americans have contributed towards the improvement of Indo-American relationships. As per the estimate of IOM (2008) ever since the 1960s, the average annual net number of migrants moving to the rich countries has generally been rising, with the maximum value of 3.3 million people each year reached during the period of 2000 to 2005. For 2005 to 2010 period, the possible value is close to standard net migration stage likely for the 1990s (specifically 2.5 million persons annually), but the long-standing level expected for 2010-2050 is rather lower at 2.3 million people every year. Although this anticipated long-term point is almost a third lower than the pinnacle achieved during 2000 to 2005, it is also 40

percent above the normal annual net migration to developed countries between 1960 and 2005 (1.6 million).

The population of developed nations is ageing rapidly. In the preponderance of developed countries, the fall in fertility started over a century ago and, since the 1980s, their fertility has reached the lowest level. As a result, in developed nations there are already less kids than people of 60 years or older. Additionally, their working-age people are to fall in spite of the expected increase from net migration. The following figure shows the past trends and future projection of migration from developing to the developed countries.

In accordance with existing estimation, for Asia and Latin America during 2000-2005, about 1.4 million people annually were lost in emigration by each region. In contrast with urbanized countries, the lion's share the developing countries expect ample swell in their working-age human resources and the emigration is anticipated to generate only diminutive decline in those populations. These figures underscore a key point, explicitly over the subsequent four decades; the developing world can basically be the supply region of as many inhabitants of working age as are probably be in demand in developed countries with declining working age populations.

The dynamics of student mobility over and above the internationalisation of higher education have altered deeply since the 1990s. Formerly, the primary incentives to study abroad were linked with educational, political, cultural, geo-strategic plus development aid matters. In general there was a positive vision of the mobility of students and academics as an opportunity to the world, in the expectation of constructing elite international networks. Universities received overseas students and academics but made hardly any unique attempt to enlist them. These days, although the original impetus remains valid, cross-border education (Knight, 2004) is being increasingly controlled by financial concerns. Governments perceive it as a pivot of economic growth and as a way of improving the superiority of their higher education and also a source of income giving them a competitive advantage. Individuals distinguish it as an added boost to their profession in the international job market, or even as investment for potential future emigration. This trend is the outcome of larger-scale mobility of skilled people in a globalised market; the declining transport cost and communication; countries supporting university and cultural interactions and to drawing highly competent workers; the aspiration of tertiary institutions to make added income or boost their status and elevate their profiles, both nationally as well as internationally; or the necessity for a well-read labour force in promising economies where local capabilities are often quantitatively and

qualitatively insufficient. The prime trends in cross-border tertiary education are characterised by growth and diversification, i.e. growth in the number of students registered in overseas education programmes; and diversification of the supply of cross-border education.

2.4 Student mobility in a globalised economy

According to UN (2010) World Migration Report, during the subsequent few decades, worldwide migration is expected to differ in size, access and difficulty, as a result of increasing demographic inequality, the effects of ecological alteration, and most recently international political and fiscal dynamics, industrial revolutions as well as social networks and so on. These makeovers will be related to increasing opportunities – from fiscal growth and poverty decline, to social and cultural novelty. The economic recession has slowed emigration in many parts of the planet, though it does not appear to have enthused considerable return migration. With financial revival and job growth, the majority experts anticipate this recession (which started in 2008) to be a brief phase. Carefully administered migration may be a dominant strength for financial growth and novelty in destination countries, and reduction of poverty and progress in poorer countries of origin, in addition to provide significant human freedom and human development results for migrants and their families. Contemporary societies are knowledge societies. Their development depends more on the accrual and exploitation of intellectual rather than material assets. The creation and communiqué of innovative knowledge come to pass ceaselessly and at mounting rapidity (Shils, 1992). Beine et. al. (2001) emphasize, in a poor financial system with a scarce growth prospective, the return to human capital is expected to be little and therefore leads to a restricted incentive to obtain education, which further restricts growth. Nevertheless, the key distinction between a clogged economy and one allowed for migration is not only in openings but also in the inducements faced by people. The likelihood of migration constitutes a greater than before motivation to gain skills and consequently there is a probability of a useful brain drain in conditions of ambiguity. Given that only a section of the human resources will truly emigrate, in the long run the sending country might possess a higher average stage of human capital, i.e. a brain gain happens. A further method for advantageous results is also discussed in Mountford, concerning the development of educational classes in a financial system. A brain drain can modify the dynamics of ‘class’ construction and thus an under-educated class do not develop (Mountford, 1997). Schiff (1999) put forward that due to emigrants an ‘empty space’ in their families and work place is

created, hence worsening the social capital but thanks to the current advancements in communication technology the issue can be solved and thus form an indispensable part in the migratory process. Even if this is a novel strategy and still budding, the global Diaspora has an imposing prospective of information, skill flows, representing a potential ex-post channel of brain gain. (Pănescu, undated). Another more customary potential for brain gain is in the course of return migration. When migrants revisit home country they are expected to bring back knowledge and skill, monetary resources, networks and innovative skills which may be industriously exploited. There is some proof that return migrants tend to pick for entrepreneurship and well educated persons are more likely to be dynamic after arrival (Commander, 2001).

The research on brain drain has of late shifted focus to brain circulation (Chaudhuri, 2011). GATS agreement of the WTO under Mode 4 encompasses movement of natural persons. GATS mode 4 appears to present the best of both hemispheres for endorsing circulation at least in theory. Whereas GATS has been in effect since the execution of the Uruguay Round in 1995, its significance for global migration is inadequate. Nowadays, the preponderance of labour flows between countries is directed by guidelines designed, monitored and enforced by labour importing nations. The United States is an important destination for skilled workers availing of H1B visa as well as for international students. The U.S. hosts about 19.7 percent of all global migrants from less developed countries. Hitherto, the United States is the origin country for merely 1.2 percent of the intercontinental migrants. Industrialised countries retain obstacle to immigration not because they do not recognize noteworthy profit from greater worker inflows. Paradoxically, the labour mobility makes migrants considerably wealthier but their prosperity has unassuming effects on net incomes in receiving nations (Hanson, 2009:4). In a financial crisis, the well-off nations have certain political compulsions also, particularly in view of unprecedented unemployment level in those countries. The United States has been the hard-hit country due to high unemployment rate. The geographical boundaries appear ineffective as the skilled persons constantly immigrate and emigrate as an integral part of brain circulation. India's technical prowess has eased the globalisation of the IT industry accompanied by the globalisation of Indian skills. Consequently owing to technological innovations in the IT industry substantial amount of investment was drawn by the IT sector through past few years. The IT industry even in a global recessionary period has remained a decidedly vivacious and fluid industry. All these led the U.S. in the 1990's to assuage their tough approach towards immigration, and H1B

visa advanced to the Indian techies is an outcome of Indian ingenuity. In this circumstance of a healthy economic milieu, the much coveted H1B was allowed for thousands of skilled Indian Diaspora for working in the United States. The demand for an H1B visa was skyrocketing until the world monetary system went topsy-turvy from 2008. In contemporary knowledge and information age, substantial information formation, knowledge management, knowledge utilisation, and knowledge propagation have become the catchphrase of the 21st century. As a consequence, countries for instance the United States have made relaxation in their immigration policies to draw sophisticated proficiency in IT, pharmaceutical, biotech and drug manufacturing, in addition to other advanced fields prior to September 11 disaster. The IT and other associated industries have pressurised the U.S. government to double H1-B visas from 65,000 to 130,000. This excluded the 586,000 students who preferred to study in the U.S. institutions from around the world (Altbach, 2004). Several researchers prove that a majority of Indian students engaged in higher education in the U.S., never return to India. Given the popularity of courses like MBA, IT, engineering and biotechnology among the Indian students in the American campuses; it seems to be plausible that a majority of the skilled diaspora form a significant share of brain bank in the U.S. (Bhuimali et al. 2006). The relative advantage of the United States due to its control of brain bank may be gauged from the fact that about 50 percent of all U.S. science and engineering human resources possessing doctorates are immigrants. Globally cross-border educational trade has been on the rise. Over 2.5 million university scholars are at present studying abroad resulting in a 70 percent boost in the figure in the past decade and despite recession, the number of overseas students will continue rising in the long run. India and China form a majority of overseas student population in the U.S. campuses. The American institutions of higher learning have been facing scarcity of funding in the present times. However, the restricted degree of globalisation in India's institutions has protected the Indian establishments from the depredation of worldwide financial depression in 2008-09, as noticed in archetypal American organisations. Ranging from the Ivy League universities to lesser-known colleges, diminishing proceeds and the dilapidated worth of endowments have resulted in joblessness, annulment of latest construction works and even slash in enrolment figures. But after enrolment advertisers, the slump is not widespread across the U.S. A few states for example Texas and Wyoming possess a tax base in oil or minerals besides being not part of the financial decline. So educational hiring has been stable. The preponderance of states with hard-hit manufacturing base or with tax deficit, though, has harshly truncated hiring in the commerce along with academic segments. Graduates keen to enter academic circles are

equally experiencing a much tougher marketplace. Scholars belonging to the baby-boom age group, appointed in the late 1960s, were anticipated to have started retiring at this time. Chaudhuri (2010) viewed that student mobility from the science and technology departments to the U.S. has been guided by few key factors, such as, income, career prospects, better teaching and learning and acquaintances. The back mobility is influenced by growing economy in India accompanied by growing salary.

2.5 The Causes of Mobility

The factors shaping the option of a foreign destination comprise: *The destination country's immigration/visa policy* for overseas students is a significant determinant. The probable determinants are the minimalism of obtaining a visa, the work prospect during the study period or to stay in the country upon achievement of a foreign degree. Employment prospective in the host country plus the country of origin determines the option of immigrants. A host country will be more attractive if students are allowed to continue work there after completing their studies, or if their education is really recognized in the neighbouring job market after they revisit home.

Acknowledgment of skills and overseas qualifications in the country of origin in addition to the host country needs more discussion. The lack of sanction of degrees along with professional schooling attained at home can drive mobility. Students may wish to study in a foreign country since they may have decided to work there and have hardly any alternative but to attain the local qualifications that would permit them to do so. Furthermore, the qualifications gained in the host country may have the superior global appreciation. Conversely, the absence of recognition of foreign schooling restrains mobility as it may limit their job scenario after homecoming. The UNESCO and OECD together have prepared the *'Guidelines for Quality Provision in Cross-border Higher Education'*, demanding better intelligibility and global collaboration as a way of making possible the worldwide acceptance of skills (OECD, 2005).

The cost of studies abroad includes living expenses, tuition fees; financial assistance etc. judged against the country of origin deserves mention. The lesser the cost disparity, the more mobile scholars are likely to be. Besides geographical and cultural immediacy, the same tuition fees as local students are a very important factor guiding student mobility.

The status and supposed excellence of the institutions of learning along with educational structure in the host country weighed against the country of origin guides the

mobility of students. A destination country supposed to be having a benefit in this field is an incentive to mobility. International ranking systems are making it gradually more achievable to evaluate institutions of higher learning all over the world (Salmi et al., 2007).

The option of post-secondary education existing in the country of origin and the potential of admission could encourage students to move to a foreign country.

The networks of current and former students from the country of origin are vital when information about overseas institutions is comparatively inadequate, the advice of other students will play a central role, as will the outlook of becoming incorporated into one's own (student) society abroad (OECD, 2004).

The language spoken in the destination country plus the language of training is an encouraging factor of student mobility. English presently is the major globalised language and it ranks second as the most extensively spoken lingua franca in the world, the English-speaking countries enjoy a distinct advantage.

The perceived quality of lifestyle in the host nation is with all varieties of travel, environment, religion, cultural and tourist attractions are crucial factors.

The geographical, as well as the cultural closeness of the host country and the country of origin in addition to historical ties, justifies the considerable student flows between the countries of French-speaking Africa and France for example.

The infrastructure and community benefits obtainable to foreign students in the host nation embrace medical treatment; university lodging, language education centres, etc. are enthralling factors too (IOM, 2008).

Boyd, (1989) has mentioned about family, friendship, and community networks guiding much of the recent migrations to industrialised nations. Current interest in these networks accompanies the development of a migration system and the rising awareness of the macro and micro determinants of migration.

2.6 STEM migration

A special emphasis has been given in this study on the STEM disciplines, which includes science, technology, engineering and mathematics. Globalised economy worldwide has drawn much of its vital power from technical areas. Hence, the technical subjects have become immensely popular in recent times as a consequence of the dynamics of the globalised economy. In accordance with S&E Indicators published by the U.S. National

Science Foundation (NSF) 2010, S&E means physical/biological sciences; mathematics/computer sciences; agricultural sciences; social/behavioral sciences; and engineering. It is somewhat dissimilar from the OECD definition. The OECD (2009) definition does not incorporate programmes such as agricultural and social and behavioral sciences as are contained in the NSF definition.

The STEM graduates are most likely to get H-1B visa due to their technical knowledge and skill. Human resources moving to the U.S. under H-1B visa category are categorised as the skilled immigrant in the U.S. The H-1B ‘non-immigrant’ impermanent overseas guest worker programme is a precious instrument for employers to draw and keep the —best and brightestl immigrants in the science, technology, engineering, and math (STEM) categories. Since employers may appeal for a permanent home for their H-1B workers, the visa is at times depicted as a —bridge to immigrationl that can permanently retain the efficient foreign STEM workforce in the U.S. and therefore develop the competitiveness of United States. Partly because of this, the Senators Hatch, Rubio, Coons and Klobuchar elucidate their fresh bill —the —I-Squared Actl — that might more than quadruple the volume of the H-1B programme. Nonetheless, for the major users of the H-1B programme, this view is a sham as in 2012, the 10 employers accepting the major number of H-1B visas belonged to the industry of outsourcing and offshoring advanced American jobs. Scores of the jobs benefitting the H-1B employees should have as a substitute gone to U.S. workforce. The top 10 H-1B employee companies were approved an astounding 40,170 visas, which is approximately half the total yearly quota. The table below has shown the H1B visa rules facilitating the permanent immigration status to the immigrants in the United States. Hira (2016) has mentioned about the H-1B program can serve as a conduit to permanent immigration for educated and skilled foreign workers.

Table: 2.2**Green Card Applications for H-1B Workers & Immigration Yield****Top 10 H-1B Employers Sponsored Few Workers for Permanent Immigration in 2014**

2014 H-1B Rank	H-1B Employer	Offshoring Business Model	2014 Applications by Employers for Permanent Labor Certification	New H-1B Workers, 2014	Immigration Yield = Green Card Applications/ New H-1B Workers
<i>1</i>	TATA CONSLTANCY	Yes	2	5,650	0 percent
<i>2</i>	COGNIZANT TECH	Yes	57	4,293	1 percent
<i>3</i>	INFOSYS	Yes	552	3,454	16 percent
<i>4</i>	WIPRO	Yes	0	3,048	0 percent
<i>5</i>	ACCENTURE	Yes	13	2,275	1 percent
<i>6</i>	TECH MAHINDRA	Yes	48	1,781	3 percent
<i>7</i>	IBM	Yes	161	1,462	11 percent
<i>8</i>	LARSEN & TOUBRO	Yes	35	1,298	3 percent
<i>9</i>	SYNTEL	Yes	23	1,080	2 percent
<i>10</i>	IGATE	Yes	127	886	14 percent

Source: Website: <https://www.foreignlaborcert.doleta.gov/performance/cfm>, Economic Policy Institute and Hitra (2016)

There is two bases these firms employ H-1Bs rather than Americans: 1) an H-1B employee can lawfully be paid less than an American worker, and 2) the H-1B employee gain knowledge of the job and subsequently migrates back to the country of birth and takes away the job with him. Hence, the H-1B was christened as the —Outsourcing Visa by the political circle of India. Rather than retaining jobs from leaving the shores of the U.S., the H-1B does the contrary, by aiding offshoring and providing companies with inexpensive, temporary

service – while sinking job openings for American high-tech workforce in the course of action. The I-Squared Act hardly does anything to defend against this, whereas greatly increasing the dimension of a profoundly faulty programme that hastens the off-shoring of the U.S. high-tech jobs and diminishes the future capacity of America to innovate (Hira, 2013).

Sperotti, (2014) has discussed a new dimension of student enrolment in STEM at the backdrop of the globalised knowledge economy. Over the last twenty years, novel forms of doctoral degrees being merged with practical working experiences have emerged. These professional or industrial PhDs-doctorates are the ‘modern doctorates’. Most of them in Australia, UK, and the United States are adult professionals; who plan to further augment their qualifications and skills. Here, doctoral students or employees work on research projects at the funding company or employer with the objective of further boosting collaboration between academia and the private sector while enhancing the career prospects of students or employees by combining employment, learning, and research. Altbach (2012a) has found that the brain drain is now euphemistically called brain exchange, and it seems to be alive and well.

2.7 Conclusion

The waves of globalisation and internationalisation of tertiary education have touched the developed as well as the developing world in an unprecedented manner in the last few decades. Much of the strength of today’s globalised economy lies in innovation and increased spending on R&D, The overarching influence of science and technology in modern civilisation has been a deciding factor of increasing student mobility worldwide. The United States is a world leader in the graduate enrolment of STEM subjects. India is a major source country from where every year more than one lakh students go to the U.S. for pursuing higher studies. The exodus of human capital in various subjects including business/management, humanities, and social sciences have raised heated debates in India – often termed as ‘brain drain’ of merit which could have benefitted India in the long run. The counter arguments are also in vogue since; brain circulation has become common nowadays due to heavily interconnected world economy and production model located in different geographies of the world. The economic recession of the 21st century has further established the increased human mobility in reverse direction from countries, for example like the U.S. to India of scientific manpower employed in the U.S. The growing economy of India has caused further

diversification of jobs on the Indian soil. On the flip side, the H1B visa restrictions in the U.S., growing joblessness etc. have prompted the expatriate Indians to move to India or other greener pastures.

The idea of brain gain has also become popular in recent literature, in the context of the highly interconnected global economy. Apart from remittance income, the supposed gains through invisible remittances in the form of social remittances are considered to be vital for developing countries like India. Hence, no such concrete proof exists in favour or against the theories of brain drain or brain gain. However, some sectors like the IT, computer science have witnessed more brain circulation in recent times owing to the nature of the industry. This may not be the case of the Indian physicians who migrate to the U.S. in maximum number compared to other OECD countries. Indian healthcare sector is woefully short of physicians, particularly in rural areas. Although the medical brain drain from India to the U.S. is not so serious, the problem is cognizable. Moreover, the lopsided nature of global trade relations has placed the industrialised countries in an advantageous position. The Indian scientists after completing their studies in the developed nations generally find the research environment and infrastructure of the U.S. more attractive. So, brain drain or brain gain concepts must be judged very carefully, rather than generalizing the terms.

Chapter 3

Our Study

3.1 Introduction

The chapter deals with international student mobility to international destinations with special reference to USA. The student mobility from India to the United States has varied in various years in respect to various fields of studies as well as the levels of studies. The international student enrolment in major countries as well as the U.S. has been discussed as comparative analysis with special reference to the U.S. and also the STEM field enrolment trends have found special mention here in this chapter.

Higher education is an export commodity, as internationalisation of higher education in 21st century knowledge economy has had a significant effect. The ripple effect of economic crisis is felt in the trade related to higher education also. Most of the developed world has been affected by recession fairly badly and the higher educational institutions in the U.S. are no exception. Many countries despite the spectra of recession, has emerged victorious in pulling overseas students due to cost advantage, job opportunities, friendly government policies. The U.S. has become more vigilant in issuing student visa as well as work visa in recent decades.

3.2 Objective

The present research intends to focus on STEM student mobility intentions from India to the higher educational institutions of the United States of America. The mobility pattern is to be researched from the viewpoint of the impact of globalisation on higher education in India as well as the United States. As the U.S. is the most popular destination for the Indian scholars enrolling in the U.S. higher educational institutions, the study intends to emphasize on the U.S. STEM education and the related job market. So, analysis will be done about the trends of international migration of STEM scholars from India to the United States for pursuing studies in the U.S. institutions as a corollary of the study. The responses are obtained from the faculty employed in selected institutions of India teaching science and technology subjects. The migration and mobility intentions of the Indian students studying science, technology, engineering and mathematics (STEM) are studied thoroughly on the basis of several parameters. The objective is to find out the mobility intentions by using statistical analysis of students' behavioural issues.

This thesis highlights the growing themes from the data gained from the qualitative case study of Indian STEM student flows to United States and presents primary reflections on neoliberal globalisation, higher education strategies and international student mobility (ISM).

3.3 The Study Area

The research area is related to India and the United States. The higher educational institutions imparting STEM education has been selected for the research. The students who study science and technology are selected. Field surveys are conducted in selected departments of sample Indian universities, IITs in Kharagpur, New Delhi and Kanpur; IIM Kolkata, IIM New Delhi, IIM Bengaluru; IISc Bengaluru, etc. The non-participatory surveys were done by sending emails to the student union bodies of the selected institutions of the United States; such as, Massachusetts Institute of Technology, Cornell University, United States Naval Academy, Rice University etc.

The study institutions are mentioned in detail in the concluding chapter.

3.3 Hypotheses tested

The most popular universities or institutions in the United States where the students from India get enrolled in STEM subjects shall be taken into account. So, the key hypotheses are:

- Students studying in pure science and mathematics are more in favour of staying back in the U.S. than the students of Information Technology (IT).
- PhD students in the STEM are eager to stay back in the U.S. compared to other categories of the STEM.
- IT students studying at all levels do not want to stay back in the U.S. for better opportunities in India.
- For scientists willing to return, family considerations and giving back to motherland are important factors.
- For Indian students staying back, earning money is the most important consideration.

3.4 Definition of the terms

International Higher Education: Internationalisation of tertiary education suggests the process of integration of international, intercultural, or global dimensions, functions or delivery of tertiary education.

Globalisation: Globalization or Globalisation involves the free movement of capital, goods, people, services, technology as well as information. Globalisation is the action or procedure of international integration as an offshoot of some shared world views, products, ideas, and related aspects of cultural customs.

Diaspora: Diaspora is scattered population originating within a geographic locale. Diaspora can refer to the human migration and mobility from its original homeland.

H1B visa: The H-1B is known as a non-immigrant visa in the U.S. under the Immigration and Nationality Act, section 101(a) (17)(H). It allows the U.S. employers to temporarily employ foreign workers in some specialty jobs.

Labour mobility: Labour mobility refers to the labour movement within an economy and also between different economies. Such mobility is important in the study of economics, as it looks at how labour, as one of the key factors of production, influences growth and production.

Brain Circulation: Brain circulation is an alternative model. The idea of brain circulation suggests the movement of skilled labour from one country to another in search of a better job and research opportunities etc.

Brain Drain: Human capital flight or brain drain means the emigration of highly skilled individuals from a country. Research is not conclusive as to whether there are net benefits, "brain gain", or net costs, or "brain drain", or the flight of human capital for the sending country.

9/11: The September 11 attacks are referred to as 9/11, which means a series of four terrorist attacks by al-Qaeda on the United States on September 11, 2001. The attacks had killed 2,996 people and injured more than 6,000 others, resulting in \$10 billion in property and infrastructure loss.

OECD: The Organisation for Economic Co-operation and Development (OECD) is an intergovernmental economic organisation having 35 members, established in 1960 to stimulate economic development and world trade. It is a forum of countries for showing commitment to democracy and market economy, thus providing a platform for comparing policy experiences, seeking answers to common hurdles, identify best practices and coordinate domestic and international policies. Most OECD members are well-off economies with very high Human Development Index (HDI) and are considered as developed countries. OECD is also an official United Nations Observer.

Student mobility: Student mobility refers to the scope for students to work or study overseas whilst pursuing their degree programme ranging from undergraduate or postgraduate levels. Student Mobility can be incoming and outgoing as Bilateral Exchange programme or one-way Study Abroad programme.

Remittance: Remittance means the transfer of money by foreign workers to an individual in his or her motherland. Money sent home by competes with global aid as one of the biggest financial inflows to developing countries.

The Financial crisis of 2007–2008: This is also known as the global financial crisis of 2008. This is considered by many as the worst financial crisis since the 1930s known as the Great Depression.

Ivy League Universities: Most elite universities in the USA. These universities are labelled as the 'Ivy League'. Starting as a group within an NCAA Division I intercollegiate association, they started as eight most competitive athletic colleges within that division. The universities are Harvard (Massachusetts), Yale (Connecticut), Princeton (New Jersey), Columbia (New York), Brown (Rhode Island) Dartmouth College of New Hampshire, the University of Pennsylvania in Pennsylvania and Cornell University in New York.

Recession: The NBER has defined an economic recession as a significant decline in monetary activity spreading across the economy, lasting months or years, generally visible in real GDP, real income, lack of employment, industrial production, as well as wholesale-retail sales.

Foreign Education Providers: Foreign education providers are the foreign universities who set up their educational campus in a country other than their country of origin. The foreign institutions have to clear few parameters financially and academically before they establish education in a foreign country.

E-learning: E-learning theory views the cognitive science principles of efficient multimedia learning by using electronic educational technology. Online education, virtual classrooms, video conferencing come within its ambit.

Memorandum of Understanding: A memorandum of understanding or (MOU) is a non-binding agreement which takes place between two or more parties outlining the terms as well as details of an understanding, which includes each party's demands and responsibilities. An MOU is most often the first stage in forming a formal contract.

Sabbatical: Study leaves or sabbatical demands academics to produce academic works during their paid leave away from teaching and administration.

Technology Park: A landscaped development having high specification office space and residential and retail developments, which encourages localisation of high tech companies, e.g. information technology, software development etc., hence giving each the advantage of economies of scale.

World University Ranking: The Times Higher Education World University Rankings or the QS rankings list the best international universities and are the international university performance tables to judge world class universities across their core missions, e.g. teaching, research, knowledge transfer and also international outlook.

BRIC countries: In economics, BRIC refers to Brazil, Russia, India, and China, which are deemed to be at the same stage of newly advanced economic development. It is rendered as "the BRICs" or called as "the BRIC countries" or "the BRIC economies" or often termed as the "Big Four".

Rashtriya Uchchattar Shiksha Abhiyan (RUSA): It is a holistic scheme for higher education in India started in 2013 by the Ministry of Human Resource Development of the Government of India. RUSA provides strategic funding to higher institutions in India. Funding is provided by the central ministry.

Demand and supply: Demand refers to the quantity of a product or service as desired by buyers. The quantity demanded refers to the amount of a product people want to buy at a certain price; the relationship between price and quantity is the demand-supply relationship. Supply refers to how much the market can offer.

R&D: Research and development or R&D or R+D, also termed as RTD in Europe as research and technical or technological development (RTD), is used as a general term for activities in relation with corporate or governmental innovation.

MOOC: A massive open online course (MOOC) is free Web-based distance learning programme designed for the large segment of geographically dispersed students. The word MOOC was coined in the year 2008 by Dave Cormier for a curricula of the University of Manitoba.

Big Science: Big science is a term which describes a series of changes in science that occurred in industrial countries during and after World War II because scientific progress gradually came to depend on large-scale projects normally sponsored by governments or in different countries.

Erasmus Mundus: The Erasmus Programme or European Region Action Scheme for the Mobility of University Students is a European Union (EU) student exchange programme started in 1987. Erasmus Plus is a new programme which combines all the EU's present schemes for education, training, youth as well as sport, started in January 2014.

CHAPTER 4

Sample Design

4.1 Design of the Study

The research design is the framework that has been created to find answers to research questions here. A research design is the set of methods and procedures used in collecting and analyzing measures of the variables specified in this research problem or research study. The design of this research study defines the study type i.e. descriptive and fundamental study.

1. Identified the research problem clearly and justify its selection, particularly in relation to valid alternative design that has been used,
2. Reviewed and synthesized previously published literature associated with the research problem,
3. Clearly and explicitly specified research questions central to the problem,
4. Effectively described the data which will be necessary for an adequate testing of the hypotheses and explain how such data will be obtained, and
5. Described the methods of analysis to be applied to the data in determining whether or not the hypotheses are true or false.

4.2 Research Methodology

Globalisation and its impact on the courses are studied by collecting data on the most demanding STEM courses of various Indian as well as foreign universities based on subjective or purposive sampling. Online surveys are conducted in various departments of universities, considered to be popular among Indian students. Both teaching faculty and especially student community are to be covered during the survey. The analysis makes serious endeavour to unearth the causes behind enrolment pattern of Indian students in the U.S. At the same time the other countries attracting students from India in their tertiary education sector will find adequate attention in the present research.

In terms of the methods to be employed, the research will be based on extensive surveys, plus on interviews (with individuals and groups) along with desk research. The proposed key research instruments are to be standardised, closed questionnaires. The questionnaires will focus on diverse target groups: a questionnaire for students aiming to study abroad; a questionnaire for Indian students enrolled at higher education institutions of different countries (distributed personally and by e-mail); and a questionnaire for professors in higher education institutions. The survey targeted employees at various organisations

institutions selected for the survey. The initial sampling strategy involved compiling the names, addresses and e-mail IDs of potential participants who would be the sampling frame. The collection of the participant names and contact information depended to a great extent on the institutions and student unions. Given the limited time frame for the survey, the students abroad were surveyed by e-mail and also to forward the cover e-mail letter to their friends. So, this is a non-probability sampling method or —snowballll or —referrall sampling (Atkinson and Flint, 2001; Rea and Parker, 1997). This sampling is used as the size and distribution of the sample are not known with absolute certainty, and also the probability that the potential respondent selected as part of the sample is unknown. Besides, the participatory surveys were conducted in India. Since the scope and extent of such surveys are limited, non-participatory surveys were also conducted simultaneously.

The ordered response model has assumed that the explanatory variables have the same impact across each and every category of the dependent variable – is called the —parallel regression assumptionll (Long and Freese, 2001). In the generalized ordered models, a separate parameter vector was estimated for each of the J categories (e.g., $\beta^1, \beta^2, \dots, \beta^J$). The parallel regression assumption is tested with an approximate LR test and a Wald test (Long and Freese, 2001) and it was rejected by the researcher.

Even if the parallel regression assumption was violated, the research is based on the ordered probit model since their shortcomings outweighed their advantages. The multinomial logit model rarely preserves the inherent ordering of return intention categories and does not incorporate this information during estimation of the coefficients of the explanatory variables. This causes a loss in the efficiency of the estimators (Long, 1997). As the —definitely not returnll category has relatively few observations, it shows more intense feeling about returning than —unlikely to returnll category. So, the results are presented from the ordered probit model. A bigger sample size and fewer explanatory variables would make the generalized models more feasible. The model selection is based on the estimation of exploratory ordered probit models. The ordered probit model was taken as the estimation method based on the characteristics of the dependent variable. The procedures of model selection are used to determine the set of regressors to ascertain in the final estimation model. The set of possible regressors do not have the same number of valid points (cross-sections) due to missing responses. After determining the initial set of explanatory variables the next stage in model selection might be complicated by non-linearities plus interactions among the regressors. A saturated model incorporates all probable variables, interactions as well as

higher-order terms using a backward elimination procedure. At each step, terms that are statistically insignificant individually and also do not contribute significantly to the fit of the model are excluded. The elimination procedures are continued until further model reduction involves a significant deterioration in model fit. The results of the study are derived from data from survey collected by the author. In the econometric analysis of return intentions, the emphasis is on determining the factors important in explaining the return intentions of engineers. The dependent variable is the likelihood of returning to India rooted in the response to the question —What about your current intentions about returning to India? The following table reveals the possibilities presented to respondents.

Dependent Variable, Return Intentions

Response Categories	Index
Students	
I will return as soon as possible whenever I get a job in India.	1
I will return immediately after getting a job in India.	2
I will definitely return but not soon even if I get a job in India.	3
I will probably return to India.	4
I don't think that I will be returning.	5
I will definitely not return.	6

These choices comprise a set of ordered categories where each consecutive category points to an increase in intensity in the employees' intentions to stay in the U.S. The categories with a higher index value show stronger feelings about not returning (staying) to India. This suggests that positive coefficients on the independent variables indicate an increase in the probability of having non-return intentions, whereas the negative coefficients point to an increase in the probability of having return intentions. The change in intensity between categories can hardly be assumed to be uniform. The observed discrete index is given by

$$y_i = \{1, 2, 3, \dots, J\} \quad (1)$$

where i is the observations and J is the number of categories of the dependent variable. The assumption is that a continuous and latent variable underlies the discrete, ordered categories may be explained by a set of observed characteristics and a random element as given below:

$$Y_i^* = \beta'X_i + u_i \quad (2)$$

As y^* is the unobserved —return intention variable, X is taken as the $(k \times 1)$ vector of explanatory variables, β is considered as the parameter vector to be estimated and u is taken as the random disturbance term. The relationship is shown between discrete, observed y and unobserved, continuous y^* is mentioned below:

$$y_i = \begin{cases} 1 & \text{if } Y_i^* \geq \mu_1 \\ \mu_2 & \text{if } \mu_1 < Y_i^* < \mu_2 \\ \mu_3 & \text{if } \mu_2 < Y_i^* < \mu_3 \\ \dots & \dots \\ \mu_J & \text{if } \mu_{J-1} < Y_i^* < \mu_J \\ J & \text{if } Y_i^* \geq \mu_J \end{cases}$$

as $\mu_1, \mu_2, \mu_3 \dots \mu_{J-1}$ are threshold parameters – linking y to y^* estimated along with explanatory variable coefficients. The ordered probit specification assumes an (underlying) normal distribution for the error term and is used in this research to estimate the model of return intentions. According to an ordered probit specification, the probability of an observed response falling into an arbitrary category j is mentioned below as:

$$\text{Prob } i = j = \frac{\Phi(\mu_j - \beta'x_i)}{\Phi(\mu_j - \beta'x_i) - \Phi(\mu_{j-1} - \beta'x_i)}$$

where Φ is the cumulative normal distribution.

Distinguishing this probability in relation to the explanatory variables renders the marginal effect of each on the probability of choosing category j . Model estimation has been carried out by maximum likelihood (ML) estimation technique as it has been shown that ML produces the unbiased and efficient estimates, especially for nonlinear models. As part of the non-participatory survey, an e-mail cover letter was mailed to potential participants identified through the internet search process. Employees were invited to take part in the survey and to forward the mail to others who they felt would fit the potential survey population.

The survey results are not to be generalized. Rather the combination of participatory observation and —snowball sampling resulted in responses from science, mathematics and technology students and faculties in India as well as the United States.

