

## **What's the best place for me? Migration Location-choice for S&E Students in India**

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Abstract:

In this paper we examine the causal mechanisms of Indian migration flows at a micro level. We observe how Indian postgraduate students in the fields of science and technology decide on whether or not to move abroad and how they determine their country of choice. The survey was conducted among students from four different universities in India and the results are based on 463 observations. The survey was developed to analyze the effects of personal characteristics, structural background factors, and expectancy-based perceptions on general intentions to move and destination-specific migration intentions. Respondent assessed the importance of a number of factors covering work, local environment, social interaction and institutional factors and evaluated in which location they are most likely to achieve them.

Author:

Metka Hercog, PhD Fellow

Maastricht Graduate School of Governance

Maastricht University

Metka.hercog@maastrichtuniversity.nl

## **1. Introduction**

Students are increasingly interested in spending at least part of higher education abroad. The 2009 Global Education Digest shows that in 2007 over 2.8 million students were enrolled in a higher education institution out of their country of origin. The numbers of international students are rising rapidly and have grown by 53% since 1999 (UNESCO-UIS, 2009). An important objective of students to pursue higher education abroad is “to benefit from study provision on a higher level of quality than those at home or in area of specialization not available at home” (Teichler, 2004). International educational experience is also considered an important attribute of intercultural competence. The present global environment highly values people with international experience and associated global cultural skills (Shaftel et al, 2007; Cubillo et al, 2006; Cant, 2004) which creates a further need for students to seek higher education opportunities abroad, preferably at highly reputed institutions. Cross-border higher education is increasingly driven by economic considerations. Studying abroad is perceived by individuals as a boost to their career in their home country as well as on the international job market. Studying abroad can be regarded as a stepping stone towards plans on migration for the future (Vincent-Lancrin, 2008). A degree obtained in a host country’s institution may be considered as an investment towards finding a job after the graduation either in the host country or in a third country. Next to the benefits in terms of greater international recognition, many receiving countries reward degrees obtained in a host country with allowing students to stay in the country after their studies and treating them favourably when applying for a residence permit.

Simultaneously with the increased interest of individuals in higher education, new competitors are entering the global competition for talents, attempting to attract their shares of international students. Competition is played out among a growing number of educational institutions and is increasingly expanding also among the national governments. Governments are involved in the competition for foreign students through active promotion strategies and through targeted immigration policies. Many industrialized countries are changing their policies in the direction of becoming more attractive for the highly-skilled migrants, part of which are also policies aiming towards

increased student mobility. Easy and transparent access to visas, possibility to work during studies, extended job-searching periods are among the policy measures installed with the purpose of influencing the decision of students to choose a certain destination country over others in the first place, and then potentially transition into the labour market of the host country.

The situation in which countries are competing for growing numbers of international students makes preferences of students a very interesting subject. Understanding potential migrants' preferences regarding migration behaviour is important for all actors involved in international higher education. It concerns educational institutions, country governments, and employers in receiving as well as in sending countries. Knowing which factors influence the decisions on mobility would inform competitors for highly-skilled migrants and contribute to understanding as to why certain countries attract dominant shares of foreign students while increased efforts of some other receiving countries have not resulted in satisfying changes.

This paper presents a quantitative analysis aimed at understanding the drivers of highly-skilled migration from India. We use a unique survey, designed specifically for the study of the addressed topic. The study is focused on students in the field of science and engineering. This group of studies has been selected for two important reasons. Firstly, students in science and engineering possess knowledge and skills which are highly transferrable across international borders. This in turn makes them more mobile and free to choose the location for their further studies as well as for work. Secondly, most developed countries are, for different reasons, facing labour supply shortages in this field. Scientists and engineers are involved in innovation and development of new products and technologies (Freeman, 2006), which may consequently lead to economic growth of the receiving country. Attracting students and workers in the field of science and engineering to a receiving country is therefore seen as an instrument to sustain economic growth through the process of research and development.

The choice to study decisions of specifically Indian students is based on two factors. Firstly, the country's educational system, in terms of number of students as well as the quality of education, guarantees a large outflow of students on a yearly basis, thus ensuring sufficiently good respondents for the survey. Secondly, India is considered to

be among the winners in terms of having an overall positive effect from skilled migration (Beine, Docquier and Rapaport, 2003), which supports our choice for studying India's science and technology sector as a case study.

This paper first explores previous literature on student mobility and destination preferences (Section 2). In section 3 we present the research setting, survey data, description of variables and our sample characteristics. In section 4 we analyse the data, with first looking at which factors influence the decision to either stay in India or move abroad, and secondly, we look at the factors influencing the decision for a preferred location. Section 5 reflects on the results of the quantitative analysis and concludes with propositions for possible policy interventions that would function as incentives to migrate to a certain country.