The empirical specification of the model can be found in an ordered probit model – estimated about return intentions of engineers where the return intentions are the dependent variable discussed in the previous section in the six categories from values 1 through 6. The wage differences existing between the home country and the country of destination is viewed as the

primary factor of migration flows. The push-pull factors are constructed as dummy variables assuming the value —one| if they score high on a 5-point Likert scale and value of —zero| if they were relatively less important in return intentions, i.e. received a score of —three| or less. Push factors emanate from the ambiance of the home country that prompt people to migrate. Various institutional, professional, economic and political factors, and also unsatisfactory income, inadequate work environment, absence of career development opportunities in addition to economic and political uncertainty are guiding factors in brain drain. Pull factors, are the opportunities offered by the host country e.g. better income, better learning as well as professional development prospects for attracting the skilled human resources to the host city. To explain the return intentions several —subjective| variables are applied to determine the significance of a range of social, economic, political and human capital factors. The empirical model is chosen based on goodness-of-fit statistics; mainly the AIC and McFadden’s adjusted R. The likelihood ratio test was used too when comparing nested models. So, these three statistics produced similar results. The details of the model are supplied in Appendix A.3. The next section intends to discuss the rationale for considering each variable and their empirical significance of engineers in determining the return intentions/willing to settle in Kolkata. The push-pull factors are dummy variables taking on the value of —one| if they have scored high on 5-point Likert scale (e.g., received either —five| or —four|) and a value of —zero| if they were comparatively less important in determining return intentions (e.g., received score of —three| or less) (Güngör, et al., 2007). The paper attempts to define the change of intention for showing the difference between a student’s initial and current return intention. The target population is the Indian students studying in the Masters in STEM and medicine courses in selected top 20 institutions of United States. The questionnaire focuses on perception related variables covering various issues ranging from family, career, financial issues and so on. The web based surveys were conducted with the help of Indian student associations and snowball survey methods during February 2010 to July 2016. About 3.3 percent population was responded in the survey. In table 4.1, a set of education related variables will attempt to focus on the effects of how the level as well as subject of study may cause change in return intention.

Table 4.1 Variable Description and Coding Scheme

Variable description and coding scheme	
Set 1 : Demographic and family related variables	
Variable	
Age	Age
Years of stay in the U.S.	Duration of stay in the U.S.
Work experience	Years of work experience prior to study
Single or married	1 for single, 0 otherwise
Family backs migration plan	1 if family supports non-return, 0 otherwise
Father tertiary educated	1 if father tertiary educated, 0 otherwise
Set 2: Education related variables	
PhD	1 if PhD, 0 otherwise
STEM	1 if STEM, 0 otherwise
Medicine	1 if medicine, 0 otherwise
OPT opportunities after education	1 if OPT, 0 otherwise
Have had education other than USA and India	1 if education received, 0 otherwise
Scholarship opportunities	1 if Scholarship, 0 otherwise
Set 3: Home perception related variables	
Better work opportunities	1 if work opportunities, 0 otherwise
Competitive wage at India	1 if wage competitive, 0 otherwise
Good use of skill at India	1 if skill use, 0 otherwise
Good lifestyle in India	1 if good lifestyle, 0 otherwise
Close ties at home country	1 if close ties, 0 otherwise
Better work opportunities work opportunity with specific faculty	1 if work opportunities, 0 otherwise

A proxy of geographical mobility has also been included. The variables are discussed below. By the latent variable approach, the bivariate probit model is mentioned as below:

$$Y^*_1 = X\beta_1 + \varepsilon_1$$

$$Y^*_2 = X\beta_2 + \varepsilon_2$$

$$E[\varepsilon_1 | X] = E[\varepsilon_2 | X] = 0$$

$$Var[\varepsilon_1 | X] = Var[\varepsilon_2 | X] = 1$$

$$Cov[\varepsilon_1, \varepsilon_2 | X] = \rho,$$

As Y_1^* has latent propensity to change one's intention, Y_2^* has latent propensity to return, and X is the vector of explanatory variable. Y_1 is 1, in case there is change of intention ($Y_1^* > 0$) and 0 otherwise, and Y_2 is 1 if the present intention is to come back ($Y_2^* > 0$) and 0 otherwise. In table 2 the breakdown of explanatory variable has been shown by the dichotomous outcome variable; that means whether the intention of returning has changed or not (Soon, 2010).

Data is to be collected from various sources:

Secondary data from

- a. Secondary data published by the Institute of International Education (IIE) with support from the State Department's Bureau of Educational and Cultural Affairs (United States) and the U.S. State Department.
- b. CGS International Graduate Admissions Surveys

Primary data from

- a. Field survey data based on survey among students in selected departments of Indian Universities/Institutions.
- b. Online survey of scholars selected departments of sample U.S. universities.

4.3 Population of the study

The scholars belonging to different science and technology streams participated in the survey. Out of 1752 students in the Indian students' category studying in the sample institutes in India, 465 responded. Another survey was conducted among the faculty in those institutes. The respondents were 89. The faculty members also belong to the same departments as the students. Only 18 percent of the faculty members responded in a closed ended questionnaire. The Indian students studying in the U.S. were also surveyed by online questionnaires. The surveyed institutions are California Institute of Technology, Missouri University of Science and Technology, Massachusetts Institute of Technology, Michigan Technological University, Carnegie Mellon University, Cornell University, North Carolina State University – Raleigh, Princeton University. The STEM students in postgraduate and above were surveyed. The sample population is 2647.

4.4 Sample and Sampling Technique

Stratified random sampling technique has been used for calculation of the sample. The technique involves dividing the sample population into smaller groups called strata. In

this case the strata are formed based on members' shared attributes or characteristics. This technique is useful in this study because of variety of attributes of sample selected here. Hence, at least one sample is selected for fair representation even if probability of it being selected is 0. The STEM subjects are equally represented at the time of selection of sample. The U.S. government approved list of STEM subjects are considered for sample selection. The broad groups are taken into consideration. The samples are taken from broad groups of subjects.

Box: 4.1 STEM Subjects taught in United States

The major subjects in STEM list as listed in ICE.gov are agro-ecology and sustainable agriculture, computer and information science, engineering, biological science, mathematics, air science, air power studies, naval science, intelligence/command control/information operations others, behavioural science, physics, chemistry, earth science, psychology, computerised forensics, archaeology, econometrics, clinical laboratory science, management science and quantitative methods etc.

4.5 Tools of the Study

The available tools for testing the hypotheses are:

1. Questionnaires
2. Schedules and
3. Observation techniques.

Questionnaires were distributed and data were collected personally in the institutions located in India; for abroad, the online questionnaires helped in collection of data.

The schedule was presented by the researcher. The questions were asked and the answers were noted down by the researcher. The list of questions was a mere formal document. It has aided in delimiting the scope of the study and to focus on the circumscribed elements needed for the analysis. It also helped delimiting the subject. For example questions were asked about their intention to migrate to the U.S. for higher education and the possible causes. The expatriate students in the U.S. were also asked about their return intentions and

the factors governing their decisions to stay or go back to India. For example, income, career prospects, job opportunities, meeting with family, cultural factors or contribution to mother land were major decisive factors.

Observation technique was used for evaluation research. It is useful for evaluating cognitive and non-cognitive aspects of the respondent. It is applied in evaluation performance, attitudes, interests, values towards their problems. The observation method was applied to the respondents in Indian institutions for assessing subjective issues in migration decisions. There are emotional issues attached to families, friends and place of origin of a person which can be assessed by talking to the respondents and getting responses rather than by filling structured questions only.

4.6 Procedure of Data Collection

Primary data were collected by a combination of participatory and non-participatory surveys. Both closed ended and open-ended questions were included in the questions. The domestic surveys were conducted by the participatory method. The questionnaires were distributed among the respondents. Both students and faculty were included. The international surveys were conducted by sending emails to the Indian students' associations of the respective institutions. Since all the contact lists of respondents were not accessible, snowball sampling techniques were used in order to get access to rest of the participants. Many emails were not answered, even if the available responses were sufficient for data analysis. Secondary data source includes data published by the Institute of International Education and Times Higher Education Ranking.

Chapter 5

Higher Education in a Globalised World, Brain Drain, Student Mobility and Remittance Issues

5.1 Introduction

Higher Education in the 21st century is a globalised and a viable endeavour. The role of nations is weakened to a great extent, yielding place to private participation. The yearly profits from higher education are predicted at \$ 30 billion. Globalisation has obliged the universities to spread out their scope ahead of geographical and political precincts. The U.S., Australian and British universities setting up branch campuses in China, Singapore, and the Gulf are not uncommon phenomena now. India is following their path by allowing the foreign campuses to set up branches in Indian soil also. Universities are developing franchisees to teach their courses using their brand value by not getting involved in the direct business of teaching. Among the twelve service sectors stated by the WTO, ‘education services’ also falls as one. The providers of higher education are impressed by the scenario of free market and globalisation of higher education sector. During the preceding decades, the market surfaced as a mechanism of public strategy in Europe. Thatcher’s government delineated the three **E**s for managing the public sector: **E**conomy in the acquirement of resources, **E**fficiency in the consumption of resources, and **E**ffectiveness in the accomplishment of objectives (Sizer, 1990).

Amaral (2007) views those countries exporting higher education, such as the U.S., U.K., and Australia have started codes along with principles of fair practice for the assertion of academic excellence in terms of education services for foreign students. O’Malley (2014) cites the example of United States’ universities which continue to dominate the top 500 in newer rankings done by different organisations. The migration of skilled persons from India has assumed a situation of chain migration, as suggested by Banerjee (1983) where migration induced by urban-based contacts is low if the sectors where job opportunities are growing are dominated by non-migrants.

5.2 Higher education system in developed countries

Worldwide, higher education has experienced several changes that can be summed up as a process of internationalisation, globalisation, commodification, and massification. Over the next few decades, higher education will continue on a path of unparalleled transformation. There are a number of forces at play, from technology to urbanisation, and how they evolve in the coming years will determine the nature of higher education globally, its mode of delivery and the rules of engagement among stakeholders. Government spending on tertiary education (as a proportion of all spending in education) is declining and so,

spending on research and development is shifting to funding being directed to applied (as opposed to pure) research. In turn, ‘big science’ projects are progressively being funded by industry and subjected to the global objectives of enterprises. The role of governments in setting and pursuing public agendas is being eroded by weakening trust in institutions (higher education included). By contrast, multinational companies are playing a more prominent role in the decision-making processes of national governments. Short-term exchanges (such as the Erasmus programme under the auspices of the European Commission or the ASEAN International Mobility for Students) are likely to be strengthened as governments, funding agencies, enterprises and students realize the gains by students from such experiences (for example, soft skills). New corridors of study abroad activity are likely to emerge, and these will be more in a two-way mode (for instance, the U.S. students of Mexican origin studying in Mexico and vice versa; German-Polish cross-border mobility); in part, these developments will be driven by the increased role of Diaspora population in opening new channels of economic and knowledge activity. The global footprint of institutions and systems is likely to become greater in scope and complexity in relation to strategic partnerships (for example, the Monash–Warwick Alliance; INSEAD’s multiple partnerships with Wharton, Tsinghua, Columbia and MIT). The MOOC-isation of higher education will have settled, in that the disruption it caused in the education-services industry will have been embraced and alliances of partners across several industries will have been established. In the long term, MOOCs will enhance the quality of the educational experience and will be seen as an additional learning resource. Accreditation and recognition of qualifications will be standardised and probably homogenised among those countries with trade-in-services agreements. This move is likely to boost international student mobility. Private provision and personal contributions to education will become prevalent globally. Boundaries between public and private providers will become more blurred due to government cuts and increased private contribution. The gap between large, elite, for-profit, quasi-public universities and the rest will be considerably wider. This may trigger mergers and is likely to influence where international students choose to study.

5.3. Higher education in the United States

Higher education in the United States consists of a diversity of institutions of higher learning. High quality research and enough funding have enabled the colleges and universities of United States to be among the world's most important institutions – thus making them major destinations of international students, professors as well as researchers in

the search of academic distinction.² There is a 4,495 Title IV-eligible, degree-granting institutes; out of which 2,774 are four year and 1,721 two year institutions in the United States.³ The accreditation agencies rate universities and colleges for assessing academic quality as a measure of the quality of the degrees the U.S. institutions offer. The United States has had a wide-ranging arrangement of both public and private higher education institutions for over more than 200 years (OECD, 2009). According to the Encyclopedia Britannica,⁴ a noticeable trait of American education system is its resemblance to the German model due to it's the de-emphasis on lecture and examination process. In both Germany and United States, students are assessed in line with their performance in individual courses because of the importance of discussion and written essays in the evaluation system. The U.S. model of higher education was accepted by the Philippines and encouraged the reforms in the educational systems of Japan and Taiwan following World War II.

The STEM students in the U.S. from different countries are recorded by the National Center for Science and Engineering Statistics (NCES) every year. The NCES (2016) data shows the enrolment pattern of international students in the United States. The Doctorate-granting institutions characterised by very high research activity are the foremost producers of S&E degrees at the bachelor's, master's, and doctoral stages, but other institutions are also essential in educating S&E graduates. The following facts and figures reveal the enrolment in the U.S. institutions.

- In 2013, doctorate-granting institutes with notably high research activity awarded 73 percent of Ph.D. degrees, 41 percent of master's, and 37 percent of bachelor's degrees in Science & Engineering subjects.
- Master's awarding colleges and institutions awarded 29 percent of all Science & Engineering bachelor's degrees along with 26 percent of all S&E master's degrees in 2013.

² The World University Rankings: Measure by measure: the US is the best of the best, <http://www.timeshighereducation.co.uk/world-university-rankings/2010-11/world-ranking/analysis/usa-top-universities>

³ http://nces.ed.gov/programs/digest/d10/tables/dt10_275.asp

⁴ See Encyclopaedia Britannica online at <http://www.britannica.com/EBchecked/topic/265464/higher-education/284185/The-system-of-higher-education-in-the-United-States>

Higher education expenditure and revenue patterns and also the trends have shown significant changes over the last two decades.

- From 1987 to 2012, the revenue per full-time equivalent (FTE) student received from net tuition at public very high research universities more or less tripled, whereas state and local appropriations decreased by almost 40 percent.
- Even though tuition fees were lower at public very high research universities compared to private counterparts, the average revenue earned from student tuition amplified more quickly at public institutions.
- In public very high research universities, revenues produced from federal appropriations, grants, and contracts per FTE student rose by almost 80 percent from 1987 to 2012, and research spending per FTE student also rose by 75 percent during the equivalent period. In private very high research universities, the proceeds from federal appropriations, grants, as well as contracts per FTE student witnessed a growth of 60 percent, and research expenditures per FTE augmented by 90 percent.
- Between 2008 and 2010, increasing enrolment in community colleges, in addition to declining state and local appropriations, contributed to about 10 percent decrease in instructional expenditure per FTE student. The instructional costs per FTE student continued to drop in 2011, but increased in 2012, with a bigger fall in enrolment as the U.S. economy improved.

Between 2009–10 and 2014–15, average net tuition plus fees paid by full-time undergraduate scholars in public 4-year colleges had growth by almost 50 percent after inflation adjustment.

- Levels of debt of doctorate holders also vary by field. In S&E subjects, a high graduate debt was widespread among doctorate candidates in social sciences, psychology, as well as medical and other health sciences.
- At the time of PhD degree conferral, about 45 percent of 2013 S&E doctorate holders had debt connected to their undergraduate or graduate education.
- Associate's colleges enroll highest students, followed by master's and doctorate institutions having very high research activity.

Graduate enrolment in S&E improved from about 493,000 to above 615,000 from 2000 to 2013.

- Graduate enrolment had growth in the majority of S&E subjects, with strong growth in engineering and in the biology.
- Women admission was low as usual at excessively low rates in engineering (24 percent), computer sciences (26 percent), physical sciences (33 percent), as well as economics (37 percent).

In 2013, the federal government of USA supplied monetary support for 17 percent of full-time S&E graduates, which is the lowest proportion since at least 1998.

- The recent drop in S&E graduate students with federal fiscal endorsement was obvious in the biological sciences from 35 percent in 1998 to 29 percent in 2013 and in the physical sciences, the fall was from 35 percent in 1998 to 28 percent in 2013.
- In 2013, the U.S. federal government contributed 60 percent of S&E graduates with traineeships, 48 percent with research assistantships, and 23 percent with fellowships.
- Graduate students in the biological sciences, physical sciences, as well as engineering subjects received comparatively better federal financial support than computer sciences, mathematics and statistics, medical and other health sciences, psychology, and social sciences and so on.

Between fall 2013 and fall 2014, the number of international graduate scholars improved by 18 percent in S&E subjects and by 6 in non-S&E fields.

- A larger share of international graduate students was there in comparison with international undergraduate students enrolled in S&E and above 6 out of 10 international graduate students in the USA in fall 2014 got enrolled in S&E fields, in comparison to about 4 in 10 international undergraduates.
- Between fall 2013 and fall 2014, the international graduate students in S&E subjects boosted frequently in computer sciences and engineering.
- In fall 2014, more than two-thirds of the international S&E graduate students in the U.S. belonged to China and India.

Masters degrees awarded in S&E swelled from 96,000 in 2000 to almost 166,000 in 2013. This period had the growth of S&E degrees at the Masters level i.e. 73 percent, which was higher than growth at the bachelor's, i.e. 54 percent and doctoral levels (47 percent).

- The number of Masters awarded in engineering in 2013 was the maximum in last 14 years. The number of master's degrees in computer science awarded in 2013 exceeded its earlier record in 2004.
- Increases were seen in the majority of major S&E fields, with the principal increase in engineering, psychology, and political sciences along with the public administration.
- The number and percentage of master's degrees awarded to women candidates in nearly all major S&E fields have increased since 2000.
- The number of S&E master's degrees enlarged for groups from 2000 to 2013. As the share of degrees earned by blacks plus Hispanics increased, and that of Asians became flat, and that of whites decreased.

In 2013, the U.S. higher academic institutions awarded about 39,000 S&E doctorates (excluding other health sciences).

- The number of S&E doctorates awarded every year by the U.S. universities improved progressively from 2002 to 2008, and then flattened and declined only to some extent in 2010 but has been rising since then.
- The largest increases in doctorate degrees awarded from 2000 to 2013 were confined in engineering (76 percent) and in the biological sciences (57 percent).

Students who are on provisional visas continue to earn very high extent of American S&E doctorates, including the bulk of degrees in at least some fields. They also earned major shares of the master's degrees in S&E subjects.

- In 2013, the international scholars earned 57 percent of all engineering PhDs, 56 percent of all economics PhDs, 53 percent of all computer sciences PhDs, and 44 percent of all physics PhDs. Their general share of S&E degrees was 37 percent.

- After very high growth between 2002 and 2008, the number of temporary residents receiving S&E doctoral degrees fell during 2010 but has been rising since then.

In 2012, the students in China earned about 23 percent, while those in the European Union earned almost 12 percent, and those in the U.S. earned about 9 percent of these degrees.

- From 2000 to 2012, the number of S&E first university degrees awarded in China, Taiwan, Germany, Mexico, Turkey doubled. It rose slowly by about 50 percent in Australia, the U.S., and Poland, and fell in France, Spain, and Japan.
- S&E degrees comprised of one-third of all bachelor's degrees awarded in the USA. In Japan, approximately 6 out of 10 first degrees were awarded in S&E in 2012; and in China, the figure was almost half.

In 2012, the U.S. awarded the highest number of S&E Ph.D. degrees of any individual country, followed by China, Germany, and the U.K.

- The numbers of S&E Ph.D. degrees awarded in China and the U.S. have grown in recent years.
- In 2007, China overtook the U.S. as the world leader in the number of Ph.D. degrees awarded in natural sciences and engineering disciplines. Since 2010, the number in China has been fairly steady.

International student mobility expanded during the past two decades, as several countries are increasingly competing for international students.

- The U.S. is an admired destination for the largest number of globally mobile students worldwide (undergraduate and graduate), although its share declined from 25 percent in 2000 to 19 percent in 2013.
- In addition to the U.S., others that are among the most sought-after countries for global students include the United Kingdom, France, Australia, and Germany.

Gu (2017) has discussed the future outbound mobility among Indian students shift in coming years. The issues that the enrolment managers also think are mentioned. India is the only country that is to come close to China as a top source of origin for qualified scholars and is currently the number two sender to several high ranked and emerging education destinations, located in the U.S., Canada, and Australia. Many countries have observed Indian enrolments grow, although numbers from other top senders such as South Korea, China, and Saudi Arabia have either slowed down or dropped. India's demographics and fiscal growth trajectories point out that it will likely remain a top sender for many years to come. Indian student mobility has historically been tied to work opportunities, and also to perceptions of safety. Understanding the unpredictability of Indian student movement to key destinations, and the issues that contributed over the last decade is very important in predicting what may turn out going forward. The broad story of outbound mobility from India between 2005/2006 and 2014/2015 is one of growth. Seven top and emerging destinations such as the U.S., Canada, the U.K., Australia, China, New Zealand, and Germany together experienced the Indian enrolments growing to 103 percent. As a study abroad destination, the U.S. enjoys a sheer volume of its education system.

The worldwide popularity of the American higher education stems from this fact that most of the higher educational institutions in the United States occupy very high ranking according to the Times international ranking. In international rankings over half of the top ranked 100 universities, and eight out of the top ten, belong to the U.S. The scientific output of American institutions is unparalleled. They generate the majority of the world's Nobel laureates in addition to high quality scientific papers. Furthermore, college graduates still earn far more and also get better benefits compared to those without a degree. Most of the top performing U.S. Institutions are old and possess enough resources in their corpus. The basic methodology for 2016 Times rankings is same as the 2011-12 tables, but some important changes are made in the underlying data.

The performance indicators may be grouped into five areas:

1. Teaching (the learning environment)
2. The Academic Reputation Survey
3. Staff-to-student ratio, Doctorate-to-bachelor's ratio, Doctorates awarded-to-academic staff ratio,
4. Institutional income
5. Research; such as volume, income, and reputation linking reputation survey, research income, and research productivity, Citations indicate research influence, International outlook such as staff, students and research etc. International-to-domestic-

student ratio, International-to-domestic-staff ratio, International collaboration, Industrial income, i.e. knowledge transfer.

The U.S. Institutions enjoy their superiority regarding the above-mentioned categories as obvious from different rankings.

The Times World Ranking of Universities 2016 in the following table finds the excellence of the U.S. Institutions.

Table 5.1
Top ranking higher educational institutions (world) Times Ranking 2018

World University Rank 2018	World University Rank 2017	University	Country/Region
1	1	University of Oxford	United Kingdom
2	4	University of Cambridge	United Kingdom
=3	2	California Institute of Technology	United States
=3	3	Stanford University	United States
5	5	Massachusetts Institute of Technology	United States
6	6	Harvard University	United States
7	7	Princeton University	United States
8	8	Imperial College London	United Kingdom
9	=10	University of Chicago	United States
=10	9	ETH Zurich – Swiss Federal Institute of Technology Zurich	Switzerland
=10	13	University of Pennsylvania	United States
12	12	Yale University	United States
13	17	Johns Hopkins University	United States
14	16	Columbia University	United States
15	14	University of California, Los Angeles	United States

World University Rank 2018	World University Rank 2017	University	Country/Region
16	15	University College London	United Kingdom
17	18	Duke University	United States
18	=10	University of California, Berkeley	United States
19	19	Cornell University	United States
20	20	Northwestern University	United States

Source: Times World University Rankings 2018

It is obvious that out of top 20 universities in the world there are 15 universities from the United States. It suggests the Supremacy of the American Universities and due to which the international students from the developing countries pursue higher education in those universities.

5.3.1 Causes of American superiority in higher education, especially STEM education

Unlike the tertiary educational arrangements of other parts of the globe, the United States lacks a central Ministry of Education. This is the noteworthy trait of American higher education system. The U.S. Department of Education is certainly the smallest federal department and it has no responsibility to run schools or universities or issue diplomas. It also has no role in writing or choosing curricula. Consequently each college or university chooses the ways to teach its students. Thus diversity leads to the first big strength of U.S. higher education. With more than 4,000 recognized colleges and universities, the American system presents so numerous learning choices that practically all students can study according to their need. Flexibility is the second strength of the U.S. education system, which continues to put the universities of U.S. at the top in international university rankings. The third great strong point of U.S. higher education system is its global students. International students carry novel attitudes to the classroom, new understanding to campus, in addition to innovative research ideas nationwide (international student guide to the United States, undated).

- The U.S. higher education enjoys heavy investment from government and private sources. Thus funding is an important issue. Monetary support for both

private and public higher education derives in two primary forms, such as Grant programmes and loan programmes (College Board, 2007).

- Grant, scholarship, and work-study programmes can be separated into two main categories: Need-based financial awards and merit-based financial awards. The majority of state governments offer need-based scholarships and a handful also offer merit-based aid (Levitz et al, 2012).

5.4 Higher education in the developing countries with special reference to India and associated challenges

The character of World Trade Organization (WTO) is influencing the development of global money matters. In the current situation of the knowledge economy, the importance on scientific skill in the higher education taught in India seems to be important. From R&D along with scientific research, India's commercial research market has further broadened to financial plus economic research. India's corporate hospitals often treat several hundred and thousands, foreign patients, every year and India has emerged as one of the most preferred medical destination countries in Asia for offshore patients. The corporate multinationals have increasing presence providing R&D services in India or have an alliance with Indian companies or educational or research organisations. The cost advantage of higher research is huge. For example, an Indian chip design engineer is generally paid far less than in the U.S. On the *demand side*, less than 10 percent of Indians decide to pursue higher education. This is a dichotomy where India's massive higher education system, still insufficient to cater to the volume of candidates for higher education, is conversely producing many more graduates from its middle and lower ranked institutions able to secure appropriate employment. This happens due to limited employment opportunities and also there is a divergence between the degrees obtained and the demand for service. Therefore, scarcity of skilled labour in vital fields along with persistent oversupply and ensuing joblessness of graduates in traditional fields has remained a problem. With the advent of globalisation, there is a massive requirement for Indian higher education to present a platform for steady incorporation of its degrees with the best existing in the world because of the fact that the mobility of skilled people has picked up recently and India is in the process of gradual evolvement into a knowledge society. Lack of qualified and trained faculty, bureaucratic administration continuing to asphyxiate the Indian academia have further reduced the competitive advantage of Indian institutions of higher education. There is, as a result, a need for institutes of higher education to permit teaching staff more payment, liberty to become involved in consultancy

activities and avail of attractive benefits like housing amenities lest elevated wages are not permissible. In some instances, concerted labours between Indian public institutions and foreign institutions do not succeed as institutions in India hardly take care of higher salaries to foreign teachers. On the *supply side* this massive demand and supply gap, the incapability of the majority of Indian students to pursue studies overseas, and also the value accorded to overseas degrees in India has provided a striking prospect that several western universities along with technical colleges are beginning to discover. Indian institutions are also forming a joint venture with recognized foreign educational institutions to offer coherent professional courses in business management as well as media studies.

The thoughtless and non-productive policies as opined by Palshikar (2010) have compounded problems in India's higher education sector. The increasingly privatised higher education has raised the possibility of the reduced role of government in education. The prominence of private players in higher education has drawn criticisms from different quarters in recent times. Bhushan (2013) finds government document suggesting the review of —not-for-profit approach in higher education on —pragmatic basis. Nayak (2013) views that the main underlying principle for privatising higher education has been *access*; because of the fact that few universities exist for the huge numbers of the young populace who desire or need to enter university education. India faces a dilemma as it has a huge illiterate population despite the Constitutional provisions for free and compulsory education. Conversely, the expansion of the knowledge sector together with Business Process Outsourcing (BPO) is sending a novel indication to the financial system. India's current growth is due to its service sector, largely boosted due to the ICT revolution. However, India is at present moving upwards the value chain —thus superior R&D efforts are needed and requirement of knowledge workers have become more important rather than manual workers. The export of service sector needs a stable supply of greatly skilled human resource which can be sustained by a vigorous higher education system together with a developed internet infrastructure which is profound and broad. The government's motivated programme (as revealed by various newspapers) focusing on increasing enrolment in higher educational institutions is to obtain Rs 500 crores for 2013-14. A considerable allotment is also for establishing 200 community colleges in India, above and beyond research parks as well as innovation centres.

The Rashtriya Uchchar Shiksha Abhiyan (RUSA) intends to grow the institutional base of tertiary education by creating additional capability in existing institutions, instituting

new institutions and inducing state governments. Nevertheless, the policymakers now face the dilemma of investing more in primary education with increasing population of the country, while attaching importance to higher education also. The findings as mentioned may be compared with the study of Altbach (2012a: 11), who finds the rate of return migration back to India and China less attractive for the foreign trained graduates as well as Ph.D. holders. Though a few countries, like China, present inducements for top graduates for homecoming, such programmes are diminutive and serve merely the top cream of the crop. For many, returning the home country to join in academic establishments that may be hierarchical and also sometimes shoddily equipped is not an attractive outlook. In the rising economies, academic salaries are discouraging factor. Even in China's topmost universities, which have received enormous investments of money and have constructed imposing campuses, the academic traditions is often arduous for graduates comfortable with comparatively open and meritocratic institutions in the U.S. or other better-established educational systems. Even as conditions and remunerations may be healthier in the budding futuristic and business sectors in the promising economies of India and China, problems do persist. Earnest efforts by countries like China and India to entice their graduates back home have been mostly ineffective, as Altbach argues. Some European countries, like Germany, have also vigorously tried to persuade their Ph.D.s and postdocs to contribute to Germany by settling in their country, with only humble accomplishment.

In a paper authored by Altbach (2012b) on the higher education scenario in four BRIC (Brazil, Russia, India and China) countries, he has found significant regional centres in BRIC countries, having an impact on adjacent countries offering academic guidance in their own fields. Brazil, India, and Russia are by far the most industrious educational arrangements in their regions. In the East Asian geographical region, Japan proves to be a prevailing academic authority whereas South Korea is growing academically. However, China has witnessed the best ever growth rate and has a significant investment of resources in higher education. In South Asia, India is noticeably the most prominent educational system, with some self-effacing effect in West Asia too. All the BRICs experience a noteworthy net outward mobility of students. Students pursuing studies in the BRIC countries usually belong to neighbouring countries, thus acting as regional centres. China as a sole exception draws a major share of international students, mainly from adjacent East Asian countries. China, India, and Russia also add considerably to the worldwide flow of academic endowment, with numerous Ph.D. graduates belonging to these countries working somewhere else. This brain

drain' has been rather considerable over quite a few decades or more. Notwithstanding rates of return picking up moderately and also the fresh development for a few most acclaimed academics as well as scientists to hold engagements in a number of countries, quite significant numbers of academics preferred to depart from these three BRIC countries. The causes are multifaceted and consist of improved working circumstances, infrastructure, wages, academic ambiance, academic independence, in addition to a plethora of other factors. Although many Indians in various technology fields have recently returned to the booming hi-tech sector – but not to the universities, India still lacks a coherent policy in respect of brain drain. China is well ahead of India as a consequence of two key ingenuities intended to establishing research universities. Altbach (2012b) views that despite being a country with the world's third – largest academic system; not any of India's universities are found in the top rank of any of the global rankings of universities. Only the small and specialized Indian Institutes of Technology (IITs) are internationally recognised. Moreover, the increasing significance of —unaidedll colleges is a new experience in India. Following the practice of globalised tertiary education, universities are expected to be financially self-dependent based on income from different sources including the marketing of intellectual property. Several high ranked Chinese universities have been doing well in establishing companies; e.g. Peking University's Founder Group is a case in point. Numerous Chinese universities have the investment in —technology parksll and some of these parks have produced ground-breaking industries and other business ventures. India lacks outstanding universities. India's higher education receives insufficient investment and a substantial amount of the resources are spent on paying salaries. In China's case, the gap between the best and the mediocre institutions has grown. It is intriguing that the most excellent universities are close to the top universities of the world. Considerable resources have been devoted and there have been major improvements in R&D, patents and other instruments of productivity. China's success in drawing international students from different countries of the world in recent times may be attributed to its renowned universities. As we find in Mishra's (2009) study that the better-quality educational organization in the U.S. and in Europe run full-size lecture classes by proactively putting in advanced information technology tools and assigning Ph.D. scholars as teaching assistants. The greater part of the IITs and IIMs consist of teacher-student ratios of 1:10 comparable to many of the advanced universities in the western nations consist of a range from 1:10 to 1:15. Deplorably IITs and IIMs are not optimizing their existing resources to make possible students' enrolment causing degeneration of quality. Also, in many prime universities of the world, classrooms plus laboratories are normally run

on 12 hour shift duty for optimal use of resources. This enables them to manage relatively larger student population within limited resources. Even the newly established IITs have a propensity to tag on to the older IITs as they function in thousand acres but aim to educate highest number of 3,000 students in five years as suggested in the new IIT project report presented by the HRD ministry of the Government of India to the Planning Commission in 2006. These are not solitary cases of under-utilization of limited physical resources but they also disgruntle several among 3,00,000 optimistic candidates for the IITs who fail to take admission every year, not basically due to deficiency of merit but as a result of restriction of seats in these extraordinary institutions. Israel has 21 universities in the best 500 globally and has three Nobel Laureates during the past 10 years. These universities attract the brilliant academic employees not by paying lofty wages but by presenting liberal sabbatical leaves and also allowing academic personnel to enjoy dual appointments in other U.S. and European Universities. China has productively employed American-Chinese researchers and professors to found research laboratories along with educational courses in China. A major reason for the augmented rivalry is the comparatively recent acknowledgment that global students are a budding profit centre and that earnings may assist in financing native students. In the U.K., for instance, overseas students now create some 10 percent of the whole proceeds of the higher education system, whereas in Australia, they finance about 15 percent of all revenue for the national universities (O'Malley, 2007). New Zealand and Japan now pursue identical courses with an aim of making higher education a profitable business by depending on increasing student immigration. Some small countries have shown significant growth as mentioned below.

The countries with the peak growth rates in terms of student immigration are often small. The following countries had extremely high growth rates during 2000-2006 (rates shown in parentheses) - New Zealand (725 percent), The Netherlands (160 percent), Spain (100 percent), Italy (96 percent), Japan (95 percent), Sweden (60 percent). Following independence, global student mobility was still highly valued, but currently had to assume a new-fangled explanation, driven mostly by the philosophy of nationalism plus developmentalism. Programmes like the Colombo and Fulbright Plans and also comparable policies in the Soviet Union were created to offer occasions for gifted students in the recently independent countries to obtain sophisticated, technological, scientific, and administrative education. Designed principally as a foreign aid programme, the Colombo Plan, for instance, stood for a pledge by the wealthier Commonwealth countries to offer education that was

regarded as obligatory for the progress of the new countries (Oakman, 2005). India as a vast nation has fared poorly in terms of marketing its higher education services. However, only recently the institutions of higher education in India have witnessed a growth in global students choosing India as a knowledge hub. There are several means of internalization of tertiary education; official accords through MoU have become a widespread device for intercontinental partnership, the attendance of international scholars in institutions of higher education influences the teaching, syllabus improvement, cultural communication etc., worldwide research cooperation either through official agreement or individual connections, exchange of faculty, access to best tradition in teaching as well as academic administration and through change of curriculum or adoption (Pritam, undated). Khan (2013) has found globalisation promising to bring major gains for India. Yet, the present educational panorama is not promising in terms of infrastructure, qualification of faculty, flexibility in syllabus etc. India cannot remain aloof from globalisation and must make use of the prospects the globalisation and also at the same time remain aware of the pitfalls of globalised education. As the trade in higher education gets more high-priced, the role of government becomes critical.

According to the Commission on the Future of Graduate Education in the United States (FGE Report, 2010), the key challenges facing graduate education and also the U.S. educational system as a whole are mentioned in brief.

- In the future, greater number of children entering schools will be from families with lesser education. So, fewer domestic students will possess math and reading skills that will empower them to pursue higher education.
- Population growth will cause more international migration resulting in the growth of first generation college students, and many of whom are to require additional educational skills.
- The number of non-traditional students (students who are older, working adults) is growing. They view graduate education as a means to develop their employability rather than as a means to get ready for a first career.
- The attrition level is high and time to gain degree is long, predominantly for doctoral students.

These changes point to the need to reassess how graduate students are economically supported and what kinds of supplementary resources they may require for their success in graduate schools. The altering demographics also demand a review of conventional time to

degree expectations and career pathway openings. Challenges faced by Indian higher education, especially STEM and medicine are serious. Sharma (2014) observed that growing enrolment in online higher education, the rollout of the national online education network, rapid content digitisation and faculty shortages in developing countries have resulted in high demand for eLearning products. The world market for self-paced eLearning products is projected to reach US\$ 53 billion by 2018, as per the research report by United States-based international research company Ambient Insight. As the U.S. leads sales, Asia occupies the second largest market with eLearning product revenues in Asia projected to reach US\$ 12.1 billion in 2018, up from US\$ 7.9 billion in 2013.

The proposed WTO as Altbach opines; initiatives are expected to bring pressure on the universities worldwide into sharp focus. Some view that the academia will be altered if higher education is subject to the rules of the WTO. The perspective of University serving as a broad public goods would be changed, and consecutively would be subjected to the profit-making pressures of the market controlled by the global treaties as well as legal necessities. Subjecting academia to the guidelines of a WTO-enforced marketplace may destroy the very objectives of the higher education system in general and universities in particular, which were established with great hopes of contributing towards achieving the goals of national development and identity. The implications are many fold and hardly understood. The attraction for education in the U.S. as Lavakare (2007) argues; continues to grow but the nature of mobility and its diversity is changing. During the early sixties, the U.S. universities attracted postgraduate students from India (known as graduate students in the American parlance), mainly in areas of natural sciences of Physics, Chemistry, Biology and Mathematics. These educational visits were primarily for getting a PhD degree of a quality not easily acquired in India. The American education system could easily absorb this category of students, since the U.S. academic community depended a lot on graduate students, needed for research projects sponsored by funding agencies. The U.S. universities were not looking for students as a source of revenue generation as the trend seems to be today, with focus now on undergraduate recruitment. The Indian student going to the U.S. in the past did his post-doc as part of his —training experience, permitted by the immigration rules. The situation today is very different. The Indian student plans to go to the U.S. with a long-term plan. The student and the parents are often keen that the stay in the U.S. is prolonged so as to improve their professional careers and also earn lot of money through lucrative job offers made by industry. The industry would justify the continued stay of the

student in that country by sponsoring their potential employee for a U.S. visas – a requirement under the immigration rules. This has led to increased seekers of green card holders in the U.S. and perhaps leading to a U.S. citizenship. Students preparing to go to the U.S. are now aware of various options available to them in the U.S. education system. Organizations like the United States Education Foundation in India (USEFI), with its branches in major cities are providing authentic information and guidance for entering the U.S. Educational Institutions. Under the auspices of the Institute of International Education (IIE) in the U.S., several American universities are participating in —education fairs‖ being organized in various Indian cities to recruit Indian students. The IIT students have established a network that helps the junior students to plan their admission process in a much more systematic way. The Internet explosion has further enabled easy access to information about the American education system. Competition from countries like U.K., Australia, and Canada is growing and now even countries in Europe and South East Asia are trying to attract Indian students to campuses in their countries. The American education had never used marketing strategies for promoting their education in India, but the competition from other countries in the world has forced them to participate in activities like the —education fairs‖ mentioned above. Proceeding to U.S. for undergraduate education is now becoming popular in India and this implies greater contribution of Indian financial resources to the American economy. Estimates provided by the Department of Commerce in the U.S. indicate that today the American economy is enriched by roughly \$14 billion dollars annually as a result of the presence of International students in that country. India certainly contributes substantially to this dollar inflow. The range of educational institutions where Indian students are studying now has also diversified and not just restricted to the Ivy League institutions as in the past. The presence of Indian students on American college campuses further attracts more Indian students since the word of mouth is perhaps still the most reliable source of information that improves the chances of getting admitted to the American education system. The fields of studies have also diversified, though the preference is still related to professional courses that would lead to a job in the corporate world. No doubt the number of Indian professionals in the American university system has also increased. These changes in the profiles of the mobility of scholars has certainly depleted the availability of good teachers in the Indian education market – a concern that may have a much more long term impact on the growth and quality of Indian higher education system. One hears of shortage of faculty and unfilled vacancies even in the IIT system. Efforts are being made by some research institutions to bring back professionals to work in the national laboratories. The Indian scholars, who have

studied in the U.S., prefer to work in the academic and corporate institutions there rather than to come back and teach in an Indian education institution or work in an Indian industry. However a new trend is seen in the corporate job market. Many more Indians are likely to return to India to work in the growing globalised corporate sector rather than to return to their alma mater, where the salaries are not attractive and facilities for high quality research are lacking. Indian companies have also started setting up R&D centres, particularly in the medical and the healthcare area, attracting global researchers for frontline work in modern areas of science. The academic sector has unfortunately not been able to attract Indian talent abroad; to the same extent as the corporate world has been doing. The reason for this has primarily been the fact that by and large the education sector in India is still under the government control with salaries laid down uniformly for all with no provision for —market driven salary packages. Even if one wants to sacrifice on the pay packet, the research facilities and the work environment are not yet attractive. In a small way this is changing with the emergence of the private higher education sector in India. Unfortunately, today this sector is however primarily geared towards teaching and that too at an undergraduate level and hence not very attractive for research oriented Indian scholars abroad. As India moves into the globalised world, the mobility has taken different routes and avenues. Opportunities are increasing for a meaningful return to India. Perhaps India has not changed as fast as China (as the two countries are always compared from the U.S. perspective) but both these countries have been influenced by this mobility between their countries and the U.S. The American economy has definitely benefited from this mobility. India and China have also both gained in the process – each with its own brand of politics. Society has seen some superficial changes in terms of —McDonaldization and commercialization. But in this process of change, the challenges and opportunities have also increased and it is up to individual professionals to make best of these opportunities. Agarwal (2009) has mentioned about the central government's contribution to higher education in India, which is about 10 percent of funding, as compared to 30 percent in the U.S. India is in a transitional stage of globalisation where one option is enabling liberal financing options for this sector, i.e. allowing private institutions to gather funds through public bonds or shares and second is giving priority to the sector, like providing it with infrastructure. Both the approaches are efforts to make higher educational institutions to behave and work like business enterprises. As observed by Bhushan, such steps shall make education more lucrative from the viewpoint of attracting investment, but in the long run, it would lead higher education towards commercialisation with damaging consequences (Bhushan 2013:18).

5.5 India-United States educational relations

The then Consul General of USA, Jennifer McIntyre delivered her speech at IIM, Trichy on December 13, 2012. The speech was on educational collaborations, fellowships, exchanges of student and faculty, and institutional partnerships. Another important aspect followed from 2008 to 2016 was the introduction of the US Higher Education working group (under the Strategic dialogue). India has the largest Fulbright scholar exchange programme in the world, with above 17,000 fellowships plus other grants awarded to Indians and Americans since its inception ⁵. There are five major issues which got emphasis, such as, strategic cooperation; economics, education and development; science and technology, energy and climate change, trade and agriculture; health and innovation etc ⁶ in the Indo- U.S. educational partnership.

Expanding labour force training, nurturing exchanges of students, making use of technology to make learning prospects easily accessible to large number of persons, and conducting joint research in key areas, e.g. food security along with climate change, are some of the vital areas of Indo-U.S. educational cooperation (Fischer, 2012). The bilateral tie up with the U.S. has grown during last two decades. From 2000 to 2014, three American Presidents visited India; the student enrolment, particularly in science, technology, engineering and mathematics from India has tripled in a span of a decade; India is a massive defence market of the U.S.; the U.S. has emerged as the largest trading partner of India; India earns more than 17 percent remittance income from the U.S. alone. Besides, the Indians run major research facilities in the U.S. and the Americans depend on the Indians for their scientific prowess.

⁵ The Consul General Jennifer McIntyre delivered her speech at IIM, Trichy on December 13, 2012. Building U.S.-India Ties through Educational Partnerships, published by the Embassy of United States, Chennai, http://chennai.usconsulate.gov/cg_iim_trichy_121213.html

⁶ The remarks at the U.S.-India Higher Education Dialogue by Hillary Rodham Clinton Secretary of State at George C. Marshall Center, Washington, DC on June 12, 2012.

5.6 The policy response of India

All the four BRIC countries have developed, or are developing, schemes to draw global students in great numbers. Influenced by the fast-emerging knowledge economy, India like other BRIC countries focus on developing viable and widespread technical education. There is an increasing demand for skilled technical manpower in India (Tilak, 2013). The meaning of —foreign educational institution⁷; according to the bill titled as Foreign Educational Institutions (Regulation of Entry and Operations) Act 2010 is:

- (i) an institution set up or incorporated outside India which is engaged in offering educational services for a minimum twenty years in a country in which it has been established or integrated; and
- (ii) which offers services in India or offer course for the award of degree or diploma or certificate etc. through conventional method such as, classroom teaching independently or in collaboration, partnership or twinning arrangements with any educational institution located in India⁷.

The act contains a disconnected part stated as —statement of objects and reasons⁸, which declares:

"A number of Foreign Educational Institutions have been operating in the count to allure and attract students. There is no comprehensive and effective policy for regulation on the operations of all the foreign educational institutions in the Country. Due to lack of policy or regulatory regime it has been very difficult to make meaningful assessment of the operations of the foreign educational institutions and absence of such meaningful assessment has given rise to chances of adoption of various unfair practices besides commercialisation"⁸.

Gurukkal (2011) wonders about the foreign education providers (FEPs) entering the country and doing their business when India had no such —policy or regulatory regimel⁸ licensing them. It is noticeable that FEPs had the unspoken approval by the central government for their access and projects in India. These foreign institutions have arrangements like twinning, collaborating as well as franchising with quite a few universities in India and thus confronting a diversity of matters hindering their function either because of the nonexistence of rules supporting or due to the pervasiveness of regulations against. Students of numerous FEPs, who have obtained degrees or diplomas at franchised centres or

⁷ See definitions in the text of the Bill, (Bill No 57 of 2010 as presented in the Lok Sabha) Foreign Educational Institutions (Regulation of Entry and Operations) Act 2010 that has been put as a public document by MHRD.

⁸ See the section on —statement of objects and reasons⁸, Foreign Educational Institutions (Regulation of Entry and Operations) Act 2010.

at any Indian university under FEPs' twinning, might face problems of recognition of their higher studies or employment. He is also concerned regarding the palpable socio-economic situation of India's rank and file notwithstanding structural adjustment of the economy. The country needs to build up competitiveness and effectiveness in every sector through concentrated and sensible application of science for enhanced productivity ensuring growth of employment openings. However, enhancing competitiveness in the contemporary arrangement of higher education pigeonholed by shortage of good quality teaching professionals, problems in drawing and retaining them, pitiable technology, scarce infrastructure, unsatisfactory libraries and archaic laboratories, unrelated and redundant academic curriculum, poor responsibility, excessive subsidies, soaring dropout rates, hyper centralization, lack of academic self-sufficiency and pervasiveness of mediocrity are the issues to be tackled. Altbach (2010) has expressed his concern about the prospective foreign universities if they are allowed to establish campuses in India. The foreign universities may be interested in services where they can make profit, or in setting up advanced postgraduate centres. There is little probability of a major expansion of access. India may well discover its hopes of riding the "branch campus" policy belied.

An empirical study by Gabriel et al (2013) has proved the sluggish growth of foreign education providers is found by studying various parameters in his research titled 'Hesitation of Foreign education providers to have tie-up with Indian educational institutions'. The major aspects recognized for the 'Hesitation of Foreign education providers to have tie up with Indian educational institution' are the 'difficulty in running the course from abroad' and 'not an attractive proposal'. Therefore amenities resembling foreign educational institutions in developed countries have to be provided in India to exert a pull on foreign education providers to initiate alliance with Indian institutions. As evident from the ongoing trends, very few foreign university of international standard like Oxford, Harvard and MIT may open branch campus in India. Business in higher education is conducted worldwide with a profit motive. India is also no exception. Thus, debarring the private investors may be a significant discouraging factor.

5.7 General Trends in International Student Mobility

Cross-border mobility is a mode of globalisation and internationalisation of tertiary education (Kubler et al. 2008). Student mobility is one of the types of higher education crossing the border. Gradually more number of students are engaged in exploring innovative potentials. In the past few years, the international programmes and institutional mobility has

improved, especially towards Asia as well as the Middle East. These fresh trends of higher education only suggest an incomplete part of cross-border tertiary education, although they represent a novelty which marks the beginning of a comprehensive revolution of higher education on long-standing basis. The mobility of Indian students is not unidirectional. In reality, the liking for courses among the students going to the universities of the U.S., U.K., Australia or Canada is changing due to the impact of shifting job market in a globalised planet. The traditional keenness for PhD degrees or post doctorate is progressively yielding place to job oriented courses ranging from semi-skilled courses to the high end expertise fields like missile technology, nano technology, sports medicine, and dairy technology etc. It is evident that even the enormous economic recession of 2008 failed to restrain the rising number of migrants to the foreign universities. Thus, India has become a significant education service exporter to the first world countries. Even China receives a significant proportion of Indian students in medical science by offering cheaper service vis-à-vis the private service providers of India. Marginson (2014) thinks that three main trends now govern higher education, such as; persistent growth of educational involvement across the globe; the extent of home-grown capability in science and technology in many countries; and the rise of autonomous higher education systems. Such trends obviously act as controlling factors in student mobility, brain drain or gain across the world also.

ICEF (2014) has mentioned the present trends of international student mobility. International student mobility paths will follow international economic shifts as the Chinese knowledge plus experience will likely to become significant in the future trade and labour market. Korea's student numbers has augmented from 22,500 in 2005 to about 76,000 in 2009 where lion's share belongs to China. China used to experience outward student mobility a decade ago, has become successful in drawing international students nowadays. Maximum students preferring China belong to Asia, Mexico, Thailand, Russia, Argentina, Taiwan, Brazil and Chile. They also increasingly take part in the race for international student enrolment. The 21st century aggressive marketing of higher education services include sophisticated recruitment strategies, resembling Western strategies like scholarships, diplomacy, mutual acknowledgment of qualifications, funding in infrastructure and intelligent marketing etc. The movement of students has now attained the proportion of mass movement. The global population of internationally mobile students more than doubled from 2000. Asia is the most important and China, India, and South Korea are the leading sources

of global students and it also reflects a growing trend to intra-regional mobility i.e. a growing body of students studying outside their home country but studying within their home region.

The in-migration from prosperous to developing countries is negligible compared to out-migration from developing to highly industrialized countries. Outmigration accounts for above 30 percent of the total human capital mobility (Hanson, 2009). The BRIC group of countries has exposed a contradictory situation in worldwide student mobility. The Goldman Sachs report invented the term BRICs; encompassing Brazil, Russia, China and India. The anticipation was precise concerning GDP but about international student admission, BRIC nations demonstrated a conflicting state of affairs. The international student mobility originating from Brazil have remained lacklustre and the numeral declined rapidly for Russia. Global student mobility is a convoluted correlation of numerous push and pull factor variables. One such very noteworthy variable is development scenario at birthplace which makes migrating overseas less elegant option. Consequently, Russia and Brazil seem to be superior to China and India in this respect. Russia and Brazil enjoy a much advanced level of affluence vis-à-vis China and India based on GNP (purchasing power parity \$), and thus they are less "pushed" to studying abroad. China and India drop back a propos broad quality of life and as a result they will continue to send more students moving out of the country in their mission of better living (Choudaha, 2011).

Apart from India, the growth of Chinese students enrolling in global higher education systems is staggering. Back in 2002, India was the foremost supply region of international students totaling almost 67,000 students in the U.S. tertiary educational institutions, compared to China supplying about 63,000 students. By 2011, the Indian students have grown by 55 percent to 104,000, whereas the students from China have grown by 150 percent to a staggering 158,000 students. This is marked by declining Japanese enrolment dropping by 40 percent from 47,000 to 28,000. The loss incurred on account of diverted student mobility to the non-U.S. countries has been made up by the unprecedented and surprising growth of Chinese students in the American institutions (Choudaha, 2012). China provides high quality educational services at affordable cost. The medical courses offered by some of China's best educational Institutions pose serious competition to the popular medical colleges of south India. The OECD (2014) report has thrown light on the current trends as below. Over the past three decades, the international students enrolled outside their motherlands have grown from 0.8 million in 1975 to 4.5 million in 2012. During 2000-12, the foreign tertiary students studying worldwide more than doubled, with an annual growth rate of almost

7 percent. Globally, 82 percent of all foreign students are enrolled in the G-20 nations, and 75 percent of all foreign students study in OECD countries. Europe is the most important region, hosting 48 percent of all global students. Within the OECD region, the 21 European member countries or EU21 host the largest proportion (39 percent) of foreign students. The EU21 countries also host 98 percent of foreign students enrolled in EU countries. Obviously, 74 percent of foreign students enrolled in EU21 countries belong to another EU21 country, suggesting the impact of EU mobility policies. North America is the second most popular region for students, with 21 percent globally, followed by Asia with 18 percent. The number of international students in Oceania had almost tripled since 2000, although the region hosts less than 10 percent of all foreign students. Africa and Latin America and the Caribbean, also have growing numbers of international students. In 2012, the number of international students in OECD countries was, about three times (3.4) million the number of students belonging to OECD countries (1 million) studying abroad. Some of these changes reflect differences in countries' approaches to internationalization, ranging from marketing campaigns to a more local and university-driven approach in the United States. The OECD data proves that Australia, Austria, Luxembourg, Switzerland, New Zealand, and the UK experiencing the highest level of incoming student mobility, measured as the proportion of international students in total tertiary enrolment where, 10 percent or more of their students are international. International students consists of more than 30 percent of enrolments in advanced research programmes in Australia, Belgium, New Zealand, Luxembourg, the Netherlands, Switzerland and the U.K. In Australia, 18 percent of students in higher education belong to another country, and it is 17 percent in the UK, 16 percent in both New Zealand and Switzerland, while it is 15 percent in Austria (Dennis, 2017). In 2015, the enrolment growth in Australia was 12 percent, (650,000 international students); contributing to A\$21 billion to their economy. Almost 27 percent students in Australia now belong to China, has grown at 17 percent in 2015/16. The achievement of Canada is evident from 8 percent growth in 2015, earning C\$11.4 billion from the international students, particularly from Nigeria (up 20 percent), China (up 11 percent) and India shows very high mobility (up 28 percent). Even the African students now prefer to study in Africa or Middle East countries. The African universities in recent years have successfully established relationships as well as joint degree programmes with Japan, China, South Korea and Turkey.

According to the Open Door Report, IIE 2015, the students from the top three countries of origin, i.e. China, India, and South Korea now represent about 51 percent of the

total enrolment of international students in the United States, as the number from China and India increasing, and from South Korea declining by six percent. The Open Door Report, IIE (2016) report shows that India comprises 15.9 percent of total international students and from 2014/15 to 2015/16, there has been 24.9 percent increase in enrolment. There has been 19.7 percent increase in graduate enrolment compared to OPT 44 percent increase. But in the case of China, there has been 19.7 percent increase in graduate enrolment, but only 21.1 percent increase in OPT. In 2015/16, 165918 Indian students got enrolment. STEM subjects are the most popular suggested by' 36 percent share in engineering, and 34.9 percent in mathematics/computer science as the most popular courses and 6.3 percent in physics/life science subjects. Push and pull factors need to be mentioned. Students make decisions about where to study based on many factors, including the academic reputation of an institution or course, the flexibility of programmes in counting time abroad towards a degree, and recognition of foreign degrees, —exploding demand for higher education worldwide, higher education limitations or restrictive university admission policies at home, geographical, trade or historical links between countries, future job opportunities, cultural aspirations, and government policies to facilitate the transfer of credits between home and host institutions. Tuition fees play an important role, as do immigration policies. In recent years several OECD countries have eased their immigration related terms and conditions to encourage temporary or permanent immigration of international students. Language and cultural issues, geographical proximity and similarity of education systems are the controlling factors that students also consider when choosing the country where they study. Language and academic traditions may explain the tendency of English-speaking students to study in other countries of the British Commonwealth or in the U.S. even if they are geographically distant. Migration networks also have a role, as suggested by the concentration of Portuguese students in France, students from Turkey in Germany or students from Mexico in the United States. Choudaha (2017) has mentioned about STEM OPT Extension, which is attractive to the Indian students who are heavily enrolled in master's programmes in engineering and computer science. In 2016, 83 percent of Indian students, 43 percent of Saudi Arabian students, 78 percent of Iranian students, and also 40 percent from China are enrolled in STEM programmes.

5.7.1 Post-9/11 Era of Declining U.S. Hegemony in Higher Education?

Marklein (2011) views cost, distance, visa complication, and challenges from other accepted destinations, perceived as pessimistic influencers, threaten the capability of the U.S. to catch the attention of international students. Hansen (2007) views that since the 9/11 attacks, many capable workers including international students became more and more reluctant to bear the extended waits and insecurity involved in immigrating to the U.S., thus they chose to go to Europe, Canada and also Australia where knowledge workers face less immigration complexity. Some of the reasons responsible for the diminishing role of the U.S. are listed below:

- *Visa procedures:* The first reason is directly related to tightened visa procedures and entry conditions for international students; especially for those from the Middle East after the September 11, 2001, terrorist attacks. Students from Gulf region countries, North Africa, and some Southeast Asian countries increasingly prefer to study in Europe, the Middle East, Asia, and Oceania rather than in the United States. The heightened national security and restraining visa procedures indisputably has affected the view some potential foreign students have regarding the United States. As a corollary, the U.S. Department of State and overseas embassies have streamlined interview and visa processes, causing restricted enrolment of foreign students. The recent years have witnessed the efforts by the U.S. Government to expand its higher education market like growth of recruitment efforts out of the country, development of the infrastructure, informational availability on campuses, and monetary support to compensate admission and tuition expenses.
- *Competition:* Persistent recruitment drives by Australia, Canada, New Zealand, France, and the United Kingdom, among others, have posed stiff competition to the U.S. These countries have a mishmash of Americanized programmes in English medium plus free or subsidized tuitions to draw foreign students apart from permanent immigration after graduation for attracting foreign students. As English becomes a global lingua franca, institutions in many non-English speaking countries offer programmes, particularly in STEM, in English.

- *Cost factor:* Europe, Australia or Canada, has always been less costly than the U.S., and many international students are reaping the benefit of lesser tuition charge and lower cost of living.
- *Creative recruiting programmes:* Correspondingly, non-Western countries, for instance, Singapore, Qatar and Malaysia, apply inventive recruiting programmes to prove themselves as vital regional providers in international education on top of to using international students as sources of income revenue. Singapore for example, puts forward incentives and ancillaries for renowned universities, such as MIT and John Hopkins, to set up their campuses in that country.
- *Easier immigration:* In the last few years, has gradually made their immigration systems as a factor to encourage and retain highly skilled people. Back in 1999 Australia made it easier for suitable overseas graduates of Australian universities to adjust to permanent resident status through its point system. The qualified foreign graduates in Australia may apply after graduation for a four years Temporary Business (long-stay) visa.
- *Participating in economy:* Since April 2006, the suitable foreign students can work off-campus in Canada to balance tuition cost and contribute to the economy of Canada.

European examples: In 2006, France lessened its immigration hurdles to encourage the inflow and post-graduation stay rate of its international students. The United Kingdom is in prime position in Europe in attracting skilled foreign students. Students belonging to the European Economic Area (EEA) and Switzerland are permitted to live, study, work, and gain established nationality with hardly any problems anywhere in the U.K. Two schemes like the Science and Engineering Graduates Scheme (SEGS) and the Fresh Talent: Working in Scotland Scheme (FTWISS) — were initiated in 2004-2005 to keep non-EEA international students in the United Kingdom even after graduation. On the contrary, the United States has no policy of direct route to permanent immigration for international students except they get supported by a U.S. employer or other half who is a U.S. citizen. Also, the optional practical training (OPT) system in the U.S. is presently set to be not more than 12 months in spite of the kind of work or stage of degree acquired. Moreover, with few exemptions, foreign students and their spouses in the U.S. are not permitted to work off-campus (foreign students on F-1 visas may be permitted to work off-campus while they study only if they can prove

financial hardship). She (2011:42) thinks that the U.S. now follows the international student policy of low level of openness towards their entry accompanied by strict control on their settlement in the U.S. The Grant Thornton International (2013) report states the current downside of the U.S. higher education. The higher education sector in the United States is at a crossroads and also in the crosshairs of watchdogs and critics unlike in the past. Issues comprising affordability, mounting student (and campus) debt, and decreasing state and federal support are raising very material questions regarding the viability of the present higher education business model. Even colleges and universities having the durable brands and deepest pockets are not invulnerable to the alteration that is fashionable in the higher education sector. Simultaneously, a digital revolution in education is fundamentally rewriting the mode and approachability of higher education content. Enormous open online courses, or MOOCs, along with other leveraged learning know-how, may very well be harbingers of transformation.

The 11th annual Times Higher Education world university ranking (2014-15) justifies the steady erosion of United States and United Kingdom leadership of global higher education associated with the rise of institutions outside the North Atlantic axis. Japan's universities are now losing ground to the rising Asian countries, including China, Hong Kong and South Korea. The U.S. universities continue to dominate the world rankings, occupying seven of the top 10 places plus 15 of the top 20, and on the contrary the three American universities have dropped out of the top 200 and 60 percent of its universities have lost ground in 2014-15. Many Western universities, starved of vital public funding, are diminishing. Where the power shift takes place from West to East, these new world university rankings vindicate this fact. Jobbins (2014) finds that the key East Asian countries have become powerhouses in international higher education and research, whereas traditional leaders including the U.S., the UK, and Canada, risk losing ground in the global knowledge economy.

The H1B Visa policy of the U.S. as designed by President Trump has been causing heated debates of late. The visa restrictions however, were withdrawn on 9th January 2018. The FE Online (2018) reports suggest great relief for the Indian techies after the US announcement regarding withdrawal of proposal for changes to the existing visa laws for highly skilled workers. It was part of President Donald Trump's campaign of 'Buy American Hire American', and as a result, an internal memo disseminated by the Department of Homeland Security set out to stop the stipulation of granting extension to H-1B visa holders

whose applications for permanent residence status (Green Card) had been received. On 9 January, 2018 the U.S. Citizenship and Immigration Services (USCIS) declared about reversal of policy change that could deport several Indian tech workers. On April 18, 2017 President Trump signed an executive order which called for enforcement of all laws related to entry into the U.S. for employment. It also asked the Departments of Labor, Justice, Homeland Security as well as the State to recommend alterations in the H-1B temporary worker visa programme for protecting the interests of American employees by making sure only the best paid and most-skilled applicants may receive visas. Earlier, the government was accepting H-1B visa applications for 2018 with no modifications to the program, but the Department of Homeland Security of the U.S. announced in April 2017 that it was adopting a targeted strategy to avoid deception and abuse. So, the proposal had sought to restrict extension of H1B visas by changing the interpretation of section 104(c) of AC-21, suggesting that workers having their permanent residency applications pending would be leaving the U.S. until their Green Card is successfully processed.

The Trump administration's decided in the teeth of some stiff criticism of the proposed law by the business and technology sectors as well as many lawmakers. Under the present regime in the U.S., a worker holding an H-1B visa can stay in the U.S. for up to six years. It is primarily for three years but may be extended for another three years. A person can get an indefinite extension if the person has a pending permanent residency application of the H-1B visa until the applicant's Green Card processing is finished.

The probable impact on the Indian techies would have been catastrophic. The proposal for more rigorous norms for the H1B visas could have led to the likely exile of 5,00,000 to 7,50,000 Indians from the U.S. While previous rules made it trouble-free for the skilled workers to continue working in the U.S. provided their Green Card applications were pending. Many such skilled workers have been staying in the U.S. for over a decade. Those workers could have to come back to India till their applications were processed successfully. Such a move would have disrupted the many such families and negatively hit their livelihoods. As per estimate, the number of H1B workers in the U.S. awaiting Green Cards could be over 1 million.

The impact on IT companies would have been no less severe. The top Indian firms rely by and large on H1B visas for their workforce requirements in the U.S. and restrictions of the kind proposed would have hit them very badly. These firms regularly provide outsourcing services to the U.S. firms and employ Indian workers. The changes proposed

fresh restrictions to put off abuse and exploitation of H-1B visas. It called for a tightening of the explanation of visa-dependent firms and demanded the imposition of fresh restrictions regarding minimum salary and movement of talent. As these norms would have own set of connotations, the Bill also placed the responsibility on clients to officially state that the visa holder is not displacing an on hand worker for a term of 5-6 years.

5.7.2 How Many International Students Study in the Major Host Countries?

Vincent-Lancrin, (2009) observes that the intercontinental student mobility comprises the major form of cross-border tertiary education. OECD countries host around 85 percent of the foreign students, that is to say 2.5 million students; nonetheless, in 2007, two-thirds or 67 percent of the overseas students situated in the OECD region belonged to a non-OECD member country. These two proportions have continued to be steady during the past decade. In 2009, about 3.7 million international students were enrolled, thus enhancing the figure above 6 percent compared to the preceding year. In terms of absolute number, the major numbers of global students in OECD nations belonged to China, India and Korea. OECD (2011) study has thrown light on the destination countries of the world. Six countries, namely, Australia, Canada, France, Germany, the U.K. and the United States hosted over half of the international student population who studied overseas in 2009. The share of United States observed a major fall as a favoured destination of international students from 2000 to 2009, falling from 23 percent of the worldwide market share to 18 percent. While, the shares of overseas students choosing Australia and New Zealand jumped by almost 2 percent, similar to the Russian Federation, likely to become a very important future player on the global education bazaar. The share of students studying in foreign countries is getting bigger in the modern globalised world, characterized by increasing use of English as a global medium of instruction (Choudaha, 2012).

5.7.3 Enrolment of International Students in Countries other than United States

Nationally, the share of global students in the tertiary education system of the U.K., Australia and Canada was relatively high few years ago, comprising 15 percent, 21 percent, and 8 percent correspondingly, contrary to just 3 percent in the U.S. Even at the institutional stage the United States is much less reliant on global flow of students to satisfy enrolment objectives, and also has a higher capability to attract further flow of overseas students (AEI, 2011). In the U.K. the ratio of international students to overall enrolment at few institutions like the University of Buckingham and Cranfield University was above 50 percent as per Choudaha's (ibid) calculation using HESA data. In Australia, institutions such as the

University of Ballarat and Central Queensland University have students from out of the country comprising over 60 percent of total enrolment. The high percentage of international student bodies in Australia and the U.K. is not only an upshot of insistent enrolment practices, that includes employing of agents, but is also linked to freethinking transformations to immigration strategies in the 2000s. Nevertheless, many of these immigration procedures are now being amended or on its head, causing more difficult visa system. According to OECD Education at a Glance 2011, the U.K., Spain, Italy and France emerged as four most important destination countries in both 1999/00 as well as 2009/10, whereas Mexico is replaced by China as the 5th most significant country as higher education service provider.

The share of international students outside Europe continent has witnessed a jump from 38 percent to 47 percent. The share of STEM students abroad has also increased about 120 percent (or 48,000) with a total figure of 3.7 million students. The figure 3.3. predicts the future possibility of increasing student mobility in the year 2020. Mukherjee et al. (2012) discover in their research that the most important host countries are situated in North America as well as Western Europe, which draw the biggest number of wide-reaching overseas students comprising 60.5 percent of all globally mobile students in 2009. Yet, East Asia in addition to the Pacific have been doing well in attracting more and more students over the years, because of their increasing share growing from 11.2 percent to 20.4 percent from 2000 to 2009. Furthermore, the declining role of Central and Western European region indicates diversifying international student market, because of the boost in the number of student destination countries since 2000. The more recent OECD study as mentioned by Cluster (2013) has mentioned that Australia, Germany, France, the U.S., Canada and the U.K. continued to dominate study destinations during 2010-11, receiving a combined 50 percent of all foreign students worldwide. Asia unsurprisingly was the largest source region, representing 53 percent of all foreign students enrolled. Since 2000, the ascendancy of non-traditional study destinations, the slowdown in demand for the US, and the rise in importance of employability for foreign graduates became trends of student mobility. In many countries there is also a growing demand for highly qualified immigrant workers. Prima facie, it is obvious after the global economic crisis there is shrinking support for scholarships and grants and trimmed personal budgets affecting mobility. However, limited labour-market opportunities in the countries of origin may increase the attractiveness of higher education abroad as a way to achieve a competitive edge, and thus boost student mobility. In addition, there is a growing demand for highly qualified immigrant workers in many countries. All of the reporting OECD countries, except Germany, had a larger proportion of international

students enrolled in advanced research programmes than in any other tertiary-level course in the period. A quarter of all international students in Switzerland, meanwhile, were enrolled in advanced research programmes, is no mean achievement. The internationalisation of labour markets for highly skilled labour has also rendered the students an incentive to achieve international experience as part of their higher education goal. Vocational education provides international students with employable skill sets, too. On an average, international students amounted to 4 percent of all enrolments on shorter, vocationally oriented courses.

The non-traditional study destinations such as Japan, Spain and Russia, attract foreign students. There are also growing number of students studying in Oceania, where students have tripled since 2000, due to closer geopolitical ties between Asia-Pacific countries. Latin America, Asia and the Caribbean have also upped their numbers, reflecting the internationalisation of higher education in an increasing number of countries in the regions. The language spoken and medium of instruction at times decides in which country students prefer to study. Countries where language of instruction, such as English, French, German, Russian and Spanish are used are consequently the leading destinations of overseas students, both in total and relative terms. Japan is a noteworthy exemption: in spite of a medium of instruction that is not prevalent, it enrolls bulky number of international students, of who above 90 percent belong to Asia. Mukherjee et al, (2012) puts forward that the market for overseas students is extremely concentrated, with the uppermost five destination countries getting above 50 percent of all international students. The OECD (2011), Education at Glance 2011 further mentions that over nine-year duration, the international students choosing the United States as their destination country has plunged vis-a-vis Australia, New Zealand and Russian Federation, emerging as the new players in the global education market. Some of these transformations mirror the diverse emphases the internationalization policies of different countries, ranging from down to business marketing strategies in the Asia-Pacific countries to a more local and university-driven strategy in the conventionally leading countries such as the United States. The education policies have a direct and indirect influence on student mobility and skilled migration as it has been discussed in the subsequent paragraphs.