## **2. Related previous research on student migration and preferences for destination**

Increased student mobility has not gone unnoticed with the academic research. The majority of studies has put more emphasis on the demand side, observing educational institutions and from a marketing perspective suggesting improvements to the universities in the offer to international students (for example Binsardi and Ekwulugo, 2003, Mazzarol, 1998). Already the early work on student mobility sees the university offerings not only in terms of core educational service, but also in combination with secondary/auxiliary offerings of tangible and intangible attributes (Levitt, 1980, Grönroos, 1978, Grönroos, 1994). However, these studies have not touched upon the influence of non-educational factors such as the effect of personal reasons and or the country choice. Cubilo et al. (2006) make an overview of the main higher education choice literature and it is noticeable that for a majority of previous studies non-educational factors are not taken into account. Findings of the papers mentioned in the overview of Cubilo et al. (2006) expose the importance of university and programme reputation (Qureshi, 1995, Lin, 1997, Mazzarol, 1998, Peng et al., 2000, Soutar and Turner, 2002, Price et al., 2003), the need of segmentation of prospective students and programme suitability (Hooley and Lynch, 1981), wide offer of courses, cost of attendance, financial aid (Qureshi, 1995, Ivy, 2001), teaching quality (Lin, 1997, Soutar and Turner, 2002, Price et al., 2003) and internship opportunities (Lin, 1997).

Only a few papers look beyond the effects of education services on student mobility choice. Srikatanyoo and Gnoth (2002) are among the few authors which focus on the country image effect on the decision making in international tertiary education. They develop a conceptual model in which country image is placed on a par with institution image and programme evaluation. They claim the country image directly influences students' attitudes towards its academic institutions in a positive or a negative way. A favourable country image may create positive beliefs about the quality of institutions as well as shatter the success of individual educational institutions. Bourke (2000) sustains this claim in her empirical investigation on international students in Ireland and pre-departure students in Malaysia. Education reputation of a country proved to be a decisive factor in the choice of a destination. Their fieldwork testifies that intending students first select a host country and then choose an education institution. Binsardi and Ekwulugo (2003) also identify in their study among international students in the UK that it is both, educational and country-related factors which influence their decision for location. Respondents in the survey ranked the ease of immigration procedures and university admissions right after the importance of educational standards. The ease of finding employment during and after the studies was positioned in the third place and the cost of living, safety and culture in the fourth place. Nonetheless, contrary to above mentioned studies Peng et al. (2000) conclude that brand image still has the strongest effect when they model effects of country, corporate and brand images on evaluation of education services.

Although decisions concerning student mobility are not necessarily equivalent to those of labour migration, we can make a number of parallels also from the research on determinants of destination choice for highly-skilled migrants. Determinants of migration has traditionally been researched from the perspective of neoclassical economic migration theories (Sjaastad, 1962, Todaro, 1969, Harris and Todaro, 1970), which analyze migration decision in terms of evaluating costs and benefits of migration. An individual is seen as a utility maximizing agent who will migrate when one expects a higher utility in a different location, net of migration cost. Individuals compare locally expected earnings with their expected earnings at different destination countries. Economic literature emphasizes the economic aspects of the decision-making and posits that people migrate to areas with a higher wage level. Especially when international students are seen as 'probationary immigrants' (Millar&Salt, 1997) who take student

mobility as a stepping stone towards later labour migration, an assumption can be made that career prospects in the host country play a role already at the decision about student mobility. Soutar and Turner (2002), Binsard and Ekwulugo (2003) are among the papers which have through empirical studies proven the relevance of job prospects in the decision making process of students.

Having in mind the explanatory limitations of economic factors and realizing that they do not cover all events that can trigger the migration decisions, reasons other than wage differentials between source and destination countries are used to understand the migration flows. Science and engineering workers, in particular, have been proven to place less importance to the pecuniary aspects of their jobs (De Grip, Fouarge, and Sauermann, 2009, De Grip and Willems, 2003, De Graaf, Heyma, and Van Klaveren, 2007) and are more likely to migrate to a place with a higher R&D intensity where they can be better involved in innovative work. De Grip et al. (2009) find out that among European science and engineering graduates wages matter only for migration within the EU but not for migration to Anglo-Saxon countries, which attract people for better career prospects.

Transaction of human capital depends largely on the types and level of skills. Skills in technology-intensive sectors have a much more global character and are more easily transferable across different countries than, for instance, skills and knowledge in social sciences. De Grip et al. (2009) and Constant and D'Agosto (2008) show that country choice decision can be explained by the field of specialization, with European life science students more likely deciding for migration to USA, Canada and Australia (as opposed to other EU countries) and with Italian humanities students preferring the UK.

Several papers on immigrant integration show that language skills bare an important contribution to the performance of immigrants in the receiving countries labour markets (e.g. Chiswick and Miller, 1999, Körner, 1999) and therefore indicate that language barriers work as an important obstacle for ripping returns to human capital investment in a destination country. Belot and Ederveen (2005) look at the cultural and institutional barriers in migration between developed countries and find strong evidence of the importance of cultural links that go beyond similarities in languages. Docquier et al.

(2006) also show that colonial ties and linguistic barriers matter across different skill levels of migrants.

The distance in cultural proximity can be reduced with the existence of migrant community in a host country. The presence of social networks and access to them plays a role in mobility behaviour (Massey et al., 1993). Much of the movement of the skilled from the developed world goes through these networks. Ties between migrants in a receiving country and people in the home country increase migration probability of the latter as they provide them with information and in that way reduce costs and risks of migration. At the same time, the networks increase its future gains.