Australia: In 2016, there were about 650,000 international students in Australia. Higher education is the Australia's third largest export, and much of the growth is attributed to increased enrolment of Chinese students, who accounts for 27 per cent of the Australian higher education market (Dennis, *ibid* 2017). In 2010, Australia had taken pro-active policy

for addressing abuses of immigration inducements within its student-visa strategy by stricter application of visa necessities for non-degree students. Consequently, the Australian higher education sector had noteworthy declines in global enrolment (Govt. of Australia, 2011a). Identifying the dependence of the Australian tertiary education sector on inter-continental students, the Australian government of late has loosened up its student visa provisions (Gov. of Australia, 2011b). Australia's international enrolment grew by 10.9 percent compared to 6.5 percent in past ten years to reach 554,179 for 2016. Australia's international student enrolment has recorded a high in 2016 to reach a total of 554,179 for 2016. More 43 percent were enrolled in Australian higher education, which recorded an overall growth of 13 percent for 2016. The official policy objectives state that Australia welcomes international students as they invigorate their high quality education system, economy, society, culture and global relationships. The contribution of international students is considered as critical since their economy continues to evolve to generate new knowledge oriented industries and companies (ICEF 2017a).

U.K.: A Point Based System (PBS) was introduced by the Home Office of the UK Border Agency (UKBA) in 2009 and integrated a succession of added necessities into the student visa plan to alleviate the mistreatment of student visa for immigration uses. The applicants are now required to give evidence of English skill and confirmation of financial support from monetary institutions confirmed by the UKBA (Gov. of U.K., 2011). The UKBA declared that it would further solidify its language prerequisites and wrap up the post-study work system from April 2012 onwards. According to the latest report by The Higher Education Funding Council for England (HEFCE 2014) the higher education institutions in England have experienced their first drop in foreign student enrolment in nearly 30 years. The decline is principally attributed to weakening in two primary areas such as:

- 1) The Indian and Pakistani students enrolling in postgraduate masters courses in STEM related fields (halved since 2010)
- 2) European Union (EU) undergraduate students (who currently have to pay the similar increased fees as UK students)

The declining mobility of international students is based on factors like cost of higher education, employment prospective and immigration prospects.

Canada: The mounting demand for Canada for global students is proved by the growth observed among Indian students. The Indian enrolment has increased leaving behind the Chinese visa holders as the major group of international scholars going to Canada during that period. If this development continues, Canada is expected to see continuous boost in international student enrolment in 2012 (Gov. of Canada, 2011 and Choudaha et al, 2012). ICEF Monitor (2016) has mentioned that there is a broader context for this observation and one that suggests that Canada has some significant competitiveness issues to address in terms of visa processing times, admissions processing, the availability and strength of articulated pathways for international students to move among Canadian institutions, and post-study employment supports.

The number of overseas students enrolled in Canadian higher education institutions increased by 8 per cent in 2015 and they contributed C\$11.4 billion (£7 billion) to Canada's economy. Enrolment from China (+11 per cent) and India (+28 per cent) were major contributors to growth. Nigerian students' enrolment grew by 20 per cent and South Korea by 5 per cent. Recently 12 Canadian institutions signed 13 memoranda of understanding with India's National Skill Development Corporation (Dennis, *ibid* 2017).

France: France observes worldwide student recruitment chiefly as a public diplomacy means (Nuffic, 2012). The French Ministry of Foreign and European Affairs (MAEE) endeavours to make possible highest global mobility for students, researchers as well as entrepreneurs. As the controller of French existence overseas, the MAEE proposes these players predominantly helpful know-how and on-the-ground information. The existence foreign researcher in France is mainly encouraged to enhance the competitiveness of French research internationally. The EIFFEL excellence scholarship programme was initiated in 1999. The —Quai d'Orsay/Enterprises programme was shaped in 2006 for coordinating scholarship programmes jointly funded by companies as well as the MAEE. The programme assists in developing the competitiveness of France globally by satisfying four core issues:

- Prop up the action of companies in France in support of young overseas elites;
- Support the worldwide aims of French institutions of higher learning;
- Promote the most excellent foreign students in their longing for sharing knowledge and skill at the topmost echelon.
- Augment French ways of action in a period of globalisation (Govt. of France, 2010).

In 2016, over 4200 students from India pursued higher education in France. The Embassy of France and Campus France India Network has an ambitious plan to increase the Indian students enrolment to 10,000 (French Embassy, 2017).

Germany: According to Nuffic (2012) Germany and Canada look for international scholars to offset their waning and ageing populace. Over the last decade, as Belyavina (2012) argued; Germany has espoused the Bologna Process across the European Higher Education Area proposed to assist student mobility and also build more attuned tertiary education arrangements across Europe. An important upshot of the Bologna development is that Germany's higher education institutes now include bachelor's, master's, plus doctoral programmes, which offer students worldwide the flexibility to go into the higher education structure at a stage that best suits them. A good number international student population is at the graduate level, often receiving education in English-medium programmes. At the institutional plane, the German universities have paid attention on intensifying research capability through partnership with their international equivalents. The University of Giessen in Germany works with more than 70 universities internationally and endorses student mobility at every part of academic levels. The QS Survey (2014) has observed Germany as the most popular study destination.

China: China has been a popular international student destination at present. The enrolment in China of South Korean students has more than doubled in the past decade. The number of Indonesians studying in China has also climbed by 10 per cent since 2010 on annual basis. The number of Indians and Pakistanis studying medical degrees in China has tripled over the past decade (Dennis, 2017). The Chinese government aspires to reach the target of 500,000 international student enrolment in Chinese higher educational institutes by 2020, double the number it currently hosts and higher than the quantity of students it exports out of the country (Nuffic, 2012). As Woodfield (2012)⁹ pointed out that the lion's share of industrialised countries have quick-fix student exchange plans; while elsewhere the bulk of mobility is intended for full degree curriculum. Nonetheless, the growth of transnational tertiary education now intimidates this mould in a bigger way and thus, intercontinental mobility will become increasingly unstable since new service provider countries will surface like China. The ICEF Monitor (2017b) has mentioned about foreign enrolment in Germany

⁹ See Steve Woodfield in —What is the future of international student mobility? by EUPRIONIC on 11th June, 2012, Website accessed: <http://delacourcommunications.com/what-is-the-future-of-international-student-mobility/Outward-boundstudentswinBritishchampion>

which reached 340,305 students in 2016. There was an increase of nearly 6 percent over the year before, and marks the long-term growth trend for Germany as an important study destination in the world. Germany holds the position of the sixth-leading global study destination (after the US, UK, Australia, Canada, and China). Where international enrolment in the UK has been flat since 2012, the international student numbers in Germany increased by roughly 36 percent between 2012 and 2016.

Japan: Over 100,000 international students presently study at different levels of educational institutions in Japan. The number has been growing rapidly ever since the 1980s, with over 60 percent of the student mobility is from China¹⁰. Japan actively promotes the reception of overseas human resources in for improving Japan's global competitiveness besides promoting the globalisation of industries and corporations. As earlier international student policy was aimed to meet up the requirements of students after their arrival in Japan and on offering sustenance to assist them to go back home, whereas the new policy is distinguishing because it is a orderly policy to promote the recognition of global students into the mainstream Japanese society, that includes policies to aid them in getting employment or pursuing other choices in Japan after completion of their studies¹¹. OECD Education at a glance 2015 shows that OECD countries attract 73 percent of all students enrolled overseas in countries reporting to the OECD or the UNESCO Institute for Statistics. Within the OECD, EU21 countries host the largest proportion, i.e. 35 percent of international students. Some 71 percent of international students enrolled in EU21 countries belong to another EU21 country that may partly be an effect of EU mobility policies. North America is also attractive for international students, as the United States and Canada both account for 23 percent of the total. The profile of international students in this region is comparatively more diverse than in the European Union. Among the countries sharing data on international students, Australia, France, Canada, Japan, Germany, the United Kingdom and the United States enrolled more than one in two international students in 2013. In absolute terms, the U.S. hosted the largest number of all international students or 19 percent of the total, followed by the United Kingdom, Australia and France, Germany, Canada and Japan. Besides the eight major destination countries, significant numbers of foreign students were enrolled in Austria, China, Italy, the Netherlands and Saudi Arabia in 2013.

¹⁰ See <http://www.japan-guide.com/e/e2232.html>

¹¹ See http://www.tsk.or.jp/ryuugaku-en/1_inter.html

5.7.4 Enrolment of International Students in United States

Conventionally the Indian students' figure in 2010/11 in the U.S. remained rather even in comparison to the preceding year. India had been the foremost country of origin for global students in the United States from 2001/02 through 2008/09. The most popular five fields of speciality of international students are biological plus biomedical sciences, engineering, health sciences, physical sciences as well as agriculture. About 75 percent of global scholars have specialisation in STEM fields. The United States has globally produced most well skilled and educated labour force for generations, nevertheless aspects like increasing worldwide competition, demographic alterations in the college-going people, plus budget limitations have converged to restrain the historical primacy of U.S. graduate education, as opined by William Russel, Commission Chair and Dean of the Graduate School at Princeton University. According to the CGS International Graduate Admissions Survey, Phase II, 2010 to 2012, and Phase I, 2013.

Internationally, the American share of the international student market has fallen since 2000, moreover competition overseas is growing. Europe and Asia are busy in investing in graduate education as indispensable mechanism of fiscal growth, and have begun to outshine the United States in production of doctoral scholars, principally in science and engineering. Prospective international graduate scholars have new preference these days as to where to pursue their graduate lessons and their occupations (ETS & CGS, 2010: 1-2). More than one-third of all international students in the U.S. in 2015-2016 studied engineering or math and computer science, as the report shows. In all, 216,932 students studied and were trained in engineering, suggesting a 10.3 percent increase from the previous year, and an overwhelming number of 141,651 students pursued math and computer science fields, which is a 25.4 percent year-over-year increase. Dennis (2017) has mentioned about China being the largest education system as 33 million students are enrolled there. China has been the third largest study destination after US and UK. The enrolment from South Korea has more than doubled in last decade and from Indonesia, the number has increased by 10 percent since 2010. In 2013, China announced the —One Belt, One Road initiative for building stronger relationship with countries ranging from south east China, through the Indian Ocean and the Red Sea before terminating in East Africa and Europe. The Chinese entrepreneurs by 2015 made massive investments in 49 countries along the route. As a consequence, China has been able to develop strong ties with these countries. By 2016, China has become the leading host country for international branch campuses with 249 branches and 180,000 international

students. China has launched World Class 2.0 in 2015 with a vision to strengthen the research activities in China's nine top universities. The mobility model of Indian students is not unidirectional. As a matter of fact the liking among students for courses in the institution of higher learning of the U.S., U.K., Australia or Canada is going through transformations because of the effect of varying job market in a globalised planet. Lately, a significant share of the Indian students in Australia opt for typical courses like cookery, hospitality, sports management; which offers scope of employment for the Indian students in Australian job market. The infamous 'curry bashing' episodes have cast a pessimistic effect on the Indian student mobility to Australia. The Indian government policy to ban student mobility to Australian institutions was temporary but it is a latent enthusing feature for other competing countries like the U.S., U.K. etc. striving to attract Indian students. The usual keenness for PhD or post doctorate degrees is increasingly yielding place to vocational courses ranging from low skilled disciplines to high-end knowledge oriented disciplines such as missile technology, nano technology and so on. It is conspicuous that even the economic recession has been ineffective to restrain the escalating number of students in foreign universities, possibly due to the fact that India is comparatively less concerned by recession in the vein of other countries.

Consequently India has become a vital education service provider to the developed countries' market (Chaudhuri, 2012). The international student enrolment increased by 7 percent in 2015/16, but it was down from 10 percent in 2014/15. In 2001, 28 percent of all international scholars got enrolment in U.S. colleges and universities, while in 2014 the figure dwindles to 22 percent. In the case of China, the popularity of the U.S. students is also decreasing. Increasing cost of education is a major factor. Since 2008, tuition and other fees at two and half year institutions have witnessed an increase of 28 percent.

According to CGS's Graduate Enrolment and Degrees: 2001 to 2011 report, international students comprise about 15 percent of all students at U.S. graduate schools, but three-quarters (76 percent) of all international students at U.S. graduate schools are enrolled in natural sciences, engineering, and business fields. Natural sciences include biological and agricultural sciences, health sciences, mathematics and computer sciences, and physical and earth sciences. Social sciences include public administration and services and social and behavioural sciences. Graduate applications from potential students from five countries covered by the survey declined between 2012 and 2013, whereas applications from the

remaining countries, such as, Brazil and India, witnessed an increase by 24 percent and 20 percent respectively.

Klimaviciute (2017) has an overview of STEM students in the United States may be mentioned here. There were above 1 million international students in the U.S. in the 2015-16 school year — a record and a 7 percent increase over the preceding year. This figure includes approximately 150,000 participating in Optional Practical Training (OPT) following their studies. Of international students in the United States, 41.6 percent pursued STEM fields, in comparison to 35 percent of all students at the undergraduate level and 22 percent at graduate level. International students are more common in graduate STEM programmes than undergraduate: one-third (10,000) of all STEM doctorates awarded in 2013 were awarded to students from abroad, compared to 5 percent (roughly 16,000) of all STEM undergraduate degrees. In 2014, almost half of all foreign undergraduate STEM students belonged to China, Saudi Arabia, and South Korea. China and India comprised more than two-thirds of international graduate student enrolment in the U.S., with Iran a distant third.

Regarding the decision to stay or not depend on many factors and the choice is not always obvious. 48 percent of international doctoral STEM scholars intended to remain after graduation, 12 percent wished to leave, and roughly 40 percent were undecided in 2015. This sizeable undecided share will raise a question about whether the U.S. will remain as popular a work destination in the future. Career opportunities play a key role in these decisions: there is an 87 percent likelihood that those who study in the United States due to future job prospects will stay back after graduation. Students find the United States attractive for work in the private sector or for start-ups —77 percent wished to work for a company or launch own business wished to stay, in comparison to 68 percent who considered careers in academia, government, or non-governmental organizations (NGOs). International student perceptions of the United States are becoming more negative, which could boost their chances of leaving. Furthermore, the U.S. share of international student enrolment has declined from 28 percent in 2001 to 22 percent in 2014.

Applications from Indian students to American graduate schools increased while from China slowed down in 2013, as per the new report from the Council of Graduate Schools (CGS). There was 32 percent increase in applications from India, accounting for 18 percent of all international graduate students at U.S. institutions. This increase is more consistent with the growth pattern in international graduate applications observed between 2006 and 2012, after a post-9/11 decrease (CGS Report 2014). As per CGS Report 2016, out of over 92,500

first-time international graduate students, approximately eight out of ten (77 percent) belonged to Asia, including Chinese nationals (36 percent) as well as Indian nationals (27 percent). The share of Indian students has dropped by four percentage points compared to Fall 2015 figures. The representation of Asian international students is high in master's and certificate programmes, accounting for 80 percent of all first-time students with India claiming 32 percent of the shares. Regarding application counts and offers of admission, the Indian graduate students represent 12 percent. A range of factors control global academic mobility, such as limited home country tertiary education capacity, human capital demands, national scholarships, and rising nationalism (Baer, 2016). Politics and economics of both U.S. and the countries of origin for overseas graduate students, as well as U.S. immigration and visa policies all influence the competitiveness of U.S. universities in the world graduate education market (CGS, 2016).

Bhandari (2017) finds Scholarship programmes funded by governments and private foundations such as the Ford Foundation and The Mastercard Foundation often aim to provide international fellowships to marginalised individuals from developing countries. Research has shown that these types of targeted efforts have a significant impact in increasing access to international education and can have a multiplier effect on communities and countries.

5.7.5 How Many Indian Students Study STEM in the U.S.?

The U.S. Census Bureau presents data which establishes that amongst the students of science or engineering; more than 50 percent are Asians, 5 percent belonged to Africa, 3 percent from Northern America.

The Institute of International Education conducted surveys in 2011-12 published in the Open Door Report 2012, which revealed several factors driving growth in enrolments in many U.S. campuses. The major reasons for the reported increases appear to be mostly associated with sustained active recruitment efforts as mentioned by 68 percent of responding institutions), the increasing standing and visibility of U.S. campuses out of the country (53 percent), and a bigger number of links with institutions located in other countries (30 percent). The campuses reporting boost also mentioned alterations in courses offered, an augmented number of supported students, and improved communications with students, parents as well as schools in key countries as various reasons for their greater than before intercontinental student numbers. Above two-thirds of all participatory institutions (69 percent or 388) have undertaken unique efforts to guarantee that the figures of global students

on their campuses do not fall. These efforts included addition of fresh employees or allotting added staff time to international recruitment (as cited by 61 percent), subsequently other responses include new worldwide programmes of partnerships (as cited by 52 percent), fresh financial support for international recruitment tours (41 percent), and also appointing third-party recruiters/agents (31 percent). Institutions devoting more capital for international student enrolment trips declare their main interest in Asia, with China undoubtedly the most well-liked recruitment destination country. Institutions also reported improved enrolment in Southeast Asia, the Middle East, followed by countries e.g. Brazil, Vietnam, India, Korea, Indonesia and Canada. The institutions restrained from taking particular steps mostly cited a deficiency of funding or resource, or mentioned their international student recruitment as steady and increasing; hence they continued their existing recruitment policies. Responding institutions were also asked about some important issues that may have influenced them in the earlier period. Various respondents reported challenges about China regarding combining the upward number of students from China on their campuses and also in their society, and to making sure English aptitude levels. Institutions are adding up more ESL classes, raising their point of student sustenance services, and supporting Chinese students with social, academic and cultural matters to address these challenges.

The greater part of institutions, which mentioned closer contact with Brazil during 2011-12 point toward their new recruitment efforts in Brazil, hosted added students belonging to Brazil, engaged in partnership actions with institutions from Brazil, and carried out planning trips to Brazil. Various institutions exclusively reported taking part as host institutions in the major new Scientific Mobility Program of the government of Brazil. Regarding support to students who were affected by the Arab Spring, many institutions indicated that they provided direct monetary help, for example scholarships, waived tuition fees or concession, short-range loans, provided free or reduced housing plus meal tickets, offered personal and group counselling, or helped students with applying for financial hardship work sanction through the U.S. Citizenship and Immigration Services.

The U.S., the U.K., Canada and Australia have been the recipients of extensive immigration of doctors during the past half century (Mejia et al, 1976; Martineau, 2004). Medical training vacancies in these industrialized countries, plus occasions for medical employment, have proved an exciting draw for doctors from several nations. This medical migration, frequently termed as —brain drain,|| has attracted many observations by the Council on Graduate Medical Education (COGME) in the United States, which expressed unease

concerning grave dependence on foreign doctors (Council on Graduate Medical Education, 1996). There is rising concern worldwide regarding the large dissimilarity among the nations in the availability of doctors and the pessimistic impact of the shortage of doctors on health equity, health disparity, and the battle at odds with HIV infection and AIDS notwithstanding the significance attached to remittances sent by migrant physicians back home countries and also to clinical and educational contacts they begin as proof of a —brain gain (Mullan, 2005; Waldman, 2004). The majority in the fields of science and technology and mathematics are found to stay back in the U.S. This finding is substantiated by Gaulé (2010), who finds very low return rates of overseas chemistry faculty in the United States. The research suggests that only nine percent of foreign born teachers holding no less than one faculty status in the U.S. return in the long run throughout their professional career, signifying very high propensity of foreign PhD holders to stay back in the U.S.

5.7.6 Post crisis mobility and migration

According to Massey (2012) though migration of temporary employees fell following the financial downturn, it improved between 2009 and 2010, as the entries of temporary workers increased from 1.7 to 2.8 million. In contradiction of the stability regarding flows of legal permanent settlers since 2008, guest worker immigration has increased significantly. Presently, permanent immigration is now stable at roughly a million entries per annum. A correlated tendency of return migration has also been seen in the United States – struggling to survive the recessionary effects still now. Well trained Brazilian, Chinese and Indian immigrants plus members belonging to the second generation have increased tendency of returning to their motherlands. As revealed from Choudaha's (2013) study the four year enrolment development of most important destinations point towards a sluggishness or decline, except for Canada. He explains the future enrolment movement likely to happen in 2013.

The post-recession situation hit the Indian students' mobility very badly and revealed two main sections of students; such as *immigration-driven* and *career-driven*. Each destination country possesses a mix up of these two sections. It ranged from mainstream *career-oriented* Indian students moving to the U.S. at master's degree level, to the preponderance of *immigration-driven* students pursuing studies in Australia at vocational and technical colleges. Because of recession, the U.S. has lost its magnetism to some extent as a result of a smaller accessibility to monetary aid from universities accompanied by worse scenario of finding jobs after attaining degrees. During this time one-year master's

programmes in the U.K. became quite eye-catching for Indian students. So they were prepared to fund shorter length master's programs and a higher prospective for immigration in comparison to the U.S. And during this period, Australia enjoyed peak enrolment of Indian students in 2009, with a big wave of Indians exploiting educational opportunity as a conduit for immigration through vocational programme. This great wave of Indian students with intent of immigration also exposed quite a few cases of visa abuses. Such incidents prompted both British and Australian governments to stiffen set of laws. Consequently, the enrolment of Indian students in the U.K. and Australia dropped. Nevertheless, Canada became a successful recipient as a consequence of its responsive policies towards immigration and attracted a greater number of Indian students with immigration purposes. Choudaha further anticipates slight recovery in 2013; for the U.S. as a result of demand side aspect of bigger group of students eager and capable to pay for their education and simultaneously growing confidence about the U.S. economy causing increase in fall 2013 enrolment. The U.K. is facing high pessimistic observation among the prospective Indian students and is not likely to start recuperating until 2014. All together, Canada could confront some challenges resembling what Australia had to face few years back. In 2013, thus, Australia will start getting better from its bottom chiefly caused by unenthusiastic observation in the U.K. and turnaround of some immigration plan including new post study work visa arrangements. USCIS defines Optional Practical Training (OPT) as short-term employment which is directly linked to most important areas of study of international students enrolled in the U.S. on F-1 visa. It is a helpful experiential occasion for 12 months at each education stage such as bachelor's, master's and doctoral. From April 2008, USCIS adopted a policy by allowing students studying in STEM to get added 17 months of OPT. This helped the U.S. to become more attractive for international students looking for gaining some work experience and also more essentially it proved to be a talent pull and retention tool also. Employers also can have a working relationship for longer duration before deciding on H-1 visa support. Since the OPT extension is relevant to STEM related subjects, it influenced a few countries over others. For instance, over 70 percent of Indian students are in STEM related disciplines like Engineering, Math, Computer Science or Physical/Life Sciences whereas; almost half of all Nepalese and Turkish students are registered in STEM related subjects. This is one illustrative aspect for soaring growth is OPT enrolment for Indian, Nepalese and Turkish students. Recent impetus regarding the immigration reform and also allocation of green card

to STEM graduates has potential to make the U.S. even more nice-looking for international students and presents logical corridors for preserving talented human capital¹². STEM OPT Extension is especially appealing to Indian students who are concentrated in master's programs in engineering and computer science. Data from SEVP indicates that in 2016, 83 percent of Indian students, 43 percent of Saudi Arabian students, 78 percent of Iranian students, and 40 percent of Chinese students are enrolled in STEM programs.

Choudaha (2017) finds some of the trends related to OPT during the eight years between 2007/08 and 2015/16. The academic year 2007/08 is selected to compare the enrollment trends prior to the approval of 17-month STEM Extension.

- In 2015/16, 90,732 more international students opted for OPT as compared to 2007/08
- In the eight years, the growth of students on OPT was higher than the growth in total enrolment
- Two third international scholars on OPT belong to China or India (2015/16)
- One out of every sixth Chinese student in the U.S. is on OPT (2015/16)
- One out of every fourth Chinese student in is on OPT (2015/16)

OPT provides a critical experiential opportunity to complement the academic curriculum with practical skills. OPT is recognized as one of the main differentiators in an increasingly competitive world of drawing international students from around the world. International students have contributed US\$ 32.8 billion to the U.S. economy in 2015-16. She (2011) states that the new policy requirements about post-graduate work and status adjustments, for example, the H-1B higher degree exemption and also the extension of the OPT program period, were not set off as down to business measures to draw international students, but somewhat an added offer besides the hassle-free visa policy with the aim of re-establishing the U.S. reputation and portraying a welcoming image to global students. The U.S. mostly relied on success from preceding decades to engage the international students. Its capacity in attracting the most brilliant and retaining the most wanted has remained for a couple of reasons, like the extraordinary learning sources, employment of highly capable graduates, and the soaring demand for accomplished labour in the knowledge industries.

¹²How 17-month OPT extension influenced international student enrollment trends? Posted on 2nd Feb 2013 by Rahul Choudaha on www.DrEducation.com, also see www.uscis.gov/portal/site/uscis/menuitem

Nevertheless, the knee-jerk practice led the U.S. to deal with exceptional challenges. Among all the matters being discussed on the U.S. supremacy in the international talent war, immigration restructuring remains essential to whether the U.S. can maintain its gain in attracting and retaining overseas talent.

5.7.7 Future projections

The factors possibly to influence student enrolment in the United States in near future are:

- Comprehensive capacity in home countries' tertiary education sector such as China and India.
- Domestic shifts, specifically political, financial, social as well as educational within key sending countries.
- International education services accompanied by substitute education delivery.
- Larger enrolment drive by other nations.
- The H1B visa policy followed by the United States.

Thus, the fresh inclination about international mobility is non-linear as well as non-traditional. Thus, there has been a transformation from the earlier form of movement of human capital between two countries towards a pioneering model of non-linear mobility across countries derived from educational and professional projections. Several studies over the past years suggest a compound yearly growth of international students of 1.07 percent from 2007 to 2025. The growth experienced in the 2000s was exceptional and bound to decelerate, but would be in proportion to the earlier decades over the years. The second scenario (linear) signifies a mishmash of the two disparate growth rates of the 1990s decade and 2000s. The third set-up discussed about the complete past development while giving more weight to the most recent time; finally, the third situation matches with a steady compound yearly growth rate over the whole phase.

Choudaha et al (2012) in a report titled 'Trends in International Student Mobility' predicts the rise of four emerging countries in the coming years. The report argues that the U.S. institutions ought to augment their near-term recruitment in the four promising markets as mentioned by order of importance:

1. **Saudi Arabia:** With over 23,000 students presently studying in U.S. institutions, Saudi Arabia will continue to be a vital market, owing to the extension of the *King Abdullah Scholarship Program*. U.S. institutions offering 'Intensive English' Programmes dexterously

connect with government agencies comprise the maximum capability to employ from this prosperous pool of entirely supported students.

2. **Brazil:** As a result of the *Scientific Mobility* scholarship programme, the U.S. institutions may receive a strong flow of almost 50,000 students from Brazil studying in short-term programs in next four years. Institutions successfully differentiating themselves from contestants can make the most of this market prospects.

3. **Vietnam:** Soaring recruitment potentials may be accredited to Vietnam's upwardly mobile middle class segment and their strong inclination for international degrees. Thus the Vietnamese students comprise the third major section of global students at the U.S. community colleges.

4. **Turkey:** possibilities exist to recruit students from Turkey mostly from its graduate marketplace in addition to dual degree programmes. Known as a tough market – but possessing lots of potentials, institutions of higher learning can overcome hindrances by understanding the first choices as well as academic requirements of Turkish student section.

5.8 Global financial crisis of 2008-09 and skilled migration during recessionary period

The International Monetary Fund (IMF) study (February 2009), mentioned that the causes of the monetary crisis laid in market malfunction, bred by a extended phase of high growth, low real interest rates as well as instability and policy breakdown in fiscal regulation – which was incapable of to make out the threat and defective incentives at the back of the monetary novelty boom; macroeconomic strategies – which failed to consider the growing systemic hazards in the monetary arrangement and in housing markets; and worldwide structural design – where a disjointed surveillance structure compounded the incapacity to see mounting defencelessness and associated issues.

Sheng (2009) thinks that the crisis must be accepted as a network crisis, because as a result of an entire series of deregulation, fiscal reforms and scientific and economic innovations, the world has become strongly networked into a universal market, with laws, directives and policies running within national boundaries. Present policymakers and regulators, mainly economists, lawyers or accountants by training, have not borrowed enough from other disciplines, like information technology, biology, and engineering, in addition to psychology to discern motivation, attentiveness, volatility plus architecture are also applied generally to explain and manage network actions. Network connections through economies of

scale, reduction of transaction costs and capital effectiveness were boosted by the open market thinking that drove international monetary deregulation, trade and capital accounts liberalisation, decrease of taxation plus transaction taxes and the drive for globalisation. With steady harmonisation of practice and principles, the trends of globalisation were shaped by the four mega-trends of arbitrages in labour wages, interest rates, knowledge and regulation. The financial systems that sheltered property rights, reduced transaction expenses with high clearness and comparative advantage in expertise, technology along with governance profited from globalisation. The four worldwide arbitrages originally fashioned an era of high growth, noticeable price constancy, low instability and increasing affluence, but policymakers and also the community similarly underrated the increase of the four immoderation in —liquidity, leverage, confidence and then greed. Furthermore, it was believed that central banks possessed the implements to restrict the harm from the cyclical slump and banks had sufficient capital and smart models for risk management. Regrettably, all four lines of security for economic stability were proved to be ineffectual. The initial line of security at the board, bank administration and internal management were unsuccessful to put off the top banks from undertaking excessive risk. The next line of defence comprising auditors, legal consultants and rating agencies failed to stop the perils of building up in toxic products, and too much remunerations etc. Risk management specialists perhaps helped to maintain the incorrect beliefs that everything was controllable. The third line of security by fiscal supervisory bodies, standard-setters as well as central banks responsible for economic stability repulsively underrated the systemic effect of the debacle and was caught with off the cuff and ungainly crisis responses causing zero help in boosting market confidence. Similarly, the last line of defence of bazaar discipline, including the media and community judgment, was more pro-cyclical rather than anti-cyclical. It was an absolute failure.

The de Larosiere Report (2009) attributed the grounds of the mayhem to macroeconomic concerns, fundamental malfunction in evaluating risks, the function of rating agencies, failures of corporate governance and the collapse of crisis management. Onaran (2009) views that the two imperative long-standing incongruities of neoliberalism are free market entrepreneurship have produced higher profits for transnational firms, particularly for the fiscal sector. The high profits not necessarily always produce high investment. Second from a macroeconomic outlook, the decline in share of labour has also been a dilemma for the micro-level beneficiaries of these strategies. Profit can be realised provided there is effective demand for commodities as well as services. From the position of the whole world,

the less developed countries were evidently less impacted by this depression compared to advanced countries; from the standpoint of the developing countries the effect of the downturn is more well-known. The expansionary course of globalisation of the previous three decades rarely matched the pace of the developing world in uniform manner. A small amount of big and heavily populated (though not completely Asian) countries have developed after taking advantage of the trade led incorporation of the world, even as others have done so to a smaller degree (ILO, 2004).

The mobility of Indian students in all fields of study has varied over the years as a result of plethora of factors. The globalisation of society and economy has caused increased dependence of technological disciplines in the curricula of higher educational institutions. During the 1990's decade, there was mass exodus of India's technical skill to the U.S. reaching its peak, the majority of workforce moved to the U.S. on H1-B work visa. In this process many became successful after becoming entrepreneurs in the U.S. The emphasis on American degrees as a route of entry to the U.S. was not so important. However, after 9/11 the heightened American security, immigration and security barriers prevented the Indian workers to directly apply for a job in America from India and subsequently getting a H1-B visa. So, the modus operandi changed. The Indians started going to the U.S. as a student and then after getting enrolled changed their status from student to worker. Thus the student enrolment started increasing. But, the 2008 recession compelled the Indian students to change their game plan regarding settling in the U.S. As a result, during the post-2008 years, it has become difficult to get work visa in the U.S. Nothing like the student visa, the applicants themselves are not eligible to apply for a work visa directly nowadays. The employers can apply on their behalf. According to modern trends, most companies hiring in job fairs, prefer to hire only U.S. citizens or green card holders. So, the international students need to totally rely on references from their professors or depend on professional networking to obtain a job, or even an internship. However, the U.S. government offers all and sundry an Optional Practical Training (OPT) period to acquire a job.

The students studying in the American campuses belong to the category of skilled workforce. The effect of recession on skilled migration turned out to be to some extent true as Martin (2009) predicted. The recession slowed fresh deployments of overseas labour to higher income countries, both due to the fact that employers ask for smaller number and for this reason some governments cut short the employment of new overseas workforce; (e.g. Korea and Malaysia declared recruitment stops in January 2009). The supply of migrant

workforce in several countries stopped growing and also declined. Comparisons with previous recessions imply that the international disposition of the 2008-09 recession affected migrants in a diverse way than the earlier period for the following grounds. *First*, during this slump one area was not profiting cost-effectively to the detriment of another, so that migrants could hardly move to another destinations. *Second*, the first consequences of recession were experienced in cyclically sensitive industries e.g. construction and manufacturing, where last-hired along with often male migrants were among the first to be discharged. *Third*, there existed far more concern about remittances and their role to development in migrant-sending regions than during preceding recessions. *Fourth*, immigration was less influenced drastically in the United States compared to other conventional immigration countries as a bigger share of the U.S. immigrants' move under preferences of family unification (Papademetriou et al. 2009). This was rather applicable to the enrolment of students from India in the American institutions following recessionary periods. There has been fall of Indian student enrolment during and immediately after recession in the United States. However, after few years, the U.S. economy picked up and impact of recession was felt less in the enrolment of Indian students.

5.8.1 Remittance flow in India – USA context

Remittances are monetary flows starting from the cross-border movement of countrymen. In contracted logic, they denote —unrequited transfers,|| suggesting money that migrants remit to family as well as friends without any claims contrary to other fiscal flows like debt or equity. The World Bank (2003) thinks that the definition ought to include two types of remittance flow that are recorded disjointedly in a country's balance of payments statistics such as —migrant transfers,|| arising from the migration of persons from one financial system to another and are equal to the net value of the migrants; and also —compensation of employees,|| which are resources remitted back by temporary workforce, who work abroad for less than a year. The remittances are commonly defined as the sum of three elements in the IMF's Balance of Payment Statistics Yearbook (BOPSY): migrant transfers, compensation of employees, and workers' remittances. This is used as a standard definition in the World Development Indicators (WDI) and the World Bank's Global Development Finance databases too (Matuzeviciute et al, 2016). Debates do exist among academicians and policy makers regarding the viability of remittance money in the case of the developing countries like India. The proponents often argue that brain drain phenomena has facilitated the remittance income for cash-starved countries of the world; whereas, others think that the

loss of precious human capital hinders the developing countries to deliver crucial services in areas like health, education and other key sectors vital for overall progress for nations.

A study by Aggarwal et al (2006) finds that remittances have a noteworthy and optimistic effect on both bank deposits in addition to the ratio of credit to GDP. Kapur, et al (2005) view that given a substantial quantity of remittances passing through illegal ways, while those moved through official paths invite lofty transaction expenditure, one might logically anticipate more outflows (from the sending countries) than inflows. But the figures in reality demonstrate the reverse scenario. Cuba, Liberia, Haiti and Vietnam confirm zero remittance inflows, whereas Hong Kong, Singapore, and Canada also prove zero or very little outflows, regardless of bulky immigrant populations in all cases. Many countries have abrupt surges, which are unfathomable under most conceivable state of affairs. There are great disparities in remittances across countries per foreign worker (see figure 8.1). High remittances from Belgium/Luxembourg and Switzerland are a dilemma and could plainly mirror the fact that the above countries are banking centers, thus remittance outflows may basically be camouflaging money laundering. The enormous ambiguity surrounding remittances is mirrored in the changing numbers recorded by diverse sources.

The pragmatic substantiation on the possible effects of positive and negative impact of skilled emigration is an unsettled issue (Güngör et al., 2010). For instance, Faini (2006) provides substantiation that skilled migrants send less remittance money than unskilled emigrants, even as a research rooted in micro data by Bollard et al. (2009) advocates contradictory findings. Remittance flows to developing countries of every income-level have matured exponentially since 1980. It was repeated during 1990-1999 compared with 1980-1989 and tripled afterwards. Increase of remittances in less developed countries has been five times higher during 2000-2009 in relation to 1990-1999, whereas the remittances for LDCs have also shown noteworthy growth. More than 90 per cent of the remittances flow to middle-income countries, which have tripled their remittances between 1990-1999 and 2000-2009.

Documented flow of workers' remittances to less developed countries have witnessed growth over the years and fast growth rates have helped in attracting attention to remittance income as a possible means for development (Freund, et al 2005). Remittances are expected to enhance on the international level. With expanding globalisation the movement of persons has become evident. Trade, transport, telecommunication, transmitting remittances, tourism etc. strengthen the acquaintances between migrants and their motherlands. Remittances have

proved to be an element of the human face of globalisation (Orozco, 2003). Kapur et al (2005: 142) think that the rate of recurrence and strength of economic crises in several developing countries during the last two decades have augmented the necessity for social safety nets, amplifying the demand for remittances. Bollard et al (2009) have found that two of the most prominent propensity in migration and development over the last twenty years are the great increase in remittances in addition to the flow of skilled migrants. Research proves a diverse model between education and the probability of remitting, and a strong encouraging link between education and amount remitted.

There are two discrete characteristics of total global remittances to India. One fraction goes towards family upholding and principally keeps up family consumption. These remittances are mostly conducted by means of wire transfers as well as bank drafts (RBI 2006). Another fraction originates from NRI deposits and can be deemed as mainly sustaining domestic savings of the NRI's. Thus, withdrawals from NRE (Non-Resident External) accounts; where the joint-holders can only be NRI's and not resident Indians are presumably directed towards domestic investments of the NRI's in real estate, equity market and other avenues (RBI 2010b; Tumble, 2011: 10). The two Indian states, e.g. Tamil Nadu and Andhra Pradesh account for almost a fifth of global domestic remittance flows, with approximately a 50-50 share between rural and urban areas. Punjab, Goa and Kerala's heavy reliance on worldwide remittance flows can be judged by the 'total' international remittance to Net Domestic Product (NDP) ratio (Tumble, 2011: 11-14). Internationally, remittances were about US\$414 billion in 2009, of which US\$316 billion flowed to developing countries, and involved about 192 million migrants of the global population. In many developing nations, remittances are a significant source of family (and national) earnings and are the principal source of peripheral financing. Certainly, in many developing countries, remittances can comprise above 20 percent of GDP. The extent and possible impact of the remittance inflows is great. Remittances add to the receiver country's foreign exchange reserves. Though capital flows have a tendency to augment during favourable monetary cycles and decline in bad times, remittances are likely to be countercyclical compared with recipient countries' financial cycles. Remittances also tend to be less unstable concerning other sources of foreign exchange incomes. Remittances sustain fiscal sector progress through a strong and affirmative impact on bank deposits plus credit to the private sector.

At the family unit level, the beneficiaries habitually count on remittances to cover every day living costs, to endow with a cushion against urgent situation, or to make little

amount of investments in commerce or education. Remittances are better targeted to the requirements of the underprivileged than are overseas aid or FDI. India has surpassed Mexico to attain the world's leading remittance destination. India and China are the principal recipient countries of remittances globally with remittance of 45 billion or more each.

Workers' remittances have always constituted about 3 to 4 percent of India's GDP ever since FY 1999/2000; have provided substantial sustenance to balance of payments of India. Remittances financed almost 45 percent of the merchandise trade deficit from FY 2005/06 to FY 2008/09. Remittances have exceeded both foreign assistance flows in addition to foreign direct investment (FDI) flows (Gupta 2006). Notwithstanding a deceleration in general remittance flows to developing countries owing to the international monetary disaster, remittance flow to South Asia has been resilient. The source countries for remittance income to India are similar to the destination countries for migrants from India. The RBI estimates that approximately 38 percent of total remittance incomes to India in 2009 started off from North America whereas 27 percent has origin from the Gulf countries, regardless of bigger share of Indian migrant population in the Gulf (RBI 2010a). This could be owing to the fact that expatriate Indians in North American are more skilled and better paid (MOIA 2009). The following table shows the remittance income of the different countries of the world. India's remittance income was \$58 billion in 2011, followed by \$57 billion for China, \$24 billion for Mexico and \$23 billion for Philippines. India's remittance income has developed from \$13 billion to \$58 billion from 2000 to 2011. The inflows include 3 percent of India's GDP in 2010, even as it was just 0.8 percent for China. India is the world's chief remittance receiver, whereas China, Philippines, Mexico, Nigeria receive massive amount of money. Other bulky recipients are Egypt, Pakistan, and Bangladesh etc. Remittances aid developing nations to improve their foreign exchange reserves; and assist them to meet up their balance of payment needs. The great majority of unskilled workforces in the U.S. belong to Latin America and the Caribbean countries. In accordance with the World Bank (2012) publication Migration and Development Brief November issue, the flows of remittance to the developing world expects remittances growing over the preceding years. Besides, the growing number of non-resident Indians, the feeble Indian currency and investment in personal property probably boosted the remittance flow to India. Nevertheless, in spite of the growth in general remittance income to developing nations, the large-scale monetary crisis restricts remittance flows to a number of regions, with Europe and Central Asia and Sub-Saharan Africa particularly involved in the restricted remittance income.

Regions with enormous number of migrants in oil export based countries continue to observe healthy growth in remittance income, in comparison to those whose migrants are mostly settled in the highly developed economies, particularly Western Europe. The report also mentioned that though remittances to developing nations grew in 2011, they are susceptible to the unconvinced economic scenario in the countries witnessing immigration.

The major character of the 2008/2009 ‘Global Crash’ was its capability to hit more hastily and distressing more countries than previous worldwide financial depressions. Recession has had a patchy effect on labour market across geographies. As during other fiscal slumps, migrants are among the most exposed class of workforce affected by failing job scenario. Impact of the recession on remittance flows depends on numerous factors like the proclivity of migrants to remit money, dependent on length of stay as well as family conditions and also the conditions at home is also a significant issue (Laczko, 2010). Afram, (2012) view that remittances to India faintly declined to US\$49.2 billion in 2009, in relation to US\$49.9 billion in 2008. In the commencement of the second half of 2008, the remittance flows were slowing down because of the global financial crisis. Remittance inflows measured as private transfers has observed growth of approximately 60 percent through the first quarter of 2008 and during the second and third quarters of 2008, by 48 percent and 43 percent correspondingly, corresponding to the similar periods in the preceding year. For the duration of the fourth quarter of 2008 and also the first quarter of 2009, nevertheless, the remittances declined by 4.5 percent and 31.5 percent, correspondingly, proportionate to the equivalent periods in the preceding year. Generally, during the first half of 2009 i.e. from January to June remittances witnessed decline by 15 percent from US\$26.7 billion to US\$23.1 billion, for the duration of the identical period in 2008. Yet, as can be seen in figure 2.7, the remittances rose once more registering a development of 5 percent and 4 percent, in that order, in both the second plus third quarters of 2009 over the equivalent time in 2008. Hence, remittance to India declined on account of the international monetary crisis in only two quarters i.e. last quarter of 2008 along with the first quarter of 2009. With the economic crisis and resulting deceleration trouncing several remittance source countries, NRIs, who have experienced earnings as well as employment snags, probably have substituted transfer of funds to their relatives by drawing on their overseas cash deposits back in India. Non-resident savings with Indian banks fell in U.S. dollar terms as well as in Indian rupees from July to October 2008. This development, though, started to turn round in November 2008, and this trend still continues.

Remittance inflows ultimately recovered to US\$55 billion in 2010. Private transfers in FY 2009/10 witnessed an improvement of over 17 percent or above US\$54 billion over the preceding fiscal year. In the second part of FY 2009/10, private remittances were US\$30 billion, almost a 50 percent augment over the US\$20 billion earned during the first half of FY 2009/10. This partial consequence of the economic crisis on remittance to India may be accredited to several factors. Primary, declining asset value in India, increasing interest rate disparity, and a downgrading of the local currency pulled investments from migrants. Secondly, even though some migrants lost their work and subsequently returned to India, with accumulated savings they had, many Indians after losing jobs decided to take lower salary jobs with other companies. Mohapatra et al (2011) view that for the first time ever since the international monetary crisis, remittance income of all six developing regions increased in 2011. Growth of remittances in 2011 was beyond outlook in four regions, particularly in Europe and Central Asia; because of higher outward remittance flows from Russia benefitting from elevated oil prices and Sub-Saharan Africa; due to well-built south-south flows plus weak currencies in a few countries that was pulling factor for bigger volume of remittances. Contrastingly, remittance growth to Latin America and Caribbean was lesser than formerly anticipated, thanks to systematic Achilles' heel in the U.S. financial system in addition to Spain. Remittances to Middle East and Africa were also affected by the —Arab Spring

- Following this rebound in 2011, the growth of remittance to developing countries is likely to prolong at 7-8 percent yearly to arrive at \$441 billion by 2014. Internationally remittance flows, including remittance to affluent countries, are likely to surpass \$590 billion by 2014.

- However, there is grave menace like persistent unemployment in Europe and the U.S. affecting job scenario of existing migrant population and tough political attitudes toward new immigration. Unstable exchange rates and ambiguity regarding the direction of oil prices also present additional hazard to the position for remittances.

- Remittance expenses have dropped gradually from 8.8 percent in 2008 to 7.3 percent in the third quarter of 2011. Still, remittance costs have remained high, particularly in Africa along with small countries where remittances provide a support to the underprivileged. Officially recorded remittance income flowing to developing nations is estimated to have attained \$351 billion in 2011, which is an 8 percent enhancement over \$325 billion in 2010. According to World Bank (2017), India's Diaspora will send approximately US\$ 65 billion in

2017. The other top five receiving countries are China receiving US\$ 61 billion, the Philippines receiving US\$ 33 billion, Mexico receiving US\$ 31 billion, and Nigeria receiving about US\$ 22 billion. Remittances to India will probably grow by 4.2 percent in 2017, after a steep decline of nine percent in 2016. India's remittance income was US\$ 62.7 billion in 2016. India's remittance income in 2018 is expected to grow at 2.5 per cent. According to a recent study by Bhandari et al (2009) of Manpower India, the corporate sectors like Hewlett Packard, Yahoo introduced business in India mainly due to confidence generated by the skilled Indian workforce working in the United States.

The World Bank (2017) estimates that officially recorded remittances to developing countries was \$429 billion in 2016, suggests a decline of 2.4 percent more than \$440 billion in 2015. The report is apprehensive because weakening of remittance flows can impact on the capability of families to get access to health care, education or nutrition. The following year data suggests improvement in remittance income. India is not only dependent on the U.S. for the remittance money, but also the skill and experience learnt by the technical Indian manpower working in the United States. The intangible resource is produced by the Indian scientists in the American laboratories and engineers in the IT firms of the USA is invaluable innovations for which the U.S. firms and government gains in the form of royalty and business supremacy over India. In return India is forced to pay a significant share of that remittance income to the U.S. by direct and indirect means. So, it is difficult to establish the validity of remittance income and development. Regarding the experience of the Indian doctors working in USA, it may be a case of brain drain rather than remittance issues. India as a country woefully lacks critical healthcare services in rural areas in particular. The experience of the doctors in the U.S. hardly comes to the use of India. A vast section of the doctors of Indian origin are engaged in economically lucrative profession in the U.S. rather than research in medicine. The recent counter migration from the United States to China suggests significant spurt in start ups in China by the Chinese Diaspora who lived in the west for long time and gained valuable skill and experience. China has been a major gainer in this respect, caused by brain gain.

5.8.2 Social remittances

Peggy Levitt in her book, *The Transnational Villagers* (2001), used the term social remittances. North-South Centre of the Council of Europe's (undated: 8) report views Diaspora as a latent resource rather than a cause of worry; and also a budding human and social capital having capability to make important input to the political as well as institutional

progress to the home countries, apart from sending money. It is critical to believe that migrants also transmit other forms of remittances to their motherland such as *social remittances*. Social remittances deserve consideration for a number of grounds.

At the outset, they play an imperative function in formation of transnational collectivity. Secondly, they bring the issues like the social impacts of migration at the forefront. And thirdly, social remittances are a possible community development support. Diasporas are termed as historical forerunner of contemporary transnationalism. Notwithstanding monetary possessions migrants also obtain knowledge, useful expertise and skilled experience, and also they enjoy a set of connections of social relations leading to a certain human capital. When better incorporated into their host cultures, migrants and refugees are better capable to give effort for the development of the political ambience in their birthplaces. The association of migrants to two spheres carries an additional possibility in cultural requisites both for the origin and destination countries. This aspect of living in different countries enables them to become intercultural intermediaries, emissaries and activators. North-South Centre of the Council of Europe's study also finds African Diasporas spreading social remittances to home countries in an informal, incomplete and irregular way. According to Levitt (2001), three categories of social remittances such as, —normative structures, —systems of practice, and —social capital are important. Normative structures encompass ideas, values, and beliefs which include norm for behaviour, accepted wisdom about family liability, ethics of sociability and community involvement, and goals for social mobility. They also include ideas concerning gender, race, as well as class identity.

Nevertheless, regardless of the significance linked to social remittances, the less developed nations lack fundamental services in several key areas similar to medicine, where brain circulation is not so common. The health centres in small towns and villages are woefully short of basic healthcare services. Despite all the advantages accrued by social remittances some key services can hardly be neglected in a developing country like India. Levitt et al. (2010) opine that social remittances are less researched but significant piece of the migration-development nexus. Their impact on immigrant amalgamation processes and the dynamics of sending-communities is not easily comprehensible. How they cast impact on development-project results, in origin and in settlement countries, is frequently unobserved.

The social remittance by emigrant Indians is important in the present circumstances as apparent by the government of India documents. They also add knowledge of the world, global networks, novel ideas, and technologies along with markets to their native soil. It is the

need of the country that the Indian Diaspora should be engaged for stepping up their rendezvous with India. The international understanding of the outcomes of international networks as sources along with facilitators of commerce and investment, suppliers of remittances and as brain banks may be important. The growth of fast communications, effortless of worldwide travel, tolerant host country courses of action, etc. have helped the Indian Diaspora to concurrently incorporate into their relevant host countries and also uphold their socio-economic plus political acquaintances with India in addition to members of same-group ethnicities distributed around the globe. These networks are valuable to transnational corporations including up-and-coming Indian multinationals. They also make possible the process of globalisation in India. Some of the Indian Diaspora have attained international character and are advocates of the rising idea of universal nationality. Diaspora youth are a grand asset on account of their intellectual resources, fervour, devotion and energy. In addition, Diaspora members, their institutes and concerns can play host to interns from India that may affect India's understanding of nations positively where Diaspora has a large presence. Thus, present association between the Indian Diaspora and India provide a tactical instrument in India's surfacing as an international power.

The less developed countries in Asia and Africa receive remittance income. This source of income has played a vital developmental role in such backward geographical regions. However, despite the money flow sent by the emigrant population and also social remittances it is quite noticeable that many sectors in the developing countries such as India lag behind due to lack of human resources. Health is one such field where India suffers because of non-availability of doctors. Historical experiences suggest the active role of human resources in the developed countries in the past was priceless. Very few countries have become developed in true sense of the term by depending on remittance only. Hence, over-reliance on remittance by ignoring the socio-economic development of the country is an imprudent policy decision.

Research related to remittance always faces lack of data and information. Even the IMF (2009) agrees the limited availability of data in this regard. There is a serious need to develop statistics on remittances at the national and bilateral corridor point. The national data on remittances is of comparatively subordinate quality in many countries compared to data on foreign direct investment along with official flows. Remittance inflows frequently comprise other objects other than those sent by expatriates, like small value trade and payments connections and in a number of cases, even transfers to NGOs and embassies. The World

Bank, IMF, OECD and Eurostat along with central banks as well as national statistical offices tried to introduce novel definitions of —personal remittances‡ in the manual of the IMF. Still, some countries assemble remittances data by making use of the Balance of Payments Manual (BPM4), which carries the risk of major underreporting of inflows. While Ghana, for example reported remittance income of \$136 million (in 2010) to the IMF Balance of Payments, the central bank of Ghana reports inflows exceeding \$1.8 billion. Also there are concerns with uniformity of definitions plus coverage of migrant remittances, particularly during crisis-period. Often bilateral remittances data are not documented. Where data on the starting place of remittances are published by central banks (like Philippines), these flows are regularly attributed to global clearing centres through which remittance proceeds are routed, in preference to the countries where the remittances really start off.

5.8 Conclusion

Remittance income has been hailed as a significant source of income for the developing countries. The skilled labour migration and mobility is regarded as a loss of valuable human skill, innovativeness, experience etc. who contribute to the economy and society of the developed nations. These losses are viewed to be compensated by remittance income. Nevertheless, it is really difficult to estimate the gain by remittance earning by India and the loss caused by outward mobility and migration. This is because the gain if any contributed by the expatriate human resource living in the U.S. is invisible resource gained by India. While the U.S. can gain out of its demographic deficits, the over dependence of India on remittance as a country of 130 billion population, surely cuts a sorry figure. The U.S. Census data confirms the presence of 45 percent of the foreign born population in 25 – 44 age group as compared to 27 percent of the native population. Thus, it is difficult to ascertain whether the remittance gain is a positive aspect for India or not.

Chapter 6

Research Findings **Mobility Intentions of Prospective Indian** **Students**

6.1 Introduction

The student mobility from the institutions of India in STEM subjects is often studied in terms of their contributions towards their homeland. Remittances, research contributions, back migration etc. are often researched. It is not easy to find out the exact impact of the so called brain drain or brain gain owing to a plethora of subjective issues involved. The present research has emphasis on the research intentions of the students studying in the higher educational institutes of United States. Hence, the behavioural economics among the prospective STEM students in India as well as the current students pursuing studies in the American institutions have been taken into account. It was found that the decisions of scholars have been guided by a variety of factors such as family, career prospects, income, government policies etc. The migration and mobility decisions change with changing economic as well as social conditions in a country. Compared to previous years, many students nowadays are in favour of returning back to their homeland. Globalised economy has resulted in changing reforms in higher education. The higher institutions have been busy in adopting new pedagogy, technologies, policy goal, and collaborations with foreign institutions in developed countries. Newer approaches adopted by the governments in sending and receiving countries directly and indirectly influence the mobility decisions. The growth oriented capitalist economy in line with the globalised world has resulted in the birth of new occupations based on specialized knowledge and expertise. The science and technology sector is sensitive in their response to the newly emerging areas. Hence, the STEM students need to keep themselves updated, which is best possible in the best educational facilities of the United States. Many Indian students leave India due to bureaucracy, poor research environment, difficult admission procedures and lack of OPT like hands on training facilities in India.

The great foreign constituent of the U.S. human scholarly capital is connected to the aptitude of U.S. higher education system to draw, support, and care for overseas S&E graduate students. Foreign students, mostly those belonging to Asia, stand for a great portion of enrolment and degrees in S&E area in U.S. institutions of graduate level teaching and learning (Johnson et al. 1998). The pull factor for education in the U.S. keeps on growing although the spirit of mobility and its variety is altering. All through the early sixties, the U.S. universities were destinations of postgraduate scholars from India (called graduate students in the American jargon), mostly in quarters of natural sciences of Physics, Chemistry, and Biology along with Mathematics. These academic visits were largely for obtaining a PhD.

degree of an eminence not simply attained in India. The U.S. education arrangement could effortlessly attract this class of students, ever since the U.S. scholarly society was reliant on graduate students, desired for research projects backed by funding agencies. The U.S. universities then were not seeking students as a basis of revenue creation as the propensity has been in vogue nowadays, with spotlight now on undergraduate employment. The Indian students pursuing in the U.S. in the past completed their post-doctorate as part of his —training skill, allowed by the immigration regulations. But now the Indian students plan to go to the U.S. with a durable plan. The students' families are habitually enthusiastic that their stay in the U.S. is protracted so that their professional careers are improved and also build substantial wealth through rewarding job offers made by industry. The industry would rationalize the continuous stay of the student in the U.S. by supporting their probable worker for a U.S. visa a must under the immigration rules. This led to more and more seekers of green card holders in the United States and possibly leading to a permanent U.S. residency. Students arranging to move to the United States are at present alert of a range of choices accessible to them in the U.S. education structure. The United States Education Foundation in India (USEFI), with its branches in major cities is offering reliable information along with supervision for pursuing studies in the U.S.

With this backdrop, the present research is written with the intent of mapping out some of these alterations in the mobility of students and other professionals between India and the United States. The charisma of education service in the U.S. continues to grow up but the character of mobility and its variety is undergoing change. Throughout the early sixties, the U.S. universities were centres of attraction for postgraduate Indian students (known as graduates in the American phraseology), largely in natural sciences of Physics, Chemistry, Biology and Mathematics. These instances of student mobility were chiefly for receiving a PhD. degree of a value recognised everywhere. The American education structure could simply attract this class of students, as the U.S. educational society depended on graduate students for research projects supported by money-granting agencies. The U.S. universities were not in search of students as a foundation of income creation as the propensity seems to be these days, with attention nowadays on undergraduate recruitment.

The institutions under study include the IITs in Kharagpur, New Delhi and Kanpur; IIM Kolkata, IIM New Delhi, IIM Bengaluru; IISc Bengaluru, medical institutions like AIIMS, New Delhi; erstwhile Bengal Engineering College, Tata Institute of Fundamental Research, Jawaharlal Nehru Centre for Advanced Scientific Research, Indian Agricultural

Research Institute New Delhi, National Physical Laboratory, Institute of Physics, Inter-University Centre for Astronomy and Astrophysics, Institute of Mathematical Sciences, Mehta Research Institute and Mathematical Physics Allahabad, S.N.Bose National Centre for Basic Sciences, Indian Institute of Astrophysics, Harish Chandra Research Institute, Christian Medical College at Vellore, certain departments of sample Indian Universities like Life Science Department and Computer Science Department of Jawaharlal Nehru Univeristy, University of Hyderabad, Saha Institute of Nuclear Physics, Computer Engineering Department of Jadavpur University, Jamia Millia Islamia, Council of Scientific and Industrial Research, Indian Institute of Science Education and Research, from where the Indian students generally out migrate.

The non-participatory surveys were done by sending emails to the student union bodies of the selected institutions of the United States; such as, Massachusetts Institute of Technology, Cornell University, United States Naval Academy, Rice University, California Institute of Technology, Carnegie Mellon University, Stanford University, Princeton University, Georgia Institute of Technology, Yale University, Duke University, University of Pennsylvania, University of Ann Arbor, University of Notre Dame, Columbia University, University of Southern California, University of California – Barkeley, University of Illinois at Urbana – Champaign, University of Texas – Austin, Purdue University, Washington University in St. Louis, Virginia Tech, Brown University, Johns Hopkins University, Tufts University, Georgia Institute of Technology, Purdue University – West Lafayette, University of Illinois – Urbana Champaign, Texas A&M University, University of Wisconsin – Madison, University of Maryland – College Park, University of Minnesota, Rice University, University of Pittsburgh, Iowa State University, University of Rochester, University of Delaware, Case Western Reserve University, University of Dayton, Michigan State University, Colorado School of Mines, University of Utah, Lehigh University (Rossin), University of Connecticut, Stony Brook University, University of Houston, Syracuse University, University of North Carolina, Michigan Technological University, New Jersey Institute of Technology, University of Cincinnati, George Washington University, University of Alabama, University of South Florida, Texas Tech University, University of Kansas, University of Kentucky, Missouri Institute of Science and Technology. In applied mathematics, applied mathematics, discrete mathematics and combinatorics, financial math, number theory, representation theory, symplectic geometry, topology, algebraic geometry, complex analysis, logic and probability are popular courses in the U.S. universities. The

popular earth science courses taught in the U.S, institutions include geology, climate studies, marine estuarine studies, earth remote sensing, geochemical science, natural resource, fishery science, geo science policy etc. The popular institutes include Montana Tech, Case Western, University of Minnesota Duluth, George Mason University, Dartmouth College, The City University of New York, Howard University, Montclair State University etc.

The environmental science is a very popular course in the U.S. The most popular universities are West Texas A&M University, Western Kentucky, Southern Illinois University Edwardsville, Marshall University, Clemson University, Western Washington University, and University of Denver etc. The forte of the American Universities is environmental management, public health, policy issues, conservation, toxicology etc.

6.2 Research findings

6.2.1 How do the forces of globalisation affect the institutions?

It seems that for improving competitiveness of the affiliated colleges the fiscal autonomy will be the important and also academic autonomy is the major guiding strength. In the case of the renowned institutions in India, strengthening the industry interface, application of technical expertise, faculty and research as well as case technique have become priority. Increasingly more open markets and decreasing governmental power are allowing companies to shatter geographical limitations. With the downfall of socialist economies, the 21st century global order is promising owing to accommodating capitalism and controlled socialism. Countries contend with each other for fiscal gain, as protectionism disappears. The lifting of governmental control might have supported the release of supremacy of an all-inclusive economic order, but the secret of affluence is fuelled by the most momentous human resources. After discovering the necessity for a greatly skilled and bright labour force, India like other countries worldwide have placed emphasis on greater investment in education and skill improvement. The surveyed Institutions have in recent decades greatly encouraged skill augmentation. The study of Indian institutions imparting science and technology education has demonstrated such characteristic trends. Several such joint projects and R&D are carried out in these institutions. The present trend of globalisation of education in India is a challenge for such parallel mediocrity of educational institutions in the country.

Now let us discover opportunities to students of the institutions surveyed in the background of altering higher education as well as job profile. The existing literatures are weighed against in the findings produced during the survey among sample student

population. The top ranked institutions in India have a discrete edge in job market, while the current employment market has a propensity to favour the potential employees from reputed institutes. Conventional and time-tested paths of service are losing relevance with the emergence of newer openings and careers, as is relevant from the courses chosen by students of these Institutions. As is revealed by interviews; presently, most students have a baffling range of options – of colleges, areas of study, areas of specialisation and methods and so on. Students are faced with difficult tasks of making alternatives derived from popular trends. In an economy open to globalisation, talent hunters from different corners of the world captures people with special aptitude from across the globe. In truly globalised economy, there exists a definitive measure, providing an archetypal method to recognize the brilliance of the human resource. There must be indistinguishable level playing field, providing likelihood to all, founded on true merit. In the case of the Indian Institutes, the job market has become enormously significant in the selection of courses. Interaction with students divulges that the students are conscious of fast changing job profile due to shifting nature of India's opening economy. The speedy diversification of courses in response to technological improvement has led to their irresistible preference for technical courses over social science disciplines. The student mobility likings have been influenced by such courses of science and technology.

The companies in India are in scurry to meet the new global principle to benchmark workforce of different countries including the developing countries – thus they are endorsing the selection systems of workers based on merit. In case of the IIT, the computer engineering courses are in the route of modernizing their proficient human resources by frequently arranging international workshops, conferences, international publications in addition to creating international tie ups with the foreign Institutions plus transnational companies like Dell, Microsoft, HP, Infosys, TCS, Wipro and so on.

Knowledge is the motivating force in the quickly changing globalised financial system as well as society. Quantity and quality of dedicated workforce determine their skill in the world market. Emergence of knowledge results in both challenges as well as opportunities. Undeniably the growth of the international economy has increased chances for those countries with high levels and quality of education. Globalisation has a multi-dimensional influence on education. It encourages new techniques in new areas like E-learning, Flexible learning, Distance Education, Overseas training etc. Globalisation means many diverse things for education. Our Institutes like IISc and IITs regularly produce top-

notch professionals. These institutes impart quality training as per industry opportunity and give due weight to institute-industry interface.

In computer science and electrical engineering, the meritorious students staying in India are chosen by multinational companies. They also become mobile labour force moving all over the world. A section of employees also prefer to pursue foreign degrees in USA as some of them are sponsored by the firms they work for. A very small number of them ultimately join management schools. A lion's share of IIT students are engaged by the IT sector with corporations like Infosys, TCS, Cognizant, HP, Dell and Wipro as they also provide services in the U.S. as well as in India. The out sourcing of jobs in Hyderabad, Bangalore, Pune and Sector V of Kolkata has made skilled migration to some extent irrelevant as the wage is increasing in Indian companies. However, the traditional information technology degrees and certificates are being replaced by newer courses like cyber security, business intelligence, health information management, computational finance, project management and leadership, human computer interaction, health informatics, web technology; cloud computing, video games and multimedia. Courses like data science and Big data are gradually occupying places among the most sought after subjects due to their steep demands. The students from India nowadays prefer to study IT courses in these fields. The modern globalised economy relies on imparting training to skilled manpower in different countries of the world – in different set up and ambience followed by employment in a country. Thus the technical manpower produced generally gets exposure after getting training in different countries. The engineering courses are also getting diversified such as, Aerospace engineering, architecture and design; civil engineering with focus on developing communities; water engineering and management; courses on electrical engineering in embedded systems; power electronics, photonics, engineering management, materials science, biomedical or automotive engineering, nuclear engineering, systems engineering, environmental health engineering, communications engineering, chemical engineering, robotics, sustainable energy, mechatronics etc. Besides, natural sciences are also popular choices, such as, atmospheric and oceanic sciences, marine science, environmental resource engineering, evolutionary biology, agricultural science, green chemistry, biochemistry, biomedical science, clinical laboratory science, ecological conservation, cosmetic science, geology-geophysics-geoengineering, condensed matter science, astronomy and astrophysics, nanoscience to nanotechnology, petroleum geology, photonics, digital signal and image processing, predictive analytics,

The Institutional response to the forces of globalisation as revealed by this study finds a brief mention below. Globalisation has definitely influenced the institutions of higher learning in India. The surveyed Universities are regularly implementing reforms in syllabus like introducing ‘_integrated course’ as per the recommendation of Human Resource Ministry of Government of India as well as the University Grants Commission. Upgrading the quality of teaching and research in higher education is necessary in modern educational system, as even the premier surveyed institutions; considered as the finest in the country lag behind many other countries as revealed by contemporary world university rankings. India immediately should have research of global standard and subsequently publication of noteworthy number of papers of lofty quality in international journals. Getting teachers of good quality in different subjects is a major problem as was revealed by the surveyed institutions because of a plethora of factors. Skilled migration of highly qualified teachers to foreign universities is one major cause. Lack of improved teaching-learning facilities even in the renowned Indian institutions in contrast to the top ranked institutes of different countries of the world is a reason behind flight of merit from such institutions. Survey has revealed that the Indian Universities, for example are introducing ‘_integrated course’ in engineering disciplines. But interaction with students has proved that only a few students of engineering truly find teaching as a profession as an interesting option. The gradual shift of the institutions of higher learning as regards weight on teaching and learning of applied disciplines, campus interview based placement openings, attractiveness of job-oriented courses, stress on responsibility of teachers and other staff indicate gradual move of our university system towards production as well as distribution of knowledge systems. Labour markets for students passing out are undergoing hurried transformation in response to impromptu technical revolution and globalisation in an amplified dimension.

As part of the surveys, the questionnaires were distributed among faculty in different Indian institutions. Overall responses were 57 percent from faculty. The questionnaire was intended to seek responses from the faculty regarding the globalised higher education in their campuses. The questions and the responses are listed below:

- a. *Do you think the current trend of globalisation of higher education is inevitable?* About 96 percent teachers agreed that the present trend of higher education is following the trends set by the forces of globalisation.

- b. *What measures are being taken by your Institution for higher academic collaborations like twinning programme, joint degree, dual degree, choice based credit system, branch campus etc. and if any problems are faced due to such structural reforms?*

All the institutions surveyed were found to be adopting with the ongoing measures mentioned above. The apex body University Grants Commission also regularly sets certain rules as mentioned, regarding the policy measures for uplifting the quality of higher education. These measures also follow the developed countries' policies. However, such sweeping changes also demand very high investment in education – from government as well as private sources. There are some issues, such as, shortage of staff, lack of research culture, low level of research, lack of innovation, absence of willingness to change the system etc. The teaching faculty finds themselves at a loss in such contradictory system.

- c. *Is there any teacher or student exchange programmes in your Institution?*

Only 34 percent had such programmes, suggest that the Indian institutions need to develop.

- d. *Is your Institution connected by online libraries like Inflibnet, Delnet, national and foreign libraries etc. in digital format?*

Although inflibnet has been introduced in all institutions, pan India or international linkage e.g. library exchanges were not commonly found.