Destination choice for intended migration is influenced also by prior migration experiences. Experiences with mobility increase the information available and hence reduce the cost and risks of future mobility as well as facilitate adaptation. Parey and Waldinger (2008) and de Grip et al. (2009) find that studying abroad significantly increases individual's probability of working in a foreign country. In general previous migration experience influences the decision whether to move abroad or not (King, Ruiz-Gelices and Findlay, 2004).

The amenity literature (Graves, 1979; Graves et al. 1979, 1982; Krupka, 2007) gives another valuable contribution to the supply-side perspective on migration. The local characteristics, also referred to as amenities, affect the quality of life because people have preferences for certain types of areas, for example areas that offer more security, better access to facilities, more moderate climate, etc. Mori (in Price et al, 2003) recognizes location and social facilities in a city as an important environmental condition that influences students' choice. Florida (2002, 2005) also claims that 'creative class' moves to areas with an attractive life style and a tolerant atmosphere.

Several studies attempt to observe the effectiveness of the immigration policies. Wright and Maxim (1993), for instance, demonstrate that the specifics of Canada's immigration policy have an effect on the type of immigrants that are attracted. Clark, Hatton and Williamson (2002) explain the changes of migrant composition in the United States through time by a number of variables, including also indirect costs associated with quantitative policy restrictions on migration and skill-selective immigration policies. Quite

on the contrary, Belot and Ederveen (2005) show that OECD countries with open borders experience less migration between them than with countries which have closed borders. Similarly, Cobb-Clark and Connolly (1997) argue that policies are likely to exert a limited effect on the concentration of migrants. Their study suggests that skilled migrants wanting to enter Australia are influenced by a range of factors.

### 3. Survey data and description of variables

The data used for this paper come from a self-designed survey, specifically prepared for the purpose of understanding perceptions of students on mobility and their preferred location choices. Data was collected during two field visits in India. The data collection took place in March and April 2009 among students at Jawaharlal Nehru University (JNU), Institute of Technology - Banaras Hindu University (IT-BHU), and University of Jammu and during August 2009, the data was collected at the Indian Institute of Technology (IIT) Delhi and Indian Institute of Science (IISc) Bangalore. These institutions were chosen according to quality rankings of universities and other education institutions in India. All chosen universities are reputed for offering high quality higher education. IIT Delhi was also ranked among the world's top 200 universities according to The Times Higher Education QS 2009.<sup>1</sup>

In addition to quality criteria, the university used in the study also allow us to exemplify the heterogeneity of the student population and different education systems in India. The universities in the study are located in four different Indian states and each of institutions has a different educational set-up. **IIT Delhi** is one of the fifteen autonomous technology institutes, which were established by the Indian Parliament as the Institutes of National Importance to raise top-quality technological manpower. It offers undergraduate and post-graduate programmes. **JNU** is also located in New Delhi, but is, in contrast to the IITs, a research-oriented postgraduate university. It's a multidisciplinary university, organized in ten different schools and four specialised centres. **IT-BHU** is a constituent unit of Banaras Hindu University, located in Varanasi (Uttar Pradesh). It's an engineering school and according to Union Cabinet's decision from 2008, IT-BHU is now in the process of converting its status of an IIT. The admission to IT-BHU follows equivalent examination as for the entrance to IITs.<sup>2</sup> **IISc Bangalore** (Karnataka) is a highly-ranked

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<sup>1</sup> <http://www.timeshighereducation.co.uk/Rankings2009-Top200.html>

<sup>2</sup> IIT - Joint Entrance Examination (IIT-JEE) is an entrance exam for undergraduate students. Graduate Aptitude Test in Engineering (GATE) is an entrance exam for post-graduate students.



research institution with very selective admission procedures. Departments of the Institute are divided in the categories of sciences and engineering, with some of them offering programmes based on course work and others based on research. It offers Masters and PhD degrees. **University of Jammu** is located in the northernmost state of India, Jammu and Kashmir. It offers undergraduate, post-graduate and doctoral programmes. It was recently ranked among A' grade universities by National Assessment & Accreditation Council of India.

The survey was delivered to students in a paper format as well as a web-based survey. In total, 468 students filled out the survey, among which 284 respondents filled out the paper-based survey and 184 filled out the digital one. The web-based survey was sent to the list of email addresses, which we acquired individually by each department. To increase the outreach to more students, we made use of email groups like yahogroups, googlegroups and Facebook groups. Initially, we planned to use only web-based surveying in order to allow busy respondents to fill out the survey at a time of their convenience. Unavailability of comprehensive students' lists of email addresses as well as low initial response rate to the digital invitation to participate proved that paper-based survey was a more appropriate method for this kind of research.

The survey is focusing on students of science and engineering. Because some of the students accessed the survey through group invitations (e.g. a post on a Facebook group), there are a few students in the survey who do not fit this criteria. We keep students of social sciences, humanities and law in the survey for the general description since their size is very small (63 observations). However, the comparison of students who plan to stay with the ones who plan to move abroad as well as the section on country choice is presented only for students of sciences and engineering.