- e. *What are the career oriented courses involving science and technology being taught in your Institution?*

There are vast choices regarding career oriented courses. Most of the technical and science courses have high demand in job market. Due to rapid changes in the production system in the Indian as well as global economy, emphasis has been placed more on super specialisation. The institutions were found to be equipped with many updated courses in collaboration with foreign establishments. The teachers however admitted that the students would always prefer to study many such latest advanced fields in the west rather than in India.

f. *Is there any foreign student in your Institution?*

Only the top bracket institutes had some representation from abroad, even from developed countries. But overall representation by the scholars from developed education system is low. It suggests urgent need to boost the system, improve international ranking, greater exchange of faculty, more stress on research and development etc.

g. *Is English medium instruction followed in your Institution? All had such facility.*

h. *What the new learning technologies are followed in your Institution like smart class, video conferencing, online teaching, virtual class etc.?*

These facilities were found to be accessible in all the institutes. Keeping pace with rapidly changing teaching learning systems, the teaching methods have been undergoing transformations.

i. *If you have international peer reviewed publication published from abroad having impact factor?*

Almost 78 percent faculty had publication from abroad.

9a. *if any of your paper is cited?*

All the respondents had citations.

9b. *if YES, how many papers are cited?*

No such specific data could be obtained.

j. *If the Institution has any link with industries for course development, and/or placement etc.?*

The departments teaching science subjects in the institutions have been developing alliances with industries. Most (83 percent) departments had placements and industry interface. The curricula are designed to cater to the demands of industry, at least to some extent. The industries further train the students after their appointment during probationary period.

k. *Whether your Institution has NAAC accreditation?*

All the institutions were NAAC accredited. Most of them had several cycles of NAAC.

l. Have you provided consultation to industries or any other organisation?

Faculty in engineering, bio science, and chemistry specialized departments regularly provide consultations.

m. Is your Institution involved in R&D?

R&D or research and development have become part and parcel of the educational institutions. The production systems in the present globalized world have been undergoing rapid transformation. Thus, constant upgradation of the products needs developed R&D in order to stay competitive in market.

n. Are the students keen to enroll in foreign countries for higher education?

The faculty members were asked about their students. Although the students were given separate questionnaires, the similar questions were asked to their teachers too. According the teachers, the students in IT, biotechnology, theoretical physics felt interested to pursue career in developed western countries, and not necessarily in the United States. The students pursue not only higher studies abroad, but also they get engaged in several fellowship programmes in foreign universities and institutions.

o. Are you conducting / or have you conducted any international project (s)?

Only 16 percent teachers were found who have had conducted international projects. The internationalisation of the Indian institutions has ensured greater access to global education for teachers as well as students. The international research collaborations are more available for teaching faculties in premier institutions of India.

p. Do you teach in any foreign Institution?

During the survey, only 5 percent teachers could be found who visiting faculty in foreign institutions. In IITs and IISc like institutions, a great number of faculties have international involvements.

q. Is there any faculty from abroad in your department/Institution?

No such teacher was found belonging to foreign origin, although the institutions surveyed had visiting professors from foreign institutions having higher rankings.

Research collaborations with teaching faculties from higher ranker institutions are common in India's premier institutions.

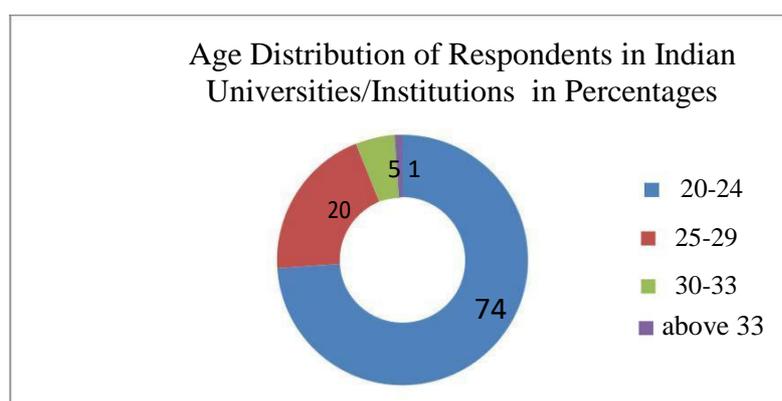
6.2.2 Factors influencing student mobility

The survey in the Indian institutions was carried out among the student population of different age groups based on stratified random sampling technique. The stratified random sampling is used in the case of the selection of students from science and technology subjects as maximum cases of student mobility abroad take place in this category. Most of the surveyed students belong to 20-25 age group in all the institutions. The case studies are discussed in two parts, such as, the case study of the Indian institutions based on participatory surveys and the non-participatory surveys conducted in the higher educational institutions in United States.

Table: 6.1 Age Distribution of Respondents in Indian Universities/ Institutions

Age Group	Percentage
20-24	74
25-29	20
30-33	5
above 33	1

Figure: 6.1

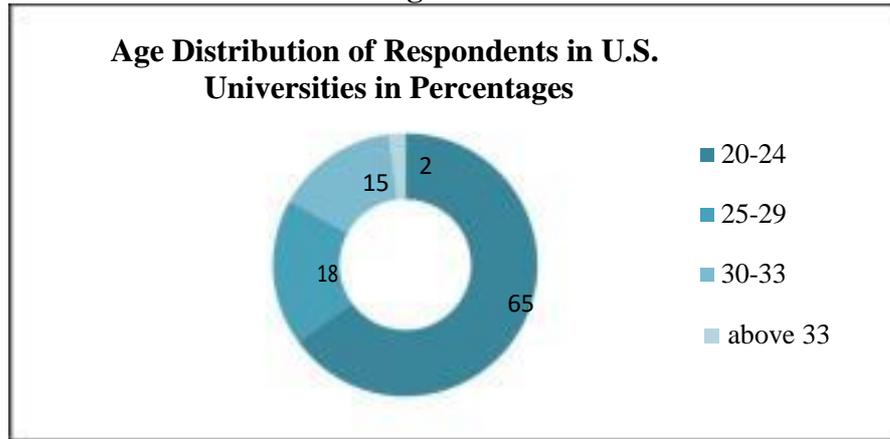


Source: Field survey, 2016

Table: 6.2 Age Distribution of Respondents in U.S. Universities

Age Group	Percentage
20-24	65
25-29	18
30-33	15
above 33	2

Figure: 6.2



Source: Field survey

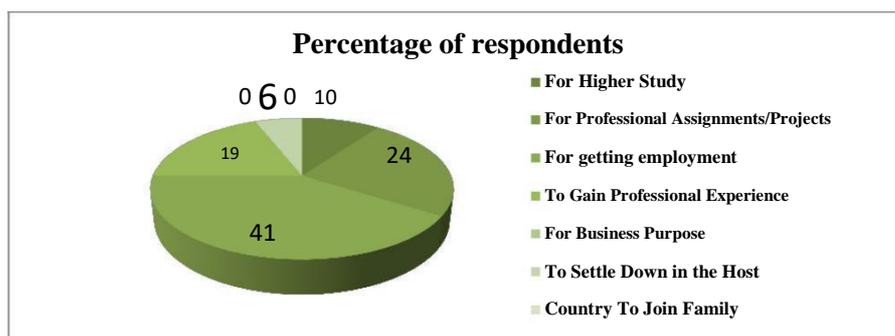
When data were collected in the Universities in India, roughly 85 percent respondents were in the age-group of 20-25, in comparison to about 11 percent in 25-30 age-groups. A small section of respondents even belonged to upper age group. Being research oriented institutions of higher education such as JNU and IISc, most of students were found to be enrolled in PhD or post doctorate. In engineering category, practically 95 percent students were in below 25 age group. In IIT's case study also a more or less matching state of affairs was revealed. As a result, the majority of students of IIT enrolled in technical fields were in 20-25 age groups. Throughout the survey in IITs, the study was persistently restricted to students of science and technology subjects only. The propensity of student mobility to overseas destinations in IIT is generally more frequent among technical professionals. The physics research institutions have restricted access. So, only 31 students could be surveyed. The agricultural institutions were surveyed, where 77 students in post graduation and Doctorate levels could be surveyed.

Table: 6.3 The push factors and pull factors of outward student mobility in Indian Institutions

Purposes	Percentage of respondents
For Higher Study	10
For Professional Assignments/Projects	24
For getting employment	41
To Gain Professional Experience	19
For Business Purpose	0
To Settle Down in the Host Country	6
To Join Family	0

Source: Field survey

Figure: 6.3 The push factors and pull factors of outward student mobility in Indian Institutions



Source: Field Survey 2016

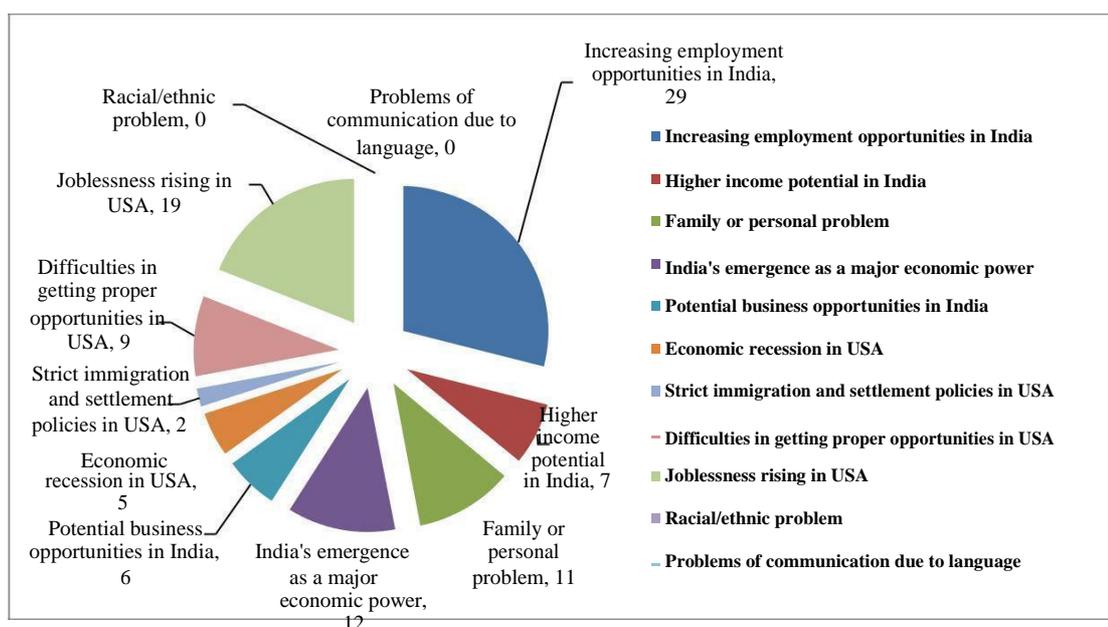
The student mobility pattern cannot be explained without looking into the encouraging factors among students acting behind going overseas. It is notable that even during past years of 90's decade, the IIT students had a distinctive trend of going abroad, either for work or for higher education. Many engineers, who left India during the 60's and 70's from India to the U.S., ultimately settled there and became green card holders. But as India emerged as an economic giant, the job openings are shifting, so are the income opportunities. The scientists find it favourable to stay back in the U.S. due to better research funding and opportunities. Whereas most of the students are concerned about service opportunities or obtaining higher education for upcoming prospects, a considerable section of students are fascinated about professional assignments or projects for lead in their career. To expand professional skill is the major inspiring factor for those studying in science research institutes, followed by higher education as well as employment in the U.S. With the growing emphasis on technology in this globalised world, the career profile of the scientists has become competitive globally. Salary wise, the employment of the IT engineers in India and the U.S. barely makes any differentiation at least in the high expertise level. For the University students, higher education out of the country is the principal motivating factor. The engineering students have an urgent priority to secure service, while the scholars in physical science plus natural science disciplines are more disposed to pursue higher studies in the U.S. It should be noted that settling down in the United States is no longer a main concern for students in all the Institutions surveyed. The attractiveness of the U.S. seems to be on the wane particularly after the recession and emergence of other destination countries. The destinations as well as the source countries are gradually becoming competitive, as their job markets are getting diversified, the quality of higher education is improving, and the governments are busy in offering incentives to the potential migrants.

Table: 6.4 Motivating Factors behind those Preferring Return Migration

Motivating Factors for Return Migration	Percentage of respondents
Increasing employment opportunities in India	29
Higher income potential in India	7
Family or personal problem	11
India's emergence as a major economic power	12
Potential business opportunities in India	6
Economic recession in USA	5
Strict immigration and settlement policies in USA	2
Difficulties in getting proper opportunities in USA	9
Joblessness rising in USA	19
Racial/ethnic problem	0
Problems of communication due to language	0

Source: Field survey

Figure: 6.4 Motivating factors behind return migration (percentage)



Source: Field survey

The students doing PhD in natural sciences, information technology and engineering said that they were not averse to come back to India after their higher studies / service is finished in the United States, were further assessed about the encouraging factors liable for their homecoming to India. Strangely optimism and despondency both seem to coexist together at the rear the choice of their mobility. The key rousing factor of return of expatriate Indians was the growing job outlook in India. India's success as a leading IT power is implied by the growth of Indian outsourcing companies such as Infosys and Wipro. The ability of employment generation by the Indian business houses in India's IT sector is colossal. The job

attrition rate is rather high attended by severe need of skilled labour force in this industry. The panic of economic downturn led to harsh joblessness crisis in the U.S.; has sent its waves across the world as well. This might have provoked the surveyed people to respond pessimistically with reference to the employment creation in the American financial system. For the students of physics, mathematics, geology and bioscience; India still does not offer good opportunities. They keep their minds open regarding working in other countries such as, Canada, Germany, UK, China, France, and so on. Despite governmental efforts, the Indian research organisations do not provide the favourable research environment like the developed countries where work ethics and professionalism are considered important. As a result, the promising researchers in science and technologies prefer to gain experience in the research laboratories in the U.S. and in the process, India is deprived.

India's surfacing as an economic power and originator of employment as well as depressing push factor of mobility like America's job loss have played as key rousing factors behind return skilled migration. Encouraging factors of student mobility and major obstacles to studying abroad have been discussed in the following section. Among the 'other' positive factors of migration the principal factors cited by the probable migrants are specialised training not easily accessible in India, making quick progress in career, superior quality of education in the host country and so on. Respondents were asked to point out the factors they felt as the main barriers to studying abroad were: finding precise information; gaining recognition to the institute of your preference; getting a visa, charge of the visa and application procedure; charge of studying abroad; language obstacles; cultural differentiation; distance from residence or family and other. Respondents were permitted to check as many reasons as applied, so percentages do not total one hundred. Women were more prone than men to mention distance from home as well as family as a main impediment and men were more liable than women to mention no impediments. An obvious networking develops among students – the senior as well as fellow students in many Institutions abroad. The technical particulars of immigration into the United States is certainly related to visa application, selection of Universities, in detail techniques of preparation for admission tests such as GRE etc. All these information are eagerly shared by the student community abroad. The literature survey done for this report has revealed wide-ranging networking which plays an imperative role in the scenario of outward mobility of Indian students.

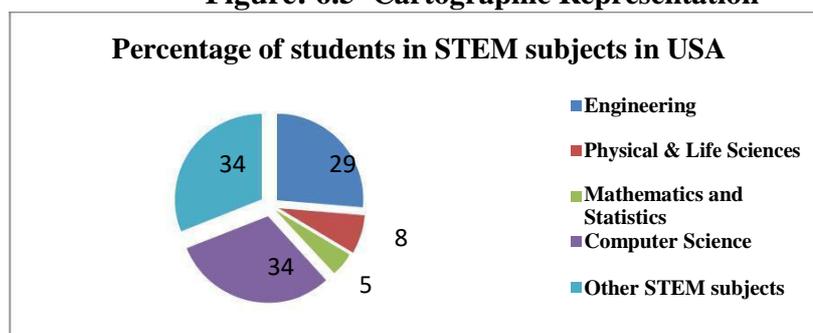
6.2.3 Intended fields of study

The S&E students were asked about their planned areas of study if they get chance in the U.S. Institutions in future. For the good number of students, the preference was engineering. The students were selected based on stratified random sampling. A variety of STEM courses were selected. For engineers, degrees in management appear to be adding credentials in their bio-data. Globalisation has caused diversification followed by further specialisation of courses with job profile also. The desire among engineers for obtaining degrees in management corroborates this fact. Physical and natural sciences have become top priority areas among the student community in general. The present day knowledge economy has become specialised, and as a result, interdisciplinary courses are in high demand. The American universities teach interdisciplinary courses – better than other countries.

Table: 6.5 Intended Field of Study (Percentage of students of science research institutions)

Intended field of study	Percentage of students
Engineering	29
Physical & Life Sciences	8
Mathematics and Statistics	5
Computer Science	34
Other STEM subjects	34

Figure: 6.5 Cartographic Representation



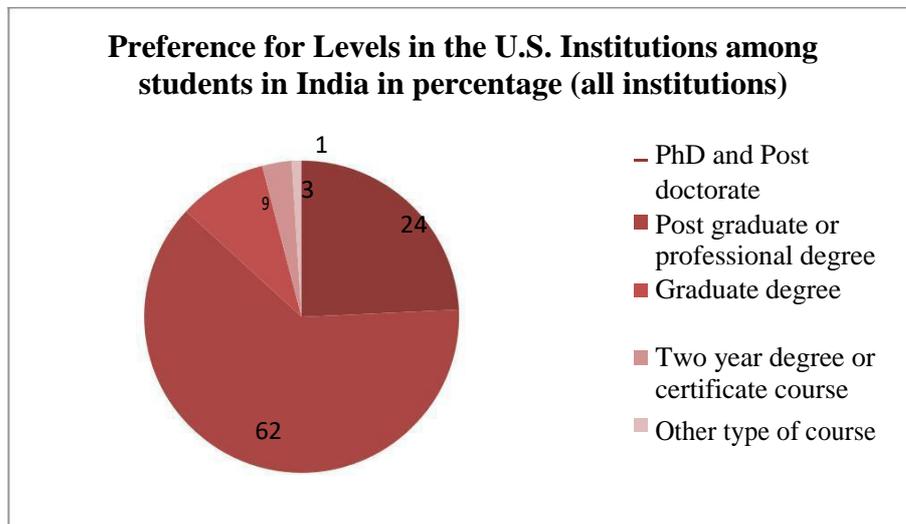
Source: Field Survey

Table: 6.6 Preference for Levels in the U.S. Institutions among students in India (all institutions)

Types of study abroad	Percent of respondents
PhD and Post doctorate	24
Post graduate or professional degree	62
Graduate degree	9
Two year degree or certificate course	3
Other type of course	1

Source: Field survey

Figure: 6.6



Source: Field survey

6.2.4 Impressions about the United States as a study destination

Impressions regarding the United States as a study destination may be analyzed from the on hand data. High value of higher education, broad choice of curricula and hospitable nature of the U.S. towards students from across the world are highly treasured by the students of IIT. Nevertheless soaring tuition fees as well as expensive school application procedure is a dispiriting attribute of the American higher education system. High distinction of tertiary education, extensive range of programs of study and friendly nature of the U.S. towards foreign students are viewed by the students as optimistic feature of the U.S. higher education system. Intricate visa application method is regarded as to be a gloomy problem. High-quality student support services, excellent standard of living are imperative concerns for students, though high quality of tertiary education along with extensive range of curricula taught by the U.S. Institutions are also believed to be indispensable like the students. Expensive school

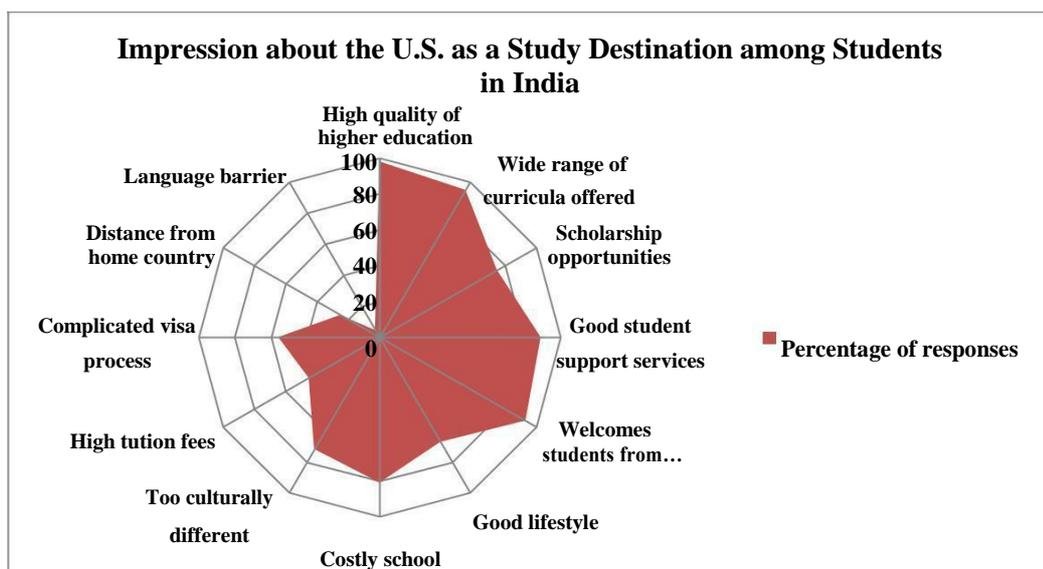
application procedure and costly tuition fees are off-putting factors. The Institutions hit by recession in the United States have hiked their fees, even exceeding the U.K. in numerous cases. During 2009-10 rise in graduate enrollment in U.K. surpassing the U.S. confirms that tuition bill in the U.S. have become inconsistent.

Table: 6.7
Impressions about the United States as a Study Destination among Students in India

Impressions about the U.S. as a Study Destination	Percentage of responses
High quality of higher education	98
Wide range of curricula offered	95
Scholarship opportunities	75
Good student support services	89
Welcomes students from overseas	93
Good lifestyle	67
Costly school application process	81
Too culturally different	72
High tuition fees	94
Complicated visa process	56
Distance from home country	25
Language barrier	5

Note: The respondents were asked to put tick mark in their choices. Hence, one person preferred more than one option regarding his/her impression of the U.S. as a study destination.

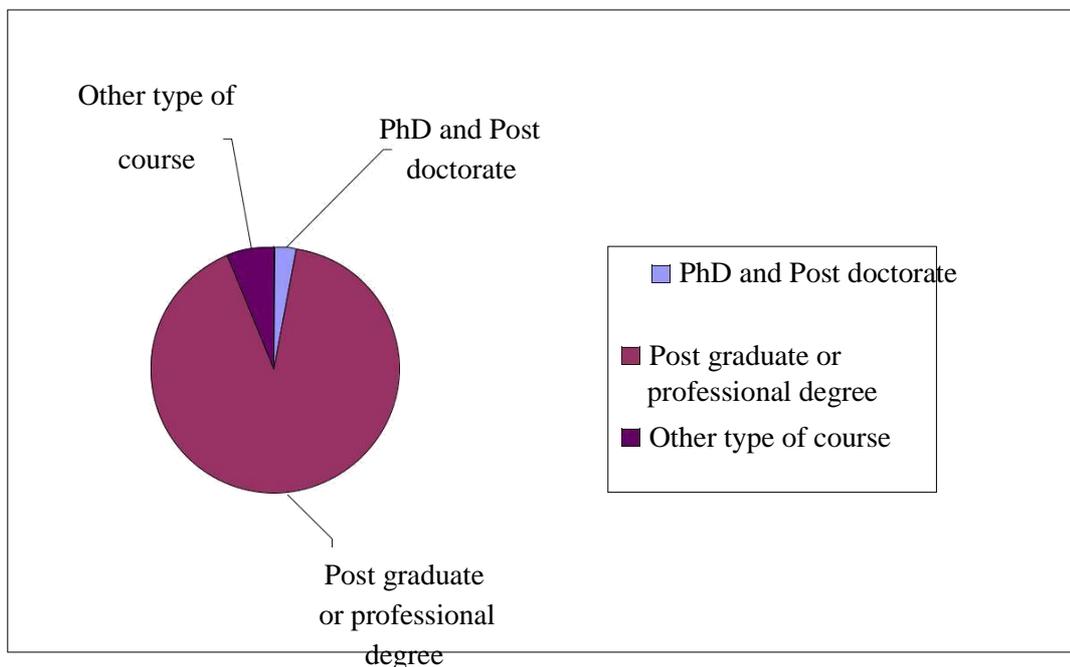
Figure: 6.7



Source: Field survey

The general idea about the major study destinations among the engineers implies a remarkable keenness for the United Kingdom and not the United States. This hints the increase of the production and distribution system of higher education in countries offering stiff competition to USA. Australia performs poorly in the in general liking as a study destination basically due to ‘curry bashing’ like physical attacks on Indian students in Australia. Pursuing a PhD or post doctorate in the U.S. visibly occupy a second rank in the list of precedence of students who are currently more in favour of bagging an early as well as high salary job.

Figure : 6.8 Preference for PhD and Other Courses in USA



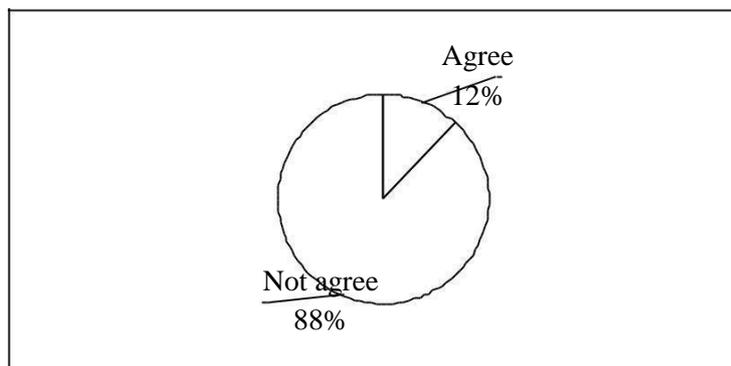
Source: Field survey

In IIT, Kharagpur it is evident that more students are in concerned about pursuing PhD or higher qualification perhaps because IIT, Kharagpur has a discrete convention of research. Many IITians from Kharagpur has previously done well in research activities contrary to IIT- Kanpur, Delhi and Mumbai for instance. In the case of the surveyed students of Indian Institutions, the United States Educational Foundation (USIEF) is a vital service provider. The USIEF provides wide-ranging information for would-be applicants for entrance in the U.S. higher educational Institutions. It is of note that notwithstanding great diffusion of internet technology in urban as well as rural areas; acquaintances and relatives still appear to be one of the chief sources of information in relation to the higher studies in USA among the

STEM students of India. Though USIEF is the chief supplier of information besides friends and families, education fairs often held in the major metropolises of India every year and in addition internet is a major source of information. Likewise, for students other than IITs, the source of information conspicuously matches the IIT students. Students were asked about their favoured study abroad destinations, their motives for studying overseas, the major impediments they faced and their major sources of information on overseas study in addition to their views of the U.S. as a probable study abroad destination in comparison to five other important host destinations. The foreign universities in near future may set up their campuses in India for drawing local students. However, the students are not keen to pursue study in the branch campuses of foreign Institutions in India as the present study suggests. The obvious bias for the United States as well as UK among the students most likely is caused by bright future scope of research in science and technology with teaching scope.

Figure: 6.9

Students in India about their Intention to Study in Branch Campuses in India



Source: Field survey

On the whole, the survey outcome points toward that the state of the United States as a likely study destination for Indians. The survey results also depicted a number of heartening issues and blemishes for the United States as a learning destination for Indian students. The majority of respondents cited the worth or type of academic course as their main reason for studying abroad. In contrast the Continental Europe, Australia, Southeast or East Asia, the Middle East; the United Kingdom and the United States was rated well for outstanding tertiary education system and extensive range of schools and programs, besides for being welcoming toward global students, presenting a unmatched level of affluence and for being a safe place to study. Yet, the U.S. received the most awful ratings for the inflated fee of tuition and high-priced school application procedure. The National Science Board, (2008)

views that the U.S. higher education is now threatened by many competitive countries of the world quickly catches up with the competitiveness of USA. Europe's reorganisation of its graduate education core curriculum has ensured more PhDs in science and engineering stream in comparison to the U.S. The findings of the present study also match with the study of the National Science Board. The past authority of the U.S. in science and technology is fast becoming thing of the past. The students find other different alternatives in European and Asian Universities as market-friendly, worldwide acceptance and also less costly. Thus it may be recommended that upgrading of the visa process is indispensable to make it easier for global students and scholars in general and Indian students in particular. As part of any possible immigration reformation, a novel visa type may be structured for international students who attain a PhD in a STEM field from U.S. Institutions. The brain circulation of skilled migrants at least in disciplines like computer sciences is expected to make certain gain for the growth of human resource in addition to the development of R&D in India also.

Once, the worldwide mobility of scholastic aptitude was restricted and universities across the world enrolled only local students, solely hired citizens as faculty, and offered hardly any prospects for non-nationals to attain citizenship status. The U.S. was the exceptional case and vigorously employed faculty and graduate students belonging to Europe and beyond starting in the 1930s. The early approach towards liberal immigration policies at foremost U.S. universities positively helped maintain a leadership position that sustained well into the 1980s. But at present, both developed and developing countries are modernising their higher education arrangements, looking for raising the global profile and magnetism of their universities, and incorporating higher education into their home and foreign strategy schemes. Thus, new contenders for international students are emerging outside the US soil.

India is rising as a large-scale R&D destination for quite a lot of MNCs. General Electric, Lucent, Suzuki, Phillips, Siemens, IBM, Microsoft, Oracle, Dell, Hindustan Levers and many more such R&D centres are contending for employing Indian skilled workers in their centers in India. Indian group leaders having working experience in their R&D centres abroad for a number of years are being moved to India - a win-win situation for both the parties. Several Indian companies have also started establishing R&D centres, predominantly in the medical and the healthcare businesses, act as pull factor for global researchers for frontier areas of science. The academic sector has regrettably not been capable to be a focus for Indian talent abroad; to the same degree as the corporate sector has been doing. The

research facilities and the work environment are though not yet attractive but this is gradually changing with the surfacing of the globalised higher education sector in India.

It may be argued that the active involvement of the government in higher education, increasing competition in higher education due to competition among service ought to benefit the higher education scenario in the country in the long run. The changing prospect for education and service influences the students in positive as well as negative manner. An Indian student from a middle class prosperous family, starts exploring the likelihood of studying overseas, from the college days. Such ambitions get aggravated once the relatives and acquaintances of that student study in foreign Institutions. Earlier parents were reluctant to send their children abroad. Now many urban affluent families encourage their children to travel overseas by giving them support during the decisive years of their studies, with the expectation of their increased chances of earning abroad in near future. In the past, a Master's or a PhD in the U.S. was the only aim of an Indian student moving to USA. But as the survey responses suggest, now it forms not the only option among the Indian students. In the post recession period, the United States temporarily lost much of its attractiveness among international students including the students from India also, despite renewed interest in the U.S. as a higher education destination. Other countries are rapidly catching up with the U.S. by offering various incentives to students. Skilled workers experienced in western markets and management systems are in much demand in the growing economy in India. The recent experience of the previous students of the surveyed institutions now working in the U.S. is not very happy either. With the loss of H1B visa enabled workers' jobs, visa status is also lost, resulting in compulsory exit from the U.S. The present decision of the prospective Indian workers to study in the U.S. followed by few years' job experience and eventually return to India is also guided by overall recessionary trends in many developed OECD nations of the world. The trend of reverse brain drain from USA is observable across many disciplines of science, technology and engineering fields. The crisis in USA presents a healthy opportunity for India to stay powerful in the 21st century knowledge economy, with the gain of skilled persons in vital science, technology and engineering fields. The slowdown in the U.S. has resulted in many populist measures like putting cap on issuing H1B visa to foreign nationals, which might cause local unemployment among the American citizens. The scholars studying science and technology prefer to respond to the changing market demands.

6.3 Findings

This part of the findings will look into the behavioural approach among the students studying in the U.S. Institutions. Thus the mobility intentions of Indian students are discussed in this section. The push and pull factors are constructed as dummy variables from value —one|| once they scored high on a 5-point Likert scale and value of —zero|| if they were relatively less important in determining the return intentions.

Table 6.8 has provided descriptions, summary statistics plus estimation results for variables applied in the ordered probit model of return intentions. Estimates of the marginal effect of few selected variables from the final estimation model are shown in Table 6.9. The marginal effects have been calculated as the changes in the probability of choosing a particular category of return intention for the explanatory variables selected. All empirical work has been done by using standard errors of the change in probabilities and are given in parentheses below the marginal effects. The categories of return intentions (y) are labeled from 1 to 6, with one which corresponds to the highest return intention category and six corresponding to lowest return intentions category. Negative value for the marginal effects tends to indicate that the probability of choosing a specific return intention category goes down whereas positive values indicate that this probability rises. The human capital theory views that the difference in the anticipated foreign and domestic income is the principal determinant of skilled migration. The migration decisions are guided by the lack of satisfactory income in the native country has been included as a push factor and competitive income prospects in the present country of domicile has been included as a pull factor. The technique of applying these two subjective measures for testing the effect of income differences are justified by the possibility of each migrant having dissimilar perceptions of the income differentials based on inadequate information regarding all alternative employment avenues available to the migrants. Not everyone may place equal weightage to the same payment. Academic opportunities in USA and upward job mobility are also strong incentives for people. Many students do not leave study even though they secure jobs. Those academic assignments are often sponsored by the firms where they work or self financed. Additional qualifications enhance prospects in the job market. The students compare the academic environments in India to that in USA. Some sectors like the IT field need constant updating of knowledge. So, they need to study often beyond their eligibility qualification in order to stay competitive. The probability of coming back increases when the psychic costs, like adjustment costs, associated with being in the U.S. is high. An ordered probit model of

return intentions is estimated of students where the dependent variable means the return intentions discussed in the previous section with the six categories ranging from values 1 through 6. Human capital theory stresses on the role of income disparity in migration decisions (Sjaastad, 1962). Wage differences between the country of destination and the country of origin are viewed as the key determinant of migration flow. To explain the return intentions of the STEM students, a set of variables are used as suggested by human capital theory apart from variables that are considered to be fit in the present research case in the empirical estimation. Various —subjective variables are used to determine the importance of a range of monetary, social, political as well as human capital factors. Some have basis on the respondents' rankings of several push and pull factors regarding their importance in their willingness to return or stay. The final empirical model is selected based on goodness-of-fit statistics; e.g. mainly the AIC plus McFadden's adjusted R^2 . More details about the model selection process are mentioned later. In the next section, the rationale for consideration of each of the variables and also their empirical importance in determination of the return intentions of Indian STEM students are discussed.

Below the variables are discussed; considered in determining the return intentions of engineers.

Gender Effects: The dummy variable takes on the value 1 for —female and 0 for —male. The positive coefficient estimate for gender means that females are less likely to indicate that they will be returning to India compared to males. Anyway, gender is not statistically significant in the final model presented in the following Tables.

Age Effects: —Age and —Age squared are part of the explanatory variables in order to control for cohort effects in addition to possible nonlinearities. Older employees and hence sponsored students generally exhibit stronger return intentions than younger generation who have a longer time frame for working and earning a better salary level in the west. In the final model, age has a positive coefficient and the square of age has a negative coefficient, which indicates that the probability of weak return intentions increases with the age of the scientific brain at a decreasing rate. These two variables, however, are not statistically significant in explaining differences in return intentions for the students.

Stay Duration: Stay duration means the number of years spent in the host country. When duration increases, the incentive to return is to diminish, as individuals get more accustomed to living in their workplaces. The duration of stay variable is positive and

statistically significant at the 1 percent level of significance – indicating the length of stay in the host country increases, and the tendency to stay outside India also increases. Stay duration may also lead to a weakening of ties to India, and a strengthening of ties to the cities of USA where they work and study. It seems that re-adapting to India can be difficult when stay duration increases. It may also increase the psychological distance with the social as well as work environment of the India even if India is the birth place.

Initial Return Intentions: the author has decided to formally test the significance of prior return intentions of the STEM students. Respondents were asked regarding their initial return intentions when they decided to study and work in USA. The possible responses were —return, —undecided and —stay. About 26 percent students intended to return prior to leaving India, whereas about 67 percent engineers decided not to return and the rest was undecided about returning. Two dummy variables are included in the model e.g. X4 for —unsure and X5 for —return, for determining whether differences in the primary intention of the engineers prior to their venture abroad is important in determining their present intentions about returning to India. The coefficients of the variables of initial return intentions are positive and significant at the 1 percent level of significance. The probability of not coming back ($y = 5, 6$) decreases as initial intention shifts from —stay to —unsure and the initial intention shifts from —stay to —return (calculated from second Table in this section).

Family Support: Family attitudes and support about migration decision are to have a significant impact on the decision to return of the students. Greater family encouragement to get job and settle in USA results in a greater non-return intentions. Thus in comparison to respondents whose families are least supportive, the probability of not returning ($y = 5$ or 6) increases whose families are supportive.

Academic opportunities: Majority (about 98 percent) of students mentioned that academic conditions were —better or —much better. This included better infrastructure in academic institutions, highly qualified faculty of international reputation, better research environment, good placement opportunities, scholarships from various sources, facility to work alongside studies, opportunity to work in industries as intern, interdisciplinary courses etc. A dummy variable constructed for each assessment category revealed that the —much worse category was statistically significant at the 5 percent level with reference to other categories in the earlier simpler models. So, the academic assessment variables have little explanatory power on return intentions, hence are excluded from the final preferred model.

Social Life: The social life is expected to be important in the differences in return intentions. About 43 percent respondents indicated that their social environment was neutral compared to India, and 10 percent indicated as —worse or —much worse. The above categories were merged to three (skipping the —don't know category) by amalgamating the —worse and —much worse categories, and also —better and —much better categories. With —much worse as the reference, both the —neither better nor worse plus —better categories are positive and statistically significant at the 1 percent level. If the reference category is —much better, both the —neither better nor worse in addition to —worse dummy variables are negative as well as statistically significant, at the 5 percent and 1 percent levels of significance respectively. These results prove the importance of social environment in determination of the current return intentions. Those who are not satisfied with social conditions in cities are more likely to return.

Standard of Living Assessment: The students were also asked to assess the standard of living applying similar scale for the social life abroad. The distribution of responses is shifted towards —much better end of the scale. As the coefficients of —much better plus —better dummy variables are statistically indifferent from each other, they are merged. In the similar fashion, the first four categories are combined into one category since they are statistically not significant with respect to each other. So, this latter variable is applied as the reference. The coefficient of the variable named —standard of living is better is positive and statistically significant at 5 percent significance level who assess their standard of living as being better than India have greater intention to stay.

Fields of specialisation: Fields of specialisation: It is a common perception that advanced education accompanied by on-the-job trainings in USA are complementary and cause higher productivity and wages. The capital-dependent disciplines are believed to be suffering more from brain drain compared to the non-capital dependent disciplines. So, dummy variable for capital-dependent disciplines was made in the analysis to check whether the similar result would be true for the sample of science and technology students migrating from India and currently working and studying in USA. This dummy variable was statistically insignificant. Therefore, discipline is not a significant determinant of return intentions. The sample in U.S. universities is mainly tilted toward engineering, earth science, natural sciences, as the majority of students study in engineering and technical fields.

Initial Reasons for Going to India: A dummy variable for each specialisation like software, Chip design, Bio-informatics, IT consulting, Physics, engineering, agriculture, and

mathematics was applied in the model in order to determine whether certain fields are more prone to brain drain compared to others. All were found to be statistically significant at the 5 percent level of significance in the initial, simpler models. While the probability of return increases when respondents left due to a job requirement, and many do not have return plans in immediate future. The stay duration affects the probability of coming back to India negatively, many do not expect to return, particularly if they are able find good jobs or start up opportunities in south. When engineers go out to avoid the political ambience, or owing to lifestyle preferences or they discover the facilities plus equipment (knowledge base) for research not sufficient in India, they are not likely to move out. The probability of never coming back ($y = 5$ or 6) increases for those who left India as a result of political reasons, for those who moved due to lifestyle preferences, and for those who migrated as a result of inadequate facilities for research. If the students choose their institution of study keeping in mind the job opportunities, this increases probability of not returning ($y = 5$ or 6). As students they hope to be employed upon completing their studies and thus they hardly face the uncertainty as well as psychic costs associated with looking for a job after their studies are finished. Generally, many students migrate to USA from India for studying engineering courses in computer science in the Institutions of USA every year.

Difficulties Faced in India and Adjustment Factors: Students were asked whether they faced any difficulties in India and how they could adjust. Prior experience (work, study or travel) before moving to the south may make it easy adjusting to or be comfortable with the present city of stay and is expected to delay or postpone returning back to India. Besides previous experience, several other adjustment factors were in the questionnaire, including having pan Indian friends and colleagues in the institution of study, and also difficulties like unfavourable employment opportunities in India. These adjustment factors and difficulties experienced while in India are included in the model as dummy variables. Each has negative coefficient, indicates increasing probability of return intentions.

Income Effects: As we expected, the prospects of better level of income outside of India has positive coefficient estimate, meaning a lower probability of return intentions. About 89 percent of those surveyed indicated income as an important pull factor while deciding about returning to India. The probability of indicating that return is unlikely is higher for those who indicated that higher income levels abroad is important compared to those who indicated that it is not so central. One issue obvious in this observation is that some settle for jobs in south that may be well below their capacity and levels of education.

Effects of Additional Push and Pull Factors: The *expected* income is a relevant variable. The employment opportunities and labour market conditions at India may play a crucial role in the perceptions of opportunity held by skilled migrants. General monetary conditions and fiscal stability determines relative employment scopes and may decrease or increase an engineer's expected income accordingly. Even if economic instability is selected as a *'very important'* reason by half and an *'important'* reason for a vast number of respondents, it is not statistically significant in determination of return intentions. Therefore it is excluded in the final preferred model. Two push factors are included in the final version of the ordered probit model of return intentions; i.e. being away from research centers / recent advances and finding the cultural or social life to be less than satisfying in India. Locating away from research centers and also recent advancements is positive and significant at the five percent level of significance. For the engineers who mentioned that this was a vital push factor, the probability of unlikely return ($y = 5$) increases. The pull factors affecting the return intentions according to importance are, a higher income level in the host country, a more ordered and organized life, and spouse's preference or job.

Effect of Last Impressions: The last impression of India has a very high impact on return intentions. The probability of returning ($y = 1$ or 2) is decreased for workers who were negatively affected by their last impression regarding India, and increases for engineers who were left with more positive impressions.

The third Table in this section has summarized the impacts of various factors considered here in determining return and non-return intentions. Two extreme categories at both ends of the scale marked for return intentions variable are merged together to form categories like *—definitely return* and *—definitely not return*. The highest positive marginal effect on the probability of *—definitely returning* for the engineers surveyed happens when the respondent has a compulsory service requirement: the probability of returning increases. This indicates that the compulsory and professional requirement is an important means of motivating return. Other factors having great impact on a respondent's probability of definitely returning include family support and an initial intention to return to India, both of which increase the probability of definitely returning. Experiencing a positive impression from the last visit to India has a favorable impact on *—definitely returning* but to a lesser degree; positive impression increases the probability of definitely returning. The inability to get accustomed to the social ambience in Hyderabad and Bangalore does increase the probability of definitely returning. The most crucial factors impacting the probability of

definitely not returning are mentioned in Table 3; which include a judicious combination of financial, political, social as well as family considerations. Marriage to a spouse belonging to the host city has the highest marginal impact (0.14) on the probability of non-return. Many respondents have indicated that they left India owing to political reasons, which boosts their probability of not returning. Family support for the decision to settle in the U.S. has considerable influence on non-return. The probability of non-return intentions increases. The marginal impact of the income differential is lower: it increases the probability of non-return. Lifestyle factors also have marginal effects. The research has studied the determination and evaluation of several factors affecting the return intentions of students abroad using the results of survey works conducted by the authors. While the decision to migrate is a planned decision, return intentions are closely linked to the realization of these intentions. The return intentions give insights about what is of importance for individuals while deciding on whether to return or stay. The empirical study of return intentions of the IT engineers in south involved the ordered probit model rooted in the human capital theory of migration that predicts that individuals decides to migrate when the net present value of benefits generated from migration is positive. Various socio-economic and political factors are important in discerning between engineers with strong return intentions and those with non-return intentions of strong nature. The push factors like political instability and pull factors like higher income and a more ordered plus organized life in the host cities. Among the pull factors, family considerations, followed by high income in the south and a more ordered lifestyle, in order of importance, all seems to weaken return intentions. A majority of the surveyed engineers have indicated that higher income levels influence their decision to return or stay.

When asked, how many cities you have travelled in India for employment: The IT engineers and scientists were found to enjoy high mobility. The MNCs have branches in different cities of India. The cities like Pune, Chennai, Hyderabad and Bangalore are pull factors, due to which the inter firm and intra firm job mobility in the form of horizontal as well as vertical mobility is seen. The junior level professionals typically spend less than 5 years in any city of India or USA. As the software and hardware technologies are constantly in the process of upgradation, the firms also need to train their human resources stay competitive in the competitive market. Different cities normally enjoy skill base in different sectors despite human mobility.

6.4 Discussion

The study suggests comprehensive relations among various socio-economic factors related to job mobility and migration. Higher income prospects are alluring to the engineers as they move from India. For the students in natural science, research opportunities, scholarship, future prospects are important. Family considerations are also significant factors affecting mobility decisions often resulting into brain gain or counter migration. Specialisation is also a very important factor in mobility. International projects are available in plenty in the U.S. for the engineers working in India. The experiences of students during study in the U.S. Universities are valuable in the Indian job market; many of them are engaged in research funded by their own organisations. The globalised phase of the Indian economy is gradually becoming technology dependent, resulting in the shift of GDP from primary sector to tertiary and quaternary as well as quinary sector. So, the STEM qualifications obtained in the U.S. will always be valuable in near future in India.

Chapter **7**

Concluding Observations

7.1 Summary

The research seeks to focus on the behavioural approach of the India student community pursuing science, technology, engineering and mathematics in India as well as the institutions of the United States. The mobility intentions of the Indian students, and the return intentions of the Indian students in USA are observed, by statistical tools like probit model and regression analysis. Besides, the student community, the teaching faculties are asked about the impact of globalisation on their institutions and their careers.

The thesis is about skilled migration as can be seen among the skilled workforce trained in science and technology towards developed countries such as the United States. The Indian students generally prefer to study in the U.S. Institutions because of the best research and job prospects in that country. Studies have proved that traditionally the Indian students take advantage of the liberal scholarships, work and study, Optional Practical Training (OPT) and H1B Visa opportunities of the U.S.

Consequently, the land of opportunities have very high stay rate even now among a vast section of STEM students. They prefer to work in the U.S. laboratories, MNC firms, launch their own start ups, and also to teach; thus contributing to the growth and development of the economy of the receiving country like USA. The brain drain debate stems from the fact that the fruits of innovations are enjoyed not only by the foreign firms or government but also by the Indian society and economy. Thus, it is difficult to establish whether brain drain is really harmful for India or not. However, it is obvious that India stands to lose in terms of innovation, patents, royalty income etc. in spite of the remittance income from the U.S. The intangible benefits of precious scientific labour force can hardly be ignored.

7.2 Findings

The study has found some variables influencing the migration and mobility decisions of the students – both in India as well as the U.S. The factors such as family, income prospects, research facilities, lure of living in a developed country, friends, scholarship opportunities, optional practical training facilities etc. have always acted as pull factors for the Indians staying back in the U.S. after completing their studies.

The findings are divided into three sections, i.e. responses from faculties, responses from Indian students pursuing their courses in selected Indian institutions, and responses also from the expatriate Indian student communities in the U.S. campuses in STEM subjects. The bivariate probit model on the basis of sample collected by snowball sampling method was

applied in the study. The findings point out the overwhelming preference for Indian students to stay back in USA, at least in engineering, natural science, and mathematics. India has of late offered opportunities in information technology jobs, but not in other promising areas like pure mathematics and natural science research, apart from very innovative newer specialisations where India has no such trained faculty to teach or conduct research. The remittance issues are also discussed based on secondary sources of data. The remittance income is a good source of revenue, which is often considered as a positive side effect of brain drain. Also, brain circulation is often considered as a positive factor for India due to positive externalities associated with it, sometimes viewed as intangible benefit for India. The study avoids those debates, whether brain drain is positive or negative; but discusses skilled migration decisions or intentions only.

7.3 Delimitation

The research on brain drain is always constrained by the lack of data. It is difficult to ascertain the extent as well as the impact of brain movement, brain circulation or brain gain involving countries like India and the United States. However, a serious attempt has been made to extract secondary data on student mobility and also obtain primary data from participatory in the Indian institutions and non-participatory surveys conducted among those studying abroad in the U.S. institutions. Although mobility intentions among students in India and return intentions among Indian Diasporas were asked, the participants in many cases could not be approached directly due to volume of sample. Further, it is not easy to obtain reliable data on remittances even from secondary sources.

7.4 Further Research

There are further scope for research, because the management and medicine students are not studied here in the study. These two areas are very popular abroad. The U.S. attracts large number of students from India in management and medicine. For a developing country like India, health care accessibility is very poor. The per capita availability of doctors is also very low especially in the rural areas of India. So more research may be done on the remittance money actually sent to India also as invisible income. Besides, the skilled migration from India to USA is often circular and in many cases reverse. The policy makers have been adopting serious strategies to make India as a research hub, as well as a prime destination for the start-ups. The problem being extremely complicated needs research from interdisciplinary point of views.

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APPENDICES

Table: Part 1

Ordered Probit Model of Return Intentions

Regressors (X)	β	z-statistica	MEAN(X)	SD(X)
X1: Gender (1=female)	0.122	(1.59)	0.36	0.46
X2: Age of respondent	0.033	(0.32)	26.88	3.62
X3: Square of age	-0.001	(0.57)	732.41	204.04
X4: Initial return intention (1=unsure)	0.492	(5.53)***	0.35	0.44
X5: Initial return intention (1=stay)	1.428	(8.52)***	0.06	0.24
X6: Stay duration of respondent (years)	0.085	(4.23)***	2.75	2.26
X7: Family support for settling in south (1=somewhat supportive)	0.212	(2.52)**	0.44	0.46
X8: Family support for settling in south (1=definitely supportive)	0.415	(3.80)***	0.27	0.44
X9: Social life in south (1=worse or much worse)	-0.339	(4.49)***	0.44	0.50
X10: Standard of living in south (1=better or much better)	0.172	(1.99)**	0.69	0.46
X11: Never married (1=yes)	0.181	(1.60)	0.71	0.45
X12: Married to a South Indian spouse (1=yes)	0.545	(1.64)	0.02	0.14
X13: Reason for going: job requirement (1=yes)	-0.248	(3.05) ***	0.41	0.49
X14: Reason for going: lifestyle preference (1=yes)	0.213	(2.06)	0.24	0.43**
X15: Reason for going: spouse / family consid. (1=yes)	-0.331	(1.65)*	0.08	0.27
X16: Reason for going: get away from political environment (1=yes)	0.280	(2.42) **	0.25	0.44

X17: Chose current company because of further job opportunities (1=yes)	0.290	(3.58) ***	0.26	0.44
X18: Chose current institution to be with spouse (1=yes)	0.436	(2.82) ***	0.11	0.31
X19: Having friends/colleagues at company viewed as an important adjustment factor (1=yes)	-0.128	(1.64)	0.57	0.50
X20: Push factor: lack of research Centers	0.191	(2.25) **	0.59	.49
X21: Push factor: less than satisfying cultural / social life in India	-0.057	(0.53)	0.20	0.41
X22: Pull factor: higher level of income in host country	0.272	(3.24) ***	0.72	0.41
X23: Pull factor: better work environment	-0.101	(1.22)	0.65	0.42
X24: Pull factor: greater job availability in specialization	0.083	(1.01)	0.71	0.38
X25: Pull factor: more organized, ordered environment	0.222	(2.48)**	0.73	0.38
X26: Pull factor: spouse's preference or job	0.359	(3.48)***	0.18	0.36
X27: Pull factor: better educational opportunities for children	-0.112	(1.09)	0.15	0.34
X28: Pull factor: incomplete project abroad	-0.083	(0.74)	0.27	0.44
X29: Pull factor: other consideration	-0.465	(1.51)	0.02	0.14
X30: Last visit to India left negative impression	0.348	(3.94)***	0.28	0.43
X31: Last visit to India left positive impression	-0.348	(2.87)***	0.07	0.25

APPENDIX Part 2

Table *Marginal Effects of Selected Independent Variables in the Ordered Probit Model of Return Intentions (Change in Probability)*
Intensity of Return Intentions

Variables	y = 1 (high)	y = 2	y = 3	y = 4	y = 5	y= 6 (low)
Female	-0.0002 (0.00022)	-0.0146 (0.00906)	-0.0344 (0.02147)	0.0234 (0.01422)	0.0251 (0.01588)	0.0008 (0.00059)
Social Life Abroad: Worse or Much Worse	0.0005 (0.0005)	0.0418*** (0.01043)	0.0911*** (0.02034)	-0.0659*** (0.01568)	-0.0653*** (0.0145)	-0.0016*** (0.00086)
Standard of Living Abroad: Better or Much Better NR	-0.0002 (0.01195)	-0.0213* (0.02252)	-0.0458** (0.01784)	0.0342* (0.01631)	0.0329** (0.0006)	0.0012*
<i>Reasons for going abroad:</i> Job requirement in USA	0.3202 (0.02034)	0.1307*** (0.01108)	0.0667*** (0.02152)	-0.0485*** (0.01648)	-0.0482*** (0.01581)	-0.0014** (0.00072)
Lifestyle preference	-0.0004 (0.00025)	-0.0234** (0.01077)	-0.0601** (0.03022)	0.0377** (0.01712)	0.0448* (0.02313)	0.0013 (0.00101)
To be with spouse / family	0.0430 (0.002884)	0.1072*** (0.03628)	0.1178*** (0.02136)	-0.1391*** (0.03894)	-0.0883*** (0.01777)	-0.0018*** (0.00081)
Get away from political environment	-0.0006 (0.00052)	-0.0458*** (0.00931)	-0.1303*** (0.02894)	0.0706*** (0.01355)	0.1015*** (0.02436)	0.0043*** (0.00191)
Reason for choosing current institution: Research facilities	-0.0002 (0.00032)	-0.0312*** (0.00851)	-0.0823*** (0.02392)	0.0502*** (0.01321)	0.0621*** (0.01873)	0.0021** (0.00108)
Adjustment factor: previous experience	0.0002 (0.00026)	0.0222** (0.01082)	0.043** (0.02141)	-0.0351** (0.01655)	-0.0342** (0.01532)	-0.0008* (0.00059)
Adjustment factor: friends at institution	0.0001 (0.00021)	0.0148 (0.00934)	0.0351 (0.02163)	-0.0236* (0.0142)	-0.0252 (0.01591)	-0.0006 (0.00057)
Difficulties faced/likely to face while In India: e.g.unemployment	0.0005 (0.00081)	0.0313 (0.02779)	0.0571 (0.03847)	-0.0482 (0.03919)	-0.0401 (0.0266)	-0.0005 (0.00071)

Push factor: lack of research centers and access to recent advances in USA	0.4521 (0.05023)	0.5228** (0.01109)	0.0512** (0.02266)	0.0367** (0.01711)	0.0366** (0.01637)	0.0004 NR
Pull factor: higher level of income in host country	0.2304 NR	0.4373*** (0.01287)	0.2721*** (0.02114)	0.0574** (0.01888)	0.0512*** (0.01472)	0.0012 NR
Pull factor: greater job availability in specialization	0.4201 (0.00021)	0.3112 (0.01161)	0.0243 (0.02393)	0.0177 (0.0176)	0.0172 (0.01705)	0.0002 (0.00051)
Pull factor: more organized, ordered environment	0.1303 NR	0.2294** (0.01294)	0.0587*** (0.02272)	0.0456** (0.01972)	0.0418*** (0.01574)	0.0011 NR
Pull factor: spouse's preference or job	-0.0002 (0.00028)	-0.0367*** (0.00962)	-0.1051*** (0.03132)	0.0591*** (0.01471)	0.0804*** (0.02547)	0.0026** (0.00153)
Last visit to India left negative impression	-0.0002 (0.00033)	-0.0382*** (0.00921)	-0.1000*** (0.02624)	0.0607*** (0.01454)	0.0751*** (0.02036)	0.0022 NR
Last visit to India left positive impression	0.1011 (0.00085)	0.0518** (0.02156)	0.0841*** (0.02472)	-0.0762*** (0.02913)	-0.0591*** (0.01723)	-0.0013** (0.00061)

Notes: The table above gives the changes in the probability linked to each of the return intention categories for the dummy variables listed above as the value of the dummy variable does change from 0 to 1. The figures indicated below in parentheses are the standard errors of the marginal effects.

* significant at 10%; ** significant at 5%; *** significant at 1%; NR means that the standard error could not be calculated and is hence not reported.

a. The table in the methodology indicates further details of the categories belonging to return intentions variable.

b. Indicates variables with interaction whose marginal effects as well as standard errors has been calculated with the software Clarify (King, Tomz and Wittenberg, 2000; Tomz, Wittenberg and King, 2001).

APPENDIX

Part 3

Table 3. Impact of Various Factors on Return Intentions

Factor (% of respondents)	Marginal Impact
Having compulsory academic service requirement (57.2%)	0.2242
Choosing same location as spouse to study abroad (2.9%)	0.0532
Respondent's initial intention is to return (43.1%)	0.1143
Last visit to India left a positive impression (8.5%)	0.3533
Social life abroad is assessed to be —worse or much worse than in India (22.1%)	0.0431
Effect of September 11, 2001 attacks in U.S. (18.6%)	0.0438
Inability to find a job abroad (5.7%)	0.0325
Relative importance of selected factors on definitely not returning (probability of y = 5 or y = 6)	
Factor (% of respondents)	0.3484
Being married/engaged to a foreign spouse (2.0%)	0.1366
Left India to get away from depressing socio-economic condition (26.3%)	0.0485
Family is definitely supportive in the decision to settle abroad (78.4%)	0.0788
Last visit to India left a negative impression (27.7%)	0.6755
Higher level of income is chosen as an important pull factor (87.4%)	0.0534
Lifestyle preference is given as an important initial reason for going abroad (47.8%)	0.5436
A better research environment in USA is an important pull factor (73.8%)	0.3762
	0.5493

Notes: y = 1 corresponds to —immediately return without completing studies and y = 2 corresponds to the —immediately return after completing studies categories; y = 5 corresponds to the —return unlikely and y = 6 corresponds to the —definitely not return categories.

Source: Author calculations

Part 4

Part 4 International Students Enrolling in the U.S. Institutions

INTERNATIONAL STUDENT AND U.S. HIGHER EDUCATION ENROLMENT, 1948/49 - 2015/16					
Year	Optional Practical Training (OPT)	Total Int'l Students	Annual % Change	Total U.S. Enrollment*	% Int'l
2007/08	56,766	623,805	7	18,248,000	3.4
2008/09	66,601	671,616	7.7	19,103,000	3.5
2009/10	67,804	690,923	2.9	20,428,000	3.4
2010/11	76,031	723,277	4.7	20,550,000	3.5
2011/12	85,157	764,495	5.7	20,625,000	3.7
2012/13	94,919	819,644	7.2	21,253,000	3.9
2013/14	105,997	886,052	8.1	21,216,000	4.2
2014/15	120,287	974,926	10	20,300,000	4.8
2015/16	147,498	1,043,839	7.1	20,264,000	5.2

Source: National Center for Education Statistics 2017

Part 5

Questionnaires for Faculty

QUESTIONNAIRE FOR PhD Thesis titled 'The Impact of Globalisation on Higher Education: Brain Drain from India to USA' conducted at NBU, Dept. of Economics, West Bengal, India

(Kindly put \surd mark wherever applicable)

1. Do you think the current trend of globalization of higher education is inevitable?
A. Yes B. No
2. What measures are being taken by your Institution for higher academic collaborations like twinning programme, joint degree, dual degree, branch campus, put \surd mark, any other: please mention.....
3. Is there any teacher or student exchange programmes in your Institution?
4. Is your Institution connected by online libraries like Inflibnet, Delnet etc.?
5. What are the self-financing career oriented courses being taught in your Institution?
Please mention:
6. Is there any foreign student in your Institution?
7. Is English medium instruction followed in your Institution?
8. What are the new learning technologies followed in your Institution?
 1. Smart class
 2. LCD Projector
 3. Video Conferencing
 4. Online teaching learning
 5. Any other, please mention
9. If you have international peer reviewed publication? Yes No
 - 9a. If any of your paper is cited? Yes No
 - 9b. if YES, how many papers are cited?
10. Does your Institution has any link with industries for course development, and/or placement etc.? Yes No
11. Whether your Institution has NAAC accreditation? Yes No
12. Have you provided consultation to industries or any other organisation? Yes No
13. Is your Institution involved in R&D? Yes No
14. Are the students keen to enroll in foreign countries for higher education? Yes No
15. Are you conducting / or have you conducted any international project (s) ? Yes No
16. Do you teach in any foreign Institution? Yes No
17. Is there any faculty from abroad in your department Institution? Yes No

Part 6

QUESTIONNAIRE FOR STUDENTS IN INDIA

(For fulfillment of PhD thesis titled 'The impact of globalisation on higher education: Brain drain from India to the United States', NBU, West Bengal, India)

Please fill in the information, select the most appropriate answer or write down your comments as appropriate for the following questions:

Background Information

Name Age Gender :

No. of years Abroad Martial Status Country of Origin

Country of destination Probable Year of Emigration:

Do you want to come back? Yes: No: Probably yes:

Email Address

Reasons of Emigration (For Students in Indian Institutions)

Please take a moment to indicate the reason of your emigration.

Indicate your level of agreement or disagreement by clicking the appropriate option

High income Strongly Agree Agree Neutral Disagree Strongly disagree

Better Work Environment Strongly Agree Agree Neutral Disagree
 Strongly disagree

Greater job opportunities Strongly Agree Agree Neutral Disagree
 Strongly disagree

Social & Cultural Values Strongly Agree Agree Neutral Disagree
 Strongly disagree

Relative political stability Strongly Agree Agree Neutral Disagree
 Strongly disagree

Better economy Strongly Agree Agree Neutral Disagree
 Strongly disagree

facilities Strongly Agree Agree Neutral Disagree Strongly disagree

Spouse preference Strongly Agree Agree Neutral Disagree Strongly disagree

Discrimination Strongly Agree Agree Neutral Disagree Strongly disagree

Scholarship Strongly Agree Agree Neutral Disagree Strongly disagree

If friends are motivating to move abroad Strongly Agree Agree Neutral Disagree Strongly disagree

Any other reason(please specify):.....

Part 7

QUESTIONNAIRE

(For fulfillment of PhD thesis titled 'The impact of globalisation on higher education: Brain drain from India to the United States', NBU, West Bengal, India)

Please fill in the information, select the most appropriate answer or write down your comments as appropriate for the following questions:

Return Intentions (For Students Studying in USA)

Please take a moment to indicate the reason of your return or return intension .Indicate your level of agreement or disagreement by clicking the appropriate option

High Income offer after exposure to the international market Strongly Agree Agree Neutral Disagree Strongly disagree

Better career growth Strongly Agree Agree Neutral Disagree Strongly disagree

Official Contract or Any Bond Strongly Agree Agree Neutral Disagree Strongly disagree

Whether Gender has any effect Strongly Agree Agree Neutral Disagree Strongly disagree

Opportunities of getting jobs in other developed countries Strongly Agree Agree Neutral Disagree Strongly disagree

Intention to start a business/start up Strongly Agree Agree Neutral Disagree Strongly disagree

Family reasons for going back Strongly Agree Agree Neutral Disagree Strongly disagree

Social and Cultural Values Strongly Agree Agree Neutral Disagree Strongly disagree

Social and Cultural Values Strongly Agree Agree Neutral Disagree Strongly disagree

Effect of Last Impressions about India deciding return Strongly Agree Agree Neutral Disagree Strongly disagree

Fields of specialisation Strongly Agree Agree Neutral Disagree Strongly disagree

Standard of Living Assessment Strongly Agree Agree Neutral Disagree Strongly disagree

Better Research Facilities Strongly Agree Agree Neutral Disagree Strongly disagree

Social Life Strongly Agree Agree Neutral Disagree Strongly disagree

Gender Effects Strongly Agree Agree Neutral Disagree Strongly disagree

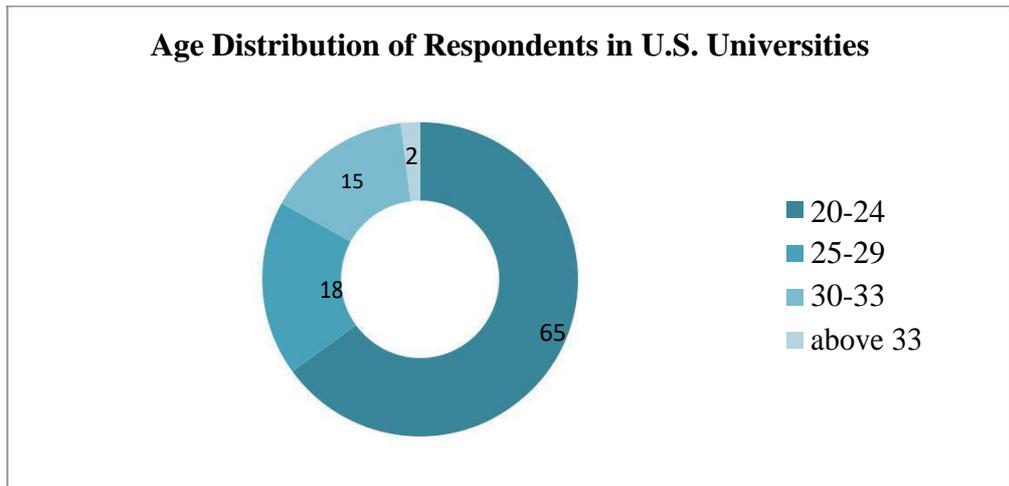
Age Effects Strongly Agree Agree Neutral Disagree Strongly disagree

Stay Duration Strongly Agree Agree Neutral Disagree Strongly disagree

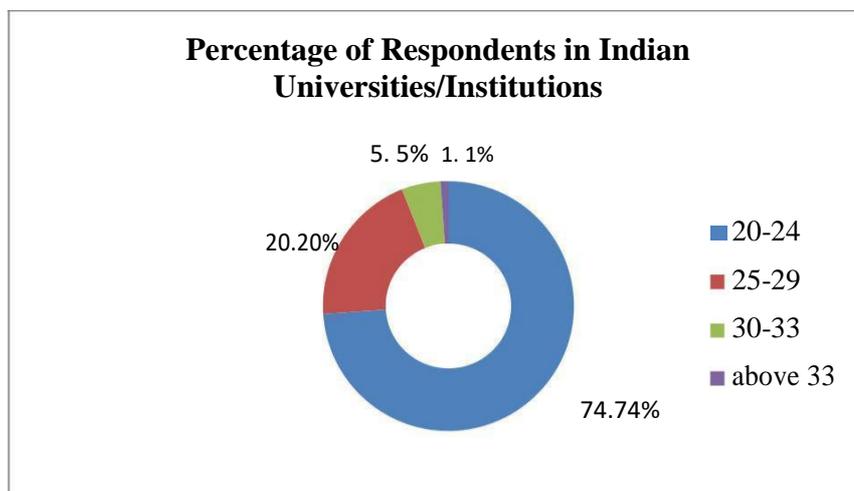
Scholarship opportunities Strongly Agree Agree Neutral Disagree Strongly disagree

Please share your experience (if any):

Part 8



Part 9



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SKILLED MIGRATION FROM INDIA TO THE UNITED STATES: CONTEXTUALIZING IN THE BACKDROP OF GLOBAL ECONOMIC CRISIS

BHASKAR CHAUDHURI*

Abstract

The paper focuses on skilled migration and student mobility as an important variant from India to the United States in a global recessionary silhouette. Skilled migration of human resources has been traditionally designated as brain drain, but the present trends of globalisation has ensured innovation in information technology, rise of multinationals, globally recognized qualifications and brain circulation. The emphasis is on assessing immigration barrier like HIB visa restrictions, limits on outsourcing of Indian workers in the United States, as also prospects of remittance income for India in a period of financial crisis.

I. INTRODUCTION

Highly skilled migration has been defined in a different way in various times. 'Brain drain' was in vogue during the nineteen fifties and sixties, emphasising the unspecified pessimistic impact on the European nations of the physical mobility of the highly skilled towards the conventional countries like the US, Canada, Australia etc. Generally, the term is used to denote flight of human capital (mostly trained by the developing countries at the expense of tax payer's money) from the developing countries to the developed world, leading to pauperisation of human resource in the less developed countries. Afterward the term 'brain gain' was coined since destination plus source countries might be benefited from the migrating of the highly skilled (IOM, 2005), whilst Mattoo, Neugu, Özden (2008) put forward the reverse impact of out-migration as 'brain waste'. Lindsay-Lowell cs., (2004) invented the 'brain strain' concept, emphasising that migration could be both positive and negative for the origin countries. A fusion emerged while migration of the highly trained was supposed as 'brain circulation' by Saxenian, (2002) or as 'transmigration' put forward by Danby, (2004). Brain circulation is the beginning of a rounded development where all and sundry might be wealthier. From brain drain theory, research has of late shifted focus to brain circulation. GATS agreement of the WTO under Mode 4 encompasses

* Lecturer, Department of Geography, Saheed Kshudiram College, The University of North Bengal, Kamakhyaguri: Dist. Jalpaiguri, West Bengal, India, E-mail: bhaskar.chowdhury122@gmail.com

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movement of natural persons. GATS mode 4 appears to present the best of both hemispheres for endorsing circulation at least in theory. Whereas GATS has been in effect since the execution of the Uruguay Round in 1995, its significance for global migration is inadequate. Nowadays, the preponderance of labour flows between countries is directed by guidelines designed, monitored and enforced by labour importing nations. Globalisation has ensured cross border flow of capital, technology, ideas as well as manpower. Telecommunication revolution, the universal acceptability of English language and the worldwide business networks accredited by WTO and most of the countries ensure that skilled workers are employed in many countries according to the necessity of the production, distribution and marketisation of end products. Brain circulation is entrenched in the worldwide flow of expertise, investment in addition to the media (Castells, 2000)¹. Thus, the modern concept of brain circulation entails migration of the highly skilled not from periphery to core and vice versa, but is perceived as decentralised collaborative flows of dexterousness, funds and know-how between economies with dissimilar areas of expertise. (Saxenian, 2006). Regardless of a mammoth hypothetical and experiential literature on migration it is still unfeasible to draw a systematic international quantitative scenario of skilled migration. So, discussions revolving around the so-called brain drain or brain gain often remain inconclusive as it is difficult to prove the exact nature of impact of human mobility on the source as well as receiving countries (Dunnewijk, 2008). Appleyard (2002) however, comes across that international migration belonging to the "highly skilled" category as characterised by dichotomy. Primarily five discrete subcategories, are traced like scientists; entrepreneurs; senior managers and executives; technicians; and engineers and students.