### **3.1 Questionnaire design**

The survey contains separate modules for students that plan to migrate and those that do not. Students who negatively answered the first question on mobility intentions for the future were asked to only answer a limited set of question.

The questionnaire has four sections. In the first section, the students are asked about their general mobility intentions, planned duration of stay abroad and reasons for the intended mobility/stay. In the next section, the students respond to questions on country choice. They are asked to indicate their expectations for alternative countries of

destination regarding the likelihood for achieving the named qualities. The listed qualities are organized in four groups, that is: a) work-related factors, b) local environment (amenities), c) social network, and d) public services. The named qualities are determined on the basis of theories on migration determinants and previous empirical research on determinants of location choice. Students are also asked to specify what factors about the listed countries would have to be changed so that they would choose that particular destination. In the third section, the students are asked a question on their migration history and two questions on social network. The last set of questions is on the students' background, which covers questions on personal characteristics, university and family background.

The questionnaire was designed with the intention to allow us looking at the list of questions. The study addresses the following issues:

1. What are the important personal and structural background factors and expectancy-based perceptions of place utility that determine general intentions to move and destination-specific migration intentions?
2. Are the determinants of migration to Europe different from determinants of migration to the US?

First of all, we look at the factors influencing the decision whether a person is intending to move abroad or no. The effect of the following factors on student mobility is observed:

1. Personal characteristics:

We look at the way age, sex, belonging to a community and reserved group, relationship status, area of residence (rural/urban), effect the intention to move abroad

2. Family background

We look at parental education, parental residence, household income, and family support for moving abroad.

3. University-related factors

We observe the field of studies, level of studies, average grade, and level of English affect the intentions on moving abroad.

#### 4. Migration history

Past experiences in working or studying abroad are likely to lower the costs of migration.

#### 5. Network abroad

We ask whether any of the family members, friends or people in profession have had migration experiences. The assumption is that people who have a network abroad will easier get access to information and will be more likely to move.

#### 6. Individual perception of importance of factors (work, local environment, social contact, public services)

The students were asked to rank a list of factors on a 5-point scale (1=not important at all, 5=very important) in terms of their importance for the place where they would to live. The complete list of factors is in Table 7 in the Appendix.

In the second section, we look at the factors affecting country choice. Students were asked what would be their top destination country in case they want to move in the following five years. The study looks at the same factors as mentioned above ( personal characteristics, family background , university-related factors, migration history, network abroad). In addition to the named factors we also look at the perceptions of importance for a group of factors, which we group in four categories, namely work, local environment, social contact, and public services. We also look at how students assess the importance of certain factors related to institutional setup of receiving countries and observe whether this differs buy the preferred country for destination.

### **3.2 Sample characteristics**

The survey was filled out by students at five universities. Some of the students who have filled out the survey online and have received the invitation through one of the networking groups are from other Indian universities. 153 students from the sample are studying at JNU, 74 at IISc Bangalore, 63 at the University of Jammu, 46 at IT-BHU, 42 at IIT-Delhi. The other 80 students from the sample are from other universities, with no major group among them.

Table 2 ( in the appendix) illustrates the sample characteristics along the dimensions of personal characteristics, university and family background, migration history and social network abroad. In line with the gender distribution of the targeted population of science and engineering students, our sample comprises of predominantly male students population with 70.2% of our survey respondents being male.<sup>3</sup> An average age of respondents is 24.1 years. 52.4% of the students are younger than 24.

The distribution of religious belonging of students in the sample is representative of the religious composition of Indian population as a whole. Respondents in the survey are predominantly Hindu, with almost 80% of the sample. The second biggest group are Muslims with 7.3% of the respondents. Christians and Sikhs represent respectively 3.9% and 3.7% of the population. According to the quota system at Indian universities, students from backward communities and schedules tribes and casts are reserved a percentage of positions during the admission procedure. The population in the student sample represents the distribution of students according to the quota system, including 15.9% of students who belong to any of the reserved categories. Majority of our respondents are not involved in relationship and do not have children.

Our survey targets students in sciences and engineering. In the whole dataset, 81.6% of student respondents correspond to this criterion and only they will be observed with respect to their migration behaviour. In the complete dataset, 30.3% students are currently enrolled in a programme in the field of natural sciences, 51.2% are in engineering studies and the rest are in social sciences, humanities or law. The students study various disciplines. The students with the highest representation in the dataset are those enrolled in life sciences (17.9%) and computer and systems sciences (12.7%).

The students are distributed across all levels of study degrees, with close to one third of the sample in each of the three levels of study programmes (28% in Bachelors, 35.7% in Masters and 36.3% in PhD or Post doctoral programmes). With respect to the achievement of the students, the sample consists of predominantly A grade students, representing 73.9% of the sample. A large proportion of sampled students also has a good command of English.

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<sup>3</sup> Percentages for the sample distribution hold for the reported cases in each of the variables and not for the total number of observations in the survey. Each of the variables has a different number of missing values.

Considering the family background of the surveyed population, we observe parents' educational level, their household income, area of residence and support for student's move abroad. About 53% of students' mothers and 74% of students' fathers have university education. In general parents encourage students move abroad. Only 34.3% of students believe that their parents prefer for them to stay in India in comparison with the option to move abroad. The students in the sample come from household with varying levels of income. The biggest share of students in the sample hails from households with low level of income. Close to half (51.60%) of the student population in the sample originates from semi-urban areas, 32.4% from urban metropolitan areas and the remaining 16% from rural areas.

With regard to migration history of our respondents, we observe that a big majority of them do not have any international migration experience (86.9%). Because of that, their information about potential destination countries depends even more on external sources. Within a close family, only a small portion of respondents has anyone that had lived for half a year or long out of India. Within an extended family, close to 32% of respondents have someone who has lived abroad. Also among friends and colleagues, our respondents are more likely to know someone with international exposure. 34.9% of respondents have someone among their friends and 25.7% of them know someone professionally who has lived abroad for more than half a year.

#### **4. Planned move abroad vs. stay in India**

In line with expectations, a large share of survey respondents stated that they consider moving abroad in the future, with 61.3% of the sample. In this section, we compare our respondents by the same factors as we used above to characterize the distribution of the population across the divide in their future plans on moving abroad. In this way, we can observe whether there are any major differences between those students who plan to move abroad compared to those that do not have such plans. Only students of natural sciences and engineering are included in this comparison. The objective of the section is to compare students who plan to move abroad with those that do not have such plans and attempt to understand the factors which influence the decision-making. Table 3 illustrates the differences between the two groups. With respect to gender, we can observe that there are proportionally less female students among the ones that plan to move abroad. There are 25.4% female students within a group which reported plans on

moving abroad, while in the other group these percentage increases to roughly 30% of the survey respondents.

Age clearly plays a role in plans on migration in a sense that the students who plan to move abroad are older. Among the students who report migration plans, close to 60% are 24 years or older, while only 31.9% of “non-movers”<sup>4</sup> belong to that age group. With respect to students’ community belonging, we can notice that students from minority communities are highly represented among students with plans to move abroad. Among students with migration intentions, students from non-Hindu communities represent 23.6%, while in the other group, they represent only 15.2%. Similarly, the proportion of students belonging to a reserved group under the quota system is bigger among “movers” in comparison with their proportion among “non-movers” (19.6% and 13.9%, respectively). In relation to students’ relationship status, we do not observe major differences between “movers” and “non-movers”, which applies as well to the fact whether respondents have children or not.

With respect to the university background of the students, we observe a major difference in their reported plans on mobility. We find a bigger proportion of students in natural sciences among the students who plan to move as compared to students without such plans. Actually, 42.3% of those that plan to move study in the field of natural sciences and only 29.6% represent the equivalent group among the “non-movers”. Also the level of studies appears to influence the plans on mobility. Among the “movers”, PhD students and post-doctoral students represent the largest share (that is 46.2%), whereas this same group of students correspond to a minor share of 18.7% among the “non-movers”. Bachelor students, on the other hand, represent the smallest share of 20.8% among the “movers” and a considerably larger share among the students, who are not planning to move ((35.7%). Also in terms of study achievements, we find a difference between the two groups. The students who consider moving abroad are more likely to have high grades. 77% of the sub-sample of students with moving intentions has first class grades, which is comparatively higher than 64.9% of first class students among those with no moving intentions. Proficiency in English also divides the students in two dissimilar groups. Students with mobility plans have a better command of English and in 81.5%

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<sup>4</sup> For the purpose of simplicity, we refer to students who report plans on moving abroad as “movers” and to those that do not have plans on moving abroad as “non-movers”.

report that their English is either good or very good. Only 70.4% of students who do not plan moving abroad think of their knowledge of English language as good or very good.

Regarding the family background, we do not find any significant differences between the two groups of interest regarding their parents' educational background. Similarly, household's income do not show differences in terms of distribution of students between the two groups. The difference, however, appears in the family support to move abroad. While students with moving intentions report in 65.2% of cases that their family encourages their move abroad, this share drops to only 43.9% for students who do not consider moving abroad. With respect to families' area of residence, we observe a minor difference in the proportion of students from urban metropolitan areas. Students who plan to move abroad have a lower representation of students from urban areas as compared to the proportion this equivalent group of students has among the non movers (31.1% and 36.5%, respectively).

In relation to migration history, the difference between the two groups points to the expectation that students with prior migration experiences will more likely have plans to move again. Among students who have plans to move in the future, 16.9% have already been abroad, while among non-movers 11.5% of students have been abroad previously. Looking at the network that students might have in their family and friends with prior migration experiences, we would expect that students with plans to move abroad will be more likely to have such networks as compared to the group of students without such plans. This proves to be the case for friends and colleagues, but not with respect to close and extended family. It is interesting to note that among students who do not have plans about moving abroad, larger proportions have parents, siblings or extended family members who have lived abroad, in comparison to students who have plans to move. However, when observing students' network of friends and colleagues, 40.8% of students with mobility plans have friends who have lived abroad and only 30.2% of students without mobility plans have such friends. With respect to colleagues, this difference becomes even more apparent (with 34.1% for "movers" compared to 16.7% for "non-movers").