The study stresses on skilled migration pattern from India to the United States, as the US receives the maximum share of skilled diaspora from India. The present analytical discourse largely depends on explaining the trends of skilled migration of population who possess above graduation degree according to the Indian system of education. As a passing reference, the student mobility pattern from India to the United States has been discussed along with student perception of those who aspire to study in the US regarding choice of course, changing job market in America, and changing policy issues. As the US is the most preferred destination for the Indian students, and most of the students pursuing higher education in the American campuses opt for technical courses like various engineering courses including IT, nuclear physics, genetic engineering, aeronautical engineering, nano technology etc. apart from management courses and social sciences and humanities; the attempt has been made to discuss student mobility also because scholars after graduating from the American universities form a vast section of skilled diaspora in the US. The paper also will focus on worldwide economic recession and ensuing policy alterations in the world in general and the US in particular.

II. DATA SOURCES

The present study draws data from secondary as well as primary sources. Data is derived from independent and published research works, studies conducted by

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institutions like Yale University, Open Doors Report 2008 published by the Institute of International Education, World Migration Report 2008, World Bank, and data obtained by conducting field surveys conducted among the students of IIT Kanpur and the prospective students preparing to appear in GRE and GMAT for pursuing higher education in the United States.

III. METHODOLOGY

The research is primarily descriptive type, and the discourse analysis heavily draws upon recent data available. Information generated through field survey conducted among Kanpur IIT students of computer engineering discipline and survey among the scholars of GRE and GMAT mainly aims at gauging the perception of students having propensity to migrate regarding the impact of recession on the prospects of employment in the US. While 15 students were surveyed in Kanpur IIT in 2009; in the case of students appearing in GRE and GMAT, 35 students responded to the survey. The IIT scholars were asked (1) Whether they are interested to work in United States if H1B visa restrictions are released (2) Are they interested to pursue higher studies in the American campus (3) Questions were asked about their job prospects in outsourcing industry (4) Whether the prospective students after they finish studies in the US institutions will come back to India. The candidates of GRE and GMAT, were asked the following questions: (1) The course of study they would like to pursue in the institutions of USA (2) Perception about H1B visa restrictions (3) Whether they are willing to work in India after completing their studies in the United States. The sample for the study is selected on the basis of stratified random sampling, because among the skilled manpower, only a handful of sectors like IT, business administration and technological fields produce a lion's share of skilled diaspora.

A parallel online survey was conducted among the students of 14 US higher education institutions.

IV. SKILLED DIASPORA AND THE AMERICAN SUPREMACY

The developed countries are in the final phase of demographic transition. So, the mature labour force on the verge of retirement belonging to the industrialised nations necessitated the liberal immigration policies in countries like the United States during the 90's decade and early half of 21st century. Subsequently, the Indians were the major beneficiaries of the H1B visa. In the same vein, prior to recession, UK had Highly Skilled Migrant Programme (HSMP) and Australia pursued Skilled Temporary Resident Programme (STRP). The US, UK, Australia and Canada are major destinations of Indian skilled migrants. Other industrial countries like Germany, Singapore, and Japan are steadily gaining attractiveness for the Indian professionals (Bhandari *et al.* 2008). The migration of India born skilled manpower to the US is largely controlled by multinationals operating in microelectronics, informatics and telecommunications sectors (Holton, 1998, p. 55). However, the emergence of biotechnology in the 21st century should ensure shift in

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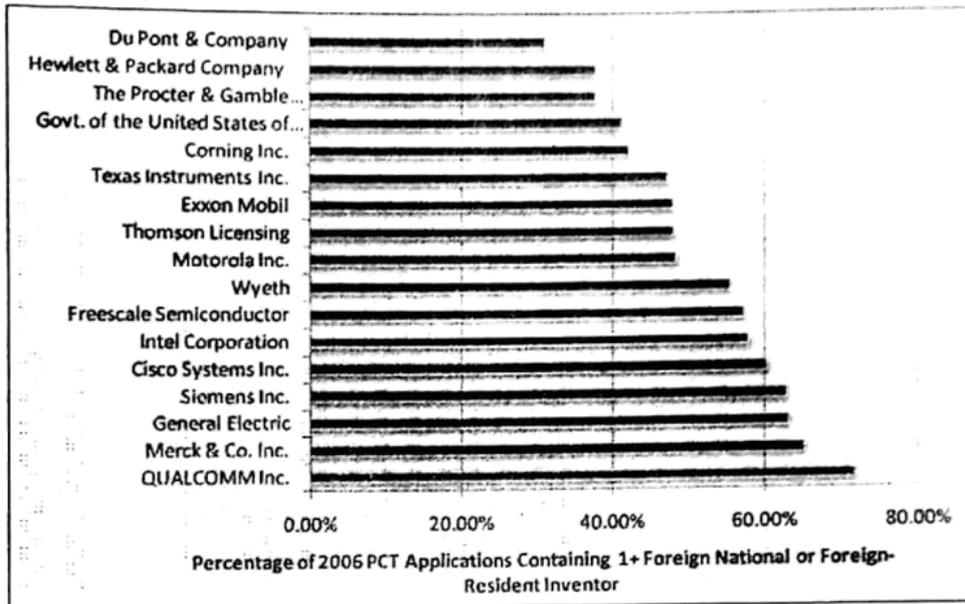
favour of biotech scientists migrating to the US. Availability of grants and fellowships in biotechnology compared to other fields of academics ought to facilitate easier skilled migration from India to the US. Even though the key beneficiary is the IT sector in recent times, the Indian doctors also move to the US. The Yale report (<http://yaleglobal.yale.edu/display.article?id=3340>) suggests about 38000 India born physicians practicing medicine in the US in 2004 while about 12000 Indian students pursuing medicine in the American medical institutions. The majority of Indian medical students earning higher degree in medicine in the US are due to severe scarcity of medical seat for obtaining MD degree in India. It is considered easier to get MD degree in the US than India also due to lower level of competition for MD degree in the United States and greater acceptance of American degrees all over the world.

Mature American baby boomers used to be the best-educated human resources as they joined the labour force about three decades ago. Based on creative policies like the GI Bill of 1944, the US baby boomers attained almost 40 per cent of college-level graduation rates in this period, contrary to 20 to 25 per cent learning stage accomplished by existing British, German, French, or Japanese during the late 1960s and 1970s. The year 2008 is the benchmark from where the Americans born following World War II has started retiring. As a result, loss of huge numbers of accomplished baby boomers now stare the US at their face. Loss of skilled workers will be felt by the American economy in the long run, but the present recessionary trends have brought political as well as social compulsions to restrict foreign workers to the glare of media hype. Kirkegaard² finds the erosion of talent a worrying factor for the US in their society. The standard educational attainment of the Americans in current decades is a cause of distress. The tertiary-level graduation rates among modern US labour market entrants is unique in the OECD, belonging to age group of 25 to 34, is the equivalent compared to their baby boomer parents, of the age cohort of 55 to 64; hovering below 40 per cent. Consequently, it is apprehended that in impending days as many skilled Americans will stop working as will come into the labour force. The following table explains America's over dependence on immigrant brain power.

America's meteoric rise to international superpower status, and triumph in the Cold War was largely due to the most highly skilled workers in the world. Nevertheless, America's worldwide "skill leadership" is facing threat in the 21st century. In addition, as America fell short of continuing to advance wide-ranging educational standard throughout the preceding 30 years, the world has progressed enough. American labour market competitors now scarcely make the international skills top-10 list. The US faces for the first time the prospect of becoming skillfully deficient country. Especially, over the past twenty years, highly skilled diaspora have assumed an imperative responsibility in America's information technology propelled economic growth. The professional know-how, uphill struggle and earnestness stimulated the technology boom ever since the early nineties decade. The debate about how H 1B visa lowers the wages of American technology personnel,

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Table 1
Foreign National and Foreign Resident One Inventor Contributions to PCT Applications Filed in the United States by Corporations



Source: Wadhwa et al. (2007)

and dislodges the US employees, and off-shores (Bangalored) American jobs is fuelled by the heat of subprime crisis of the US that sparked the global economic meltdown.

The United States is an important destination for skilled workers availing of H 1B visa as well as for Indian students pursuing higher education in the US, mostly with ambition to get a job in the US. Interestingly, the US hosts about 19.7 per cent of all global migrants from less developed countries. Hitherto, the United States is the origin country for merely 1.2 per cent of the intercontinental migrants. Like United States many developed countries during recessionary period are now following policies to discourage immigration. Paradoxically, Hanson, (2009:4) argues that labour mobility makes migrants considerably wealthier but their prosperity has unassuming effects on net incomes in receiving nations. During financial crisis, the well-off nations face certain political compulsions also, particularly in view of unprecedented unemployment level in those countries. The United States has been the hard hit country due to high unemployment rate. Economic heavyweights were disappeared in the heat of financial meltdown. All these led the US in the 1990's to assuage their tough approach towards immigration.

The geographical boundaries appear ineffective as the skilled persons constantly immigrate and emigrate as an integral part of brain circulation. India's technical

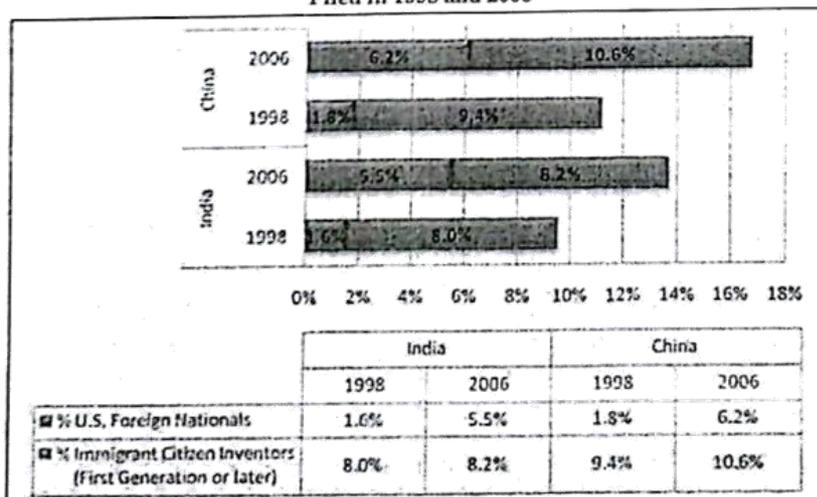
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proress has accelerated the progress of the globalisation of the IT industry accompanied by globalising Indian skills. Consequently owing to technological innovations in the IT industry substantial amount of investment was drawn by the IT sector through past few years. The IT industry even in a global recessionary period has remained a decidedly vivacious industry. H 1B visa advanced to the Indian techies is an outcome of Indian resourcefulness. In the condition of a healthy economic milieu during past decades, the much coveted H 1B and L1 visa were allowed for thousands of skilled Indian diaspora for working in the United States. The demand for H 1B visa was skyrocketing until the world monetary system went topsy-turvy from 2008.

Student Mobility as Skilled Migration

In contemporary knowledge and information age, substantial information generation, knowledge management, knowledge utilisation, and knowledge propagation have become the catchphrase of the 21st century. As a consequence, countries for instance the United States have made relaxation in their immigration policies to draw sophisticated proficiency in IT, pharmaceutical, biotech and drug manufacturing, in addition to other advanced fields prior to September 11 disaster. The IT and other associated industries have pressurised the US government to double H 1-B visas from 65,000 to 130,000. This excluded thousands of students study in the U.S. institutions from around the world (Altbach, 2004). Several researches prove that a majority of Indian students engaged in higher education in

Table 2
Indian and Chinese Contribution Towards International Patent Applications
Filed in 1998 and 2006



Source: Wadhwa et al. (2007)

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the US, never return to India. Given the popularity of courses like MBA, IT and biotechnology among the Indian students in the American campuses; it seems to be plausible that a majority of the skilled diaspora form a significant share of brain bank in the US (Bhaimali *et al.* 2006). The relative advantage of the United States due to its control of brain bank may be gauged from the fact that about 50 per cent of all US science and engineering human resources possessing doctorates are immigrants. The following table depicts the contribution of expatriate talent in American economy.

The growing student mobility is because U.S. higher education is unmatched in its vivacity, excellence, and diversity. The table below depicts student migration over the years from India to the United States.

Table 3
Student Mobility from India to the United States

Year	No. of Students from India	% of Total Foreign Students in US
2008/09	103,260	15.4%
2007/08	94,563	15.2%
2006/07	83,833	14.4%
2005/06	76,503	13.5%
2004/05	80,466	14.2%
2003/04	79,736	13.9%
2002/03	74,603	12.7%
2001/02	66,836	11.5%
2000/01	54,664	9.9%
1999/00	42,337	8.2%

Source: Open Doors Report 2009

The Open Doors 2009 data reports on enrolments in 2008/09 founded on a wide-ranging survey of roughly 3,000 recognised U.S higher education institutions of all categories and sizes, concerning international scholars at all levels of study. The results do not echo the exact impact of the economic recession, because decisions to study in the United States were made before the monetary consequences were fully experienced in the sending countries. The following table depicts the growth of Indian students to the US. Most of the developing countries send students to the US.

Although detailed data is still unavailable, it may be assumed that international educational trade witnessed a downturn during recessionary period. The American institutions of higher learning have been facing scarcity of funding during recessionary period. However, the restricted degree of globalisation in India's institutions and right financial management of India's banking sector has protected the Indian establishments from the depredation of worldwide financial depression

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Table 4
Countries Sending Most Students to the USA

Rank	Country	2008/09	+/- change YOY
#1	India	103,260	+9%
#2	China	98,510	+21%
#3	South Korea	75,065	+9%
#4	Canada	29,697	+2%
#5	Japan	29,264	-14%
#6	Taiwan	28,065	-3%
#7	Mexico	14,850	+0.1%
#8	Turkey	13,263	+10%
#9	Vietnam	12,823	+46%
#10	Saudi Arabia	12,661	+28%

Source: Open Doors Report 2009

in 2008 – 09, as noticed in archetypal American organisations. Ranging from the Ivy League universities to lesser known colleges in the US, diminishing proceeds and the dilapidated worth of endowments have resulted in joblessness, annulment of latest construction works and even slash in enrollment figures. But according to enrollment advertisers, the slump is not widespread across the US. A few states for example, Texas and Wyoming possess a tax base in oil or minerals besides being not part of the financial decline. So educational hiring has been stable. The preponderance of states with hard-hit manufacturing base or with tax deficit, though, has harshly truncated hiring in the commerce along with academic segments. Graduates keen to enter academic circles have equally experienced a much tougher marketplace. Scholars belonging to the baby-boom age group, appointed in the late 1960s, were anticipated to have started retiring at this time. This would have resulted in an unparalleled requirement for assistant professors but, disinclined to coop up much lesser benefit levels, a considerable number of senior professors are putting off retirement at present (Schrock, 2009). Nevertheless, the economic turnaround in the last quarter of 2009-10 has been made possible due to impressive industrial recovery in the United States, India, China etc. accompanied by industrial recovery and surge in demand. Despite weak monsoon in India, Dubai financial crisis, the unemployment problem in America or the rising costs of fossil fuel; the global economy is all set to grow in the coming days.

V. GLOBAL RECESSION AND IMMIGRATION BARRIERS: WHAT NEXT?

The Human Development Report (2009:4) observes that the present recession has made migrants predominantly susceptible. Although the global economy is in the process of recovery, but still recessionary pressures are not negligible. Some destination countries have intensified the enforcement of migration regulations in ways that may infringe on migrants' rights. Traditionally, the liberal immigration

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policy of the United States has enabled the country to tap the finest talents from all corners of the globe. Many India born famous academicians and scientists like Amartya Sen, Chandrasekhar and Mani Bhowmik have successfully pursued career in the United States and enriched the global community, made possible only due to favourable US immigration policies towards nurturing talent. The global recessionary trends having its epicenter in the United States itself sparked the massive trends of unemployment everywhere in the world and the crisis of job loss and unemployment was most severe in the US. The current debate in America regarding immigration of workers from third world countries like India empowered by H1B visa by replacing comparatively expensive American workers is largely rooted in the unemployment crisis in the US. The US high-skilled immigration strategies have lately become perceptibly more restraining. The American visa policy allows hiring high-skilled workers on H-1B visas amounting to 65,000 plus 20,000 available to immigrant graduates with higher degrees from US universities. Following the onset of recession, fierce debate has erupted in the US over H 1B. The Indians found the European immigration policy comparatively less inaccessible. The 2008 scheme for an EU "Blue Card" was to allow high-skilled staff from outside the European Union to work in numerous EU countries. As the United States is distressed by faster ageing process compared to other OECD countries, the US immigration regulations have at this time become less forceful, whilst concurrently tightening directive of low-skilled and immigration on humanitarian ground³. As the financial meltdown has gripped the rest of the world, more restraining immigration strategies are being taken up to guard the neighbouring labour market and also as an answer to a declined demand for overseas workers. Italy, the Russian Federation and Kazakhstan have reduced their respective quotas. The U.K. for the first time is lifting up academic and monetary necessities for migrants seeking to settle in the U.K. in the extremely skilled migrant class. Since, labour migration specifically is an essential element of modern global financial, political and social existence; flexible, logical and inclusive policies are the need of the day for effective management of migration. Proof for Europe advocates as put forward by (Mayda, 2006; Facchini and Mayda, 2008) shows that the labour market along with financial cost of immigration as well add to hostility to distant labour inflows; and it is obvious that the flow of skill from India to Europe ought to see a downward trend until the green shoots of economic revival are converted into real gains in future. Migration being an indispensable ingredient and corollary of globalisation, necessitates that the wellbeing and wants of migrants are entirely factored into policy response intended to supporting fiscal resurgence, with the help of anti-protectionism procedures, stimulation of global trade etc. As protectionism in trade needs complete evasion, so should protectionism in individual mobility be opposed, because human mobility may be part of the answer, not the predicament (IOM, 2009). Kleemans, et al. (2009) find negative people's responses regarding preference to migrants when jobs are given bypassing the native people. But simultaneously, more than 75 per cent of respondents in the 2005/2006 World Values Survey as mentioned by Kleemans et al did not object to having a migrant as their fellow citizen. These

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outlooks point to obvious prospects for building a broad agreement around better treatment of migrants. Hatcher (2001) has found several legal hurdles also, which like all other developing countries could be hurdle for the Indian skilled workers also. So far developing countries have established countless impediments in utilizing GATS provision. Primarily, the inadequate pledge by urbanised countries is a key problem to GATS benefits for less developed countries. Developed nations have more obligations in GATS under other forms than in mode 4 that entail movement of natural persons. Developing countries regularly grumble against the unwarranted biasness of the system in favour of the developed nations, and also in favour of multinationals. The MNCs are at the vanguard regarding the claim for bigger liberalisation of GATS as exemplified in the actions of the European Services Forum. Secondly, widespread immigration obstacles in developed countries in opposition to service providers from developing countries act as barrier to skilled people's mobility. There are several areas where tangible improvements can be made including standardizing and expanding occupations or market access. Developing nations, particularly India, have been lobbying for expansion of Mode 4 service definitions. The European Service Forum has recommended the simplification of administrative procedures through a special GATS visa. Several areas exist where concrete up gradation may be finished including regulating and growing professions or market admission. Developing countries, predominantly India, have been demanding for growth service definitions under the auspices of Mode 4.

A pertinent question is whether the strategy of the developed countries to limit immigration flow from developing countries justified in terms of economical sustainability? Hanson (2009) argues that in a neoclassical financial system, the best possible immigration plan would be to permit the free entry of overseas workers. However, labor-importing nations firmly put a ceiling on labour inflows. Obstacles to immigration partly mirrors domestic political antagonism to open restrictions, with those mainly resisting to labour inflows being the employees and taxpayers nearly all of whom are exposed to the undesirable consequences of in-migration on labour markets plus monetary accounts. Immigration barricades might also stand for a second-best strategy that governments implement in line not to worsen deformation allied with domestic social-insurance agendas that they are indisposed to dismantle.

Experience suggests that immigration alters income-distribution within a country, giving birth to frontrunners and losers. Indians after migrating to the US due to visa power and the Indian students after getting degrees from the American universities have traditionally contributed to the success of American production system due to high end skill they possess and also due to cheaper wage they receive. In the United States, winners are the MNCs hiring foreign workers, and also customers who purchase the immigrants' produce (Cortes, 2008); whereas losers comprise low skilled local employees that vie with immigrants for employment (Borjas, 2003). Hanson, Scheve, and Slaughter (2007) find the American taxpayers at the receiving end as they bear the economic expenses of immigration. The fresh

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debate over the policy of hiring cheap labour from developing countries may not be good news for India at least in the short term, but the issue of American taxpayers has received a considerable attention in the US in a period of economic turmoil. The skilled migration to the United States will be curtailed because of H 1B visa policy of 2009. Indian citizens who mostly join the information technology industry were issued about 22000 visas out of the 65,000 H 1B work visas that the United States issues every year. H 1B is a non-immigrant visa granted to skilled and educated foreign workers. If the stringent policies against hiring foreign staff are implemented, it may cause severe erosion in the profitability of companies. In India reform processes in social and economic sectors have ensured growth and development of the country. The Indian economic institutions have successfully thwarted the negative impact of economic downturn. As a result, a reverse migration of skilled persons from north to south is nowadays a discernible phenomenon. The Indian software professionals are commanding almost equivalent salary in India also after moving to Bangalore from Silicon Valley. But the US is not only example in espousing policies opposed to outsourcing of jobs and reducing foreign personnel. Millions of Indians in the banking and construction industries in the Gulf countries have been jobless and they prefer to return home. Deferment of priority processing for immigrant IT experts in Australia and Germany imposing new strict immigration laws are other examples of immediate reaction of various countries to global recession. In United States lobbying for visas by giant high technology MNCs like Dell, Microsoft, Google, Nokia etc. has become important factor. These companies sponsor the largest numbers of H1B visa holders from India. The share of far-off guest recruits in the form of H1B visas for skilled workers across American industries are studied and researches suggest that industries spending more on lobbying the administration on immigration thrive in getting hold of a bigger number of visas. So, evidently employers are the biggest beneficiaries of such lobbying activities. It appears that skilled immigration brings profit to employers, because inflows of cheap and skilled labour enhance the marginal product of capital. So, skill-intensive industries gain a large amount from skilled immigration, in with tune with their importunate lobbying for visas (Facchini, Mayda, and Mishra, 2008). Studies conducted by Banerjee (2006) reveal exploitative nature of H1B visa to some extent. In the late 1990s, business lobbies, mainly governed by the IT sector, referred to severe deficiency of skilled employees and pleaded to the US Congress to elevate the yearly H 1B limit from 65,000 in order that additional foreign recruits could be hired for IT profession. Because the staff on this visa was above all being appointed by subcontractors to serve as contract people, and not essentially as direct workforce of the lobbying corporations that wanted flexibility of labour, it was in these lobbies' concern to push for more visas because that would broaden the team of flexible indentured human resources at their disposal.

As the Indian skilled employees are found to be "tied down" to their subcontracting firms, it becomes difficult for the contract employees to leave their companies and get a better job. Moreover, since the visa hardly provides eligibility to get employment independently, H-1B workers must sign up themselves with

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and rely on subcontractors to obtain lawful employment status. Government, policy and research statistics are in dark about precisely what quantity of the H-1B populace in IT, or Indian IT trained on this visa, are employed not as direct staff with customers or consulting firms, but as bond workers for subcontractors. It must need mention that the much hyped H 1B visa has fewer takers in the year 2009, since the US monetary crisis has weakened the global confidence regarding the American capitalist management. The visa fraud in the US has marred the reputation of H 1B visa also.

The field survey conducted by this author in April 2009 reveals a changing face of India. About 42 per cent of the IIT students responded in favour of working in the US, while a majority 78 per cent responded in favour of a US degree provided the degree will help them doing better in their career. Despite recent move by the American administration to impose restrictions on outsourcing, almost 66 per cent respondents feel that outsourcing industry has a bright future in the long run. Therefore, working in outsourcing industry is still relevant once the recession will be over. The coveted destination status of the US as employment opportunity is now a thing of the past, since 95 per cent students are not interested to continue working in the US, even if they are offered jobs in the United States. Among the aspiring students, 29 out of 35 students were found to be preparing for MBA course in the US institutes, and rest of the students were aiming for nuclear science (4) and genetic engineering (2). The ongoing debates concerning limited access of immigrants and visa restrictions have worried all the respondents as evident from the survey. They feel that it is unjustified to put visa barrier because market rule of demand and supply will be ignored in the process, and the American production system will lose its competitive advantage in a high cost economical set up. The aspiring candidates seeking admission in MBA in the US are found to be worried about bank finance as well as limited fellowship opportunities in a recessionary period. As a rule, out of 29, most of the respondents (26) are not enthusiastic to stay back in the US, because they perceive India's growing economy and healthy salary structure is a strong pulling factor for reverse migration back to India.

A similar survey was conducted among the US institutions. The survey received responses from 14 US higher education institutions from various types mentioned below. Doctoral/research institutions formed the major group of respondents, with 79.5 per cent, followed by associate's institutions with 8 per cent. Baccalaureate institutions represented 5 per cent of respondents, followed by Master's institutions with 8 per cent. 5 were public institutions and 9 were private institutions.

The survey was conducted in the line of IIE (2010) study. In India the students (50) pursuing master's degree in the University of Calcutta and Jadavpur were asked in November, 2009 about the most preferred destinations for higher education abroad. United States topped the most preferred list (84.3 per cent), followed by United Kingdom (9 %), Canada (4.7%), Southeast/East Asia (1.1%),

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Continental Europe (0.9%) and Australia (nil). The survey conducted among 62 students of the NRI Associations of 7 US universities exposed some strong points and limitations for the United States as a destination for Indian students. The majority (89%) of respondents cited the excellence or category of academic curriculums as their chief *raison d'être* for studying abroad. Judging against the United Kingdom, Continental Europe, Southeast/East Asia, Australia and the Middle East, the United States was considered to be possessing excellent higher education system plus broad variety of schools and programs on top of being hospitable toward international students, offering a first-rate standard of living and for being a secure place to study. Nonetheless, the United States got the poorest ratings due to high tuition-fees, costly school application procedure as well as long distance from India.

Skilled Migration, Remittance Issues and Concluding Remarks

The economic recession in the United States has resulted in unemployment at unprecedented level. The skilled migration from India in the form of recruitment of skilled persons, enrolment of students in the American campuses, brain circulation etc. are undergoing declining phase. Regarding student mobility, a downturn is observed even in the case of the most reputed institutions of the United States. The renowned institutions such as, Harvard, Wharton, Kellogg, MIT Sloan, NYU Stern, Duke and Michigan used to be the dream end of Indian scholars till recently. But in the wake of new monetary turmoil, these institutions no longer guarantee top-dollar occupations. A new study by the University of California, Berkeley suggests, approximately 84 per cent of Indian students with 76 per cent of Chinese students in the US believe it will be hard to hit upon a profession in their turf in the US. Banks were also reluctant till recently to extend educational loan to international students including MBA students. However, with gradual improvement in the US economy demand for MBA is again returning. Some students during the survey responded negatively to visa limitations on business establishments accepting Troubled Asset Relief Programme (TARF) – a bailout endowment funded by the government to aid US companies emerge out of recession. The prospects of international students are the biggest hit due to visa limitations. At this time, many Indian students in the West are laying a bet on their motherland. Asian schools like China Europe International Business School in China, Indian School of Business, National University of Singapore and Asian Institute of Management in the Philippines etc. are acquiring popularity among international students due to their global status and low expenses. Students unanimously agree about the quality of these centres of excellence because the yield of these institutes will get their dues in the long-standing basis⁴. The issue of brain drain and loss of skilled persons have rattled India like other developing countries for long time. Although, rapid improvements in communication technology have ensured virtual brain circulation, brain gain and also the concept of brain bank in India, the necessity of skilled persons like doctors serving in the remote and rural areas of India can be denied at our own peril. It is logical to ensure the services of intelligent people for

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further betterment of India. It will be pertinent to take a cue from South Africa regarding minimizing the ill impact of brain drain, as the country resorts to delaying immigration of skilled persons; ensuring a minimum period of social service in the country itself. Emigration can be delayed by involving strategies like including some element of public service in the agenda. In India discussions are in vogue about compulsory service of doctors in India's rural areas for few years after their training so that they can pay back what they owe to society. Even imposition of exit tax on the emigrating IIT graduates at the rate of Rs. One and half lakh for each student is being considered by the government; as obvious from press reports. However, improving standard of higher education in India at least in some sectors and growth of economy has ensured reverse migration of skilled persons to India in recent decades. In a market driven system, it seems implausible to prohibit people to migrate abroad. Thus, improvement of domestic condition in the long run is the answer.

India receives high remittance earnings from the skilled diaspora settled in the United States. Recession has resulted in fall in remittance income and a number of developing countries of origin e.g., Morocco, Sri Lanka, Philippines, and from the United States to Latin America and the Caribbean, about 71 per cent of Hispanic immigrants in America informed of sending fewer remittances home in 2008 compared to the previous year (Lopez et al., 2009). Even the latest (World Bank, 2009 and UNDP, 2009: 4) studies suggest downward revision of remittance flows. A sharper decline of 5.8 per cent in 2009 is also anticipated. Migration and Remittances Factbook 2008 of the World Bank (2008) estimates India receiving \$27 billion as remittance income in 2007. There are three causes of risks. Firstly, if the crisis lasts longer, the decline in remittance and migration flows would persist longer. Second source of risk is erratic movements in the exchange rates posing danger to dollar denominated predictions. Further, if the exchange rates of remittance sources remain weak at their current levels compared with the US dollar, it would cause an even bigger decline in remittance flows to less developed countries. Lastly, the political response to feeble employment markets in destination countries could cause further tightening of immigration controls. This type of fall should not indicate any meaningful loss of purchasing power of remittances for the beneficiaries; but the retreating dollar volume can result in complexity for governments to meet external payment commitments. A sturdy dollar would entail that Indian immigrants in the US can send lesser remittances and still be capable to acquire the same amount of goods and services for their recipients in India. Nonetheless, a stronger dollar also suggests that merchandise plus services and possessions in India are appreciably cheaper in dollar terms that may cheer Indian migrants to send extra remittances for investments. In the latter case there is a rush in remittance flow since the neighbouring money is devalued next to the US dollar – was manifested in the US-Mexico passageway in October 2008, and is happening now in South and South East Asia, and to an extent in Moldova and Tajikistan. The following table shows remittance flows to developing countries.

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Table 5
Remittances to Developing Countries 2002-2008 (\$ mils)

	2002	2003	2004	2005	2006	2007	2008
Total	115,502	143,345	163,535	194,174	228,800	264,896	282,793
Annual change	21%	24%	14%	19%	18%	16%	7%
East Asia and Pacific	29,477	35,402	39,077	46,586	52,841	57,988	62,307
Annual change	47%	20%	10%	19%	13%	10%	7%
Europe and Central Asia	13,729	16,027	22,556	31,660	38,830	50,804	53,530
Annual change	11%	17%	41%	40%	23%	31%	5%
Latin America and Caribbean	27,918	35,219	41,728	48,716	57,384	61,000	61,095
Annual change	15%	26%	18%	17%	18%	6%	0%
Middle-East and North Africa	15,211	20,361	23,034	24,150	26,656	32,075	34,500
Annual change	4%	34%	13%	5%	10%	20%	8%
South Asia	24,137	30,366	28,694	33,092	39,615	43,824	50,942
Annual change		26%	-6%	15%	20%	11%	16%
Sub-Saharan Africa	5,030	5,970	8,445	9,969	13,475	19,204	20,418
Annual change		19%	41%	18%	35%	43%	6%

Source: Ratha, D. et al., (2008)

Confronted with failing employment, several destination countries are tightening migration management. Even as tightening immigration is perhaps politically eye-catching in short term, it is also estimated to extend the modification to the fiscal catastrophe by lessening the labour market flexibility that industry requires for economy and continued existence. The Indian skilled migrants are in general cheaper and more flexible compared to national recruits. Many anecdotal reports of brain circulation are in air, suggesting perplexing reports from different sectors of economy. In the United States, while the number of migrants employed in manufacturing and construction has declined in recent months as the crisis has deepened, employment in wholesale and retail trade has held up, and the number of those employed in restaurants and hotels has increased (World Bank, 2009).

HDR (2009:92) observes:

“...given the global recession of 2008/09, it is especially important to assess the impact of migration on host communities and countries. There is no evidence of significant adverse economic, labour market or fiscal impacts, and there is evidence of gains in such areas as social diversity and capacity for innovation. Fears about migrants are generally exaggerated. These findings ...suggest the possibility of creating virtuous circles through policy measures that enhance and broaden the benefits of mobility. This would increase migrants' economic and social contributions to both destination and origin communities and countries.”

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The skilled migration to the United States and back has witnessed a temporary setback largely due to global economic recession, widespread unemployment in the United States, and erosion of profit of companies. The prospect of world economy is all set to recover in another couple of years, and accordingly India's prospect of skilled manpower will increase in future, and also the outsourcing industry of India.

Notes

1. Castells, M. (2000), in: "The Information Age: Economy, Society and Culture", Vol I, The rise of the Network Society, Second Edition, 2000, Blackwell Publishers, Oxford., quotes his own work: Castells, 1972, "La Question Urbaine", Paris: Maspero.
2. See Jacob Funk Kirkegaard's article in Yale Global online.
3. World Migration Report 2008, See page 61.
4. See Economic Times, New Delhi, 20th May, 2009.

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