Additionally, we looked into individual perception of importance of factors (work, local environment, social contact, public services). An assumption is that people who value work related factors higher will more likely plan to move abroad, while people who value

local environment, social contacts and public services will prefer staying in India. This assumption was, however, not proven. There are no major difference between the two groups as we can observe that all students rank work as the most important. In terms of local environment, students who do not have plans on moving abroad tend to rank its importance higher.

Importance of factors (averages)	Plan to move abroad	No plan to move abroad	Total
Work	4.25	4.25	4.25
Local environment	4.14	4.26	4.19
Social contact	3.99	3.78	3.91
Public services	3.97	4.07	4.01

#### 4.1 Country choice

This section only looks at those S&E students who have expressed the intention to move abroad. The wording of the question is the following: “What would be your **top destination country** in case you want to move in the following 5 years?”

Table 4 illustrates the distribution of students preferred location choices for all students in the sample and only for S&E students in the second column. It is remarkable to note that close to half of our respondents choose the United States of America as their first option for moving abroad. The second most often mentioned country is Germany, however only 11.7% of students mentioned it as their first choice. For S&E students, the other countries most often mentioned as desired destinations are the UK (10.1%), Australia (8.51%) and Canada (5.32).

Table 4: Country choice for all student sin the sample and for S&E students (in percentages)

	All students n=305 (in percentages)	S&E students N=188 (in percentages)
USA	49.51	47.87
Australia	7.54	8.51
Canada	4.26	5.32
Germany	12.79	11.70
UK	11.15	10.11
another European country	7.54	8.51



another country	3.28	4.26
I don't know	3.93	3.72
	100.00	100.00

As expected from the general patterns of Indian highly-skilled migration, preferences for a destination country from our sample clearly show that some countries have an obvious advantage in attracting the Indian skilled population. It is clear that the European countries lag far behind the United States, which has more than a million of immigrants born in India and an inflow of 63.352 India-born permanent settlers in 2008. As we have mentioned in the beginning of the article, many industrialized countries are changing their policies in order to become more attractive for highly skilled migrants. Even though some European countries have introduced a fast-track entry system for knowledge migrants in recent years, they are having troubles in reaching the expected figures.

In the following section, we divide the mentioned countries of destination in three groups: the USA, the Anglo-Saxon countries and continental European countries. The US universities and high technology companies have worked as a magnet for Indians for decades, leading to a strong migration network. A vast majority of skilled Indians are exclusively interested in migrating to the United States of America. In the second group are the Anglo-Saxon countries, namely the United Kingdom, Australia and Canada. They have been historically open to immigrants; they are all English-speaking countries, and linked to India with colonial history. The three named Anglo-Saxon countries all have a supply-driven immigration policy for the highly skilled. Australia and Canada were the first to introduce points-based system as part of their immigration policy already in the 1980s and the UK followed with an introduction of a similar system in 2002. The European continental countries form the third group of interest. They do not speak English as a native language and do not have traditional links with India. However, in recent years, European countries have become increasingly involved in changing their labour migration policies in order to attract highly skilled migrants from third-countries. Some European countries seem to have gone further than the US in adopting specific rules for young migrants and former students (Wiesbrock & Hercog, 2010). We are interested to observe how the various factors of interest differ by countries chosen as the first option for migration. In this manner, we can observe whether there are any major differences between those students who choose the USA compared to those that choose any of the three Anglo-Saxon countries or European countries.

Table 5 describes the differences in terms of country preferences by student characteristics. In the first place, Pearson chi-square test shows us whether students which differ in terms of observed dimensions would choose a different country. A general observation can be made that students' personal profiles do not differ much between those that choose one destination or another. Only in terms of relationship status, having children and level of studies, we observe differences in country choice that are statistically significant at 5% value. We further look into whether any of the dimensions would have an effect in terms of choosing a particular group of countries. Gender does not seem to play a major role for students' country of choice. Among students who chose any of the European countries as a first choice, we notice a bigger male dominance compared to students who choose the USA or any other Anglo-Saxon countries. We further see that there are no substantial differences in terms of country choice in respect to students' age. Students who choose the USA tend to be a bit older, especially when compared to those students who would choose other Anglo-Saxon countries. When looking at division by students' community belonging, we see that among those that would choose the USA, there are relatively more Hindus than in the other two destination groups. In terms of belonging to any of the reserved groups, we do not observe big difference either. There are slightly more students with a reserved group background who would choose European countries as their preferred destination. The differences in terms of country choice are significant in terms of students' relationship status and whether they have children or not. Students that are single are more inclined to choose the USA as a destination country.<sup>5</sup> On the other hand, we can see that those that are in a relationship are less inclined to migrate to the USA.<sup>6</sup> Those students that have children are significantly less inclined to pick any of the three Anglo-Saxon countries in comparison to other possible destinations. Among those students who picked any of the Anglo-Saxon countries only 4.5% have children, while this percentage is 32.4% and 29.2% for European destinations and the USA, respectively.

In terms of the university background, we observe that students in different levels of their study programmes differ in terms of a chosen destination country with a statistical significance of 5%. Looking closer into the differences in terms of country choice, we observe that people in natural sciences are more inclined to choose a European

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<sup>5</sup> The high percentage is statistically different from the average at 5% level.

<sup>6</sup> The difference with the averages from the other chosen destinations is significant at 1% level.

country.<sup>7</sup> The level of studies also seems to play a role in the country choice. Among those students who pick European countries, 54% are pursuing PhD studies or post-doctoral studies. On the other hand, the equivalent group of students has a low representation in the group of students who picked any of the Anglo-Saxon countries. These countries seem to attract more Masters students, who are highly represented within this group.<sup>8</sup> In terms of students' performance, we observe only minor differences between the chosen countries. Proficiency in English displays unexpected outcomes as there are only 10.8% of students who report their knowledge of English as medium or worse among the ones that want to move to Europe. The share of students with worse command of knowledge rises for students with the USA as a preferred country to 18.2% and even higher for the Anglo-Saxon countries, to 20.4%.

In terms of students' family background, none of the observed dimensions prove to display statistically significant differences with respect to choosing a certain country. With respect to parent education, we observe that students who choose any of the three Anglo-Saxon countries tend to have parents with lower educational level compared to those that would choose continental Europe or the USA. Lower shares of mothers and fathers are reported to have reached a university degree. With respect to family support for moving abroad, it is exactly the students who picked Anglo-Saxon countries as their first choice to have the highest share of families which encourage students' move abroad (74.4% compared to 61.8% for the USA and 62.2% for the continental Europe). Also in term of household income, the Anglo-Saxon group differs from the average. They have the lowest representation for the students with the lowest household income. Only 30.9% come from a household with an income of Rs. 25000/- or less. This percentage rises to 44.3% for the students with the USA as a top country and to 48.6% for those that choose continental Europe. At the other end of the household income distribution, the USA country choice has the highest representation of students (26.1% compared to 18.9% and 16.7% for Europe and Anglo-Saxon countries, respectively). Looking at the area of families' residence, the students with preference for Europe are more likely to come from urban metropolitan areas (40.5% in comparison to 29.2% and 25.6% for the USA and other Anglo-Saxon countries, respectively).

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<sup>7</sup> 55.3% of people that would choose a European country are studying natural sciences. For those that plan to move to the USA, 58.9% are in the field of engineering and for those that plan to move to other Anglo-Saxon countries, this share rises even higher to 64.4%.

<sup>8</sup> The differences for both levels of studies within the Anglo-Saxon group are statistically different from the average at 1% level.

The difference between those that have any migration experiences and the rest in terms of a country choice is not statistically significant. Nevertheless, we observe that students who have been abroad in the past have a higher representation among the choice for European countries. 24.3% of those that would choose Europe as a destination region have already had some experiences with living abroad while only 9% of those that would go to Anglo-Saxon countries have had such experience. In terms of migration network abroad, we do not observe major differences with respect to students' choice of countries. Students' country choice differs only in terms of whether the students have siblings or colleagues living abroad or not. Among the students who would choose a continental European country, only 3.2% have had siblings living abroad, while this number rises to 13.9% and 15% for the USA and the other Anglo-Saxon countries, respectively. In terms of having colleagues who have lived abroad, we notice a difference between the country choices in a sense that people with preference for Europe tend to be the ones who are more likely to have colleagues living abroad.

The students were also asked to rank on a 5-point scale the importance for a number of stated factors for the country where they want to live. We grouped the listed factors in five groups, namely work, local environment, social contacts and public services (for the complete list of factors, check Table 7 in the appendix). In general, it can be observed that in general for all students factors related to work are considered the most important. The second most important group of factors are related to the local environment, while social contact and public policy factors rank lower in terms of importance. We can not observe any major differences in terms of students' country choice. The students who have picked the USA as their preferred country choice tend to rank the named factors higher compared to students from the other two observed destinations. In the second set of questions, students were asked to rank the importance of policy-related factors. It is notable to observe that in terms of immigration policies, the possibility of permanent settlement and acquisition of citizenships rank the lowest. Especially for students who choose Europe as a destination country, the possibility of settlement is particularly not important. The students are much more interested in clear application procedures and the chance that immigration policies will allow them to re-enter the country later on in the career.

Table 6: Average ranking of factors by the top country of destination

Importance of factors	USA	Anglo-Saxon	Europe	other	Total
Work	4.30	4.28	4.15	4.14	4.25
Environment	4.12	4.20	4.09	4.09	4.13
Social contact	4.04	3.97	3.91	3.72	3.97
Public policy	4.03	3.98	3.98	3.71	3.97
Easily bringing in my family now or later	3.81	3.76	3.29	3.47	3.67
That I can easily return to later in my career	4.2	3.97	4	3.69	4.06
Living near a large Indian community	3.6	3.37	3.02	3.59	3.42
Clear application procedure for a residence and work permit	4.22	3.89	4.10	4.36	4.13
Accessibility of your spouse to the labour market	3.52	3.52	3.28	3.84	3.49
Being able to stay in a country longer than 5 years	3.72	3.8	3.39	3.57	3.66
Possibility of permanent settlement	3.27	3.27	2.83	3.14	3.17
Possibility of acquiring local citizenship	3.34	3.34	3.08	3.14	3.27

Conclusions to be added

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Appendix

Table 1: Observed variables from the survey

Personal characteristics	age	_____years
	gender	a) male b) female
	Community	a) Hindu b) Sikh c) Muslim d) Buddhist e) Jain f) Christian g) other
	Reserved group	a) belongs to a reserved group b) doesn't belong to a reserved group
	Relationship status	a) single b) in a relationship (boyfriend/ girlfriend) c) married d) separated/divorced
	Children	a) has children b) doesn't have children
University-related factors	Field of studies	a) Computer and systems sciences b) Information technology c) Physical sciences d) Mathematics e) Life Sciences f) Biotechnology g) Environmental sciences h) Social sciences i) Humanities j) other
	Level of studies	a) MA b) MSc c) MTech d) MPhil e) PhD
	Average grade	a) First class (A+, A. A-) b) Second class (B+, B, B-) c) Third class (below C+)
	Proficiency in English	a) Very good b) Good c) Medium d) Bad e) Very bad
Family-related factors	Mother's education level highest	a) none, or some primary b) completed primary c) secondary



		d) vocational e) university
	Father's education	f) none, or some primary g) completed primary h) secondary i) vocational j) university
	Support of family to move abroad	a) Strongly encourages move b) Somewhat encourages move c) Prefers stay d) Strongly prefers stay e) Doesn't care
	Average monthly income of the household	a) Less than Rs. 25000/- per month b) Between Rs. 25001/- and 30,000/- c) Between Rs. 30,001/- and 40,000/- d) More than Rs. 40,000/- per month
	Area of residence	a) Urban metropolitan area b) Semi-urban, smaller cities and towns c) Rural area
Migration history		a) lived outside India for one month or longer b) not lived outside India for one month or longer
Network abroad		a) parents lived abroad b) siblings lived abroad c) extended family members lived abroad d) friends lived abroad e) professional contacts lived abroad

Table 2: Basic characteristics of the surveyed population

	Values	Percentages
<b>Personal characteristics</b>		
Gender n=383	0: female 1: male	29.77 70.23
Age n=372	0: 24 years or older 1: younger than 24 years	47.58 52.42
Community n=354	1=Hindus 2=other communities	79.38 20.62
Reserved group n= 365	1=not reserved group 2=reserved group	84.11 15.89
Relationship n=376	1=single 2=relationship (boyfriend/girlfriend) 3=married	76.33 13.30 10.37
Children n=377	0=no children 1=children	78.25 21.75
<b>University characteristics</b>		
Field of studies N=369	1=natural sciences 2=engineering	30.35 51.22

	3=social sciences, humanities and law 4=other	17.07 1.36
Level of studies N=353	1=Bachelor programmes 2=Masters programmes 3=PhD and Post-Doc	28.05 35.69 36.26
Average grade N=345	1=First class (A+, A, A-) 2=Second class (B+, B, B-) 3=Third class (below C+)	73.91 25.22 0.87
Proficiency in English N=372	1=Very good 2=Good 3=Medium 4=Bad 5=Very bad	22.85 54.3 21.24 0.27 1.34
<b>Family background</b>		
Mother's highest education level N=371	1=none, or some primary 2=completed primary 3=secondary 4=vocational 5=university	7.28 6.74 26.95 5.66 53.37
Father's education N=372	1=none, or some primary 2=completed primary 3=secondary 4=vocational 5=university	2.15 2.42 14.25 7.26 73.92
Support of family to move abroad N=373	1=Strongly encourages move 2=Somewhat encourages move 3=Prefers stay 4=Strongly prefers stay 5=Doesn't care	24.66 34.85 26.54 7.77 6.17
Average monthly income of the household N=370	1=Less than Rs. 25000/- per month 2=Between Rs. 25001/- and 30,000/- per month 3=Between Rs. 30,001/- and 40,000/- per month 4=More than Rs. 40,000/- per month	39.46 18.38 18.65 23.51
Area of residence N=374	1=Urban metropolitan area 2=Semi-urban, smaller cities and towns 3=Rural area	32.35 51.60 16.04
<b>Migration history</b>		
Lived abroad N=426	0=not lived abroad 1=lived abroad	86.85 13.15
<b>Network abroad</b>		
Parents lived abroad N=331	0=not lived abroad 1=lived abroad	94.56 5.44
Brother or sisters lived abroad N=330	0=not lived abroad 1=lived abroad	85.45 14.55
Extended family abroad	0=not lived abroad 1=lived abroad	68.15 31.85

N=314		
Friends abroad N=304	0=not lived abroad 1=lived abroad	65.13 34.87
Colleagues abroad N=300	0=not lived abroad 1=lived abroad	74.33 25.67

Table 3: Comparison of the S&E students by main characteristics (in percentages)

	Plan to move abroad	No plan to move abroad	Total
Total	61.28	38.72	100
<b>Personal characteristics</b>			
Gender 0=female 1=male n=295	25.41 74.59	29.82 70.18	27.12 72.88
Age 0=24 years or older 1=younger than 24 years n=289	59.09 40.91	31.86 68.14	48.44 51.56
Community 1=Hindus 2=other communities n=277	76.36 23.64	84.82 15.18	79.78 20.22
Reserved group 1=not reserved group 2=reserved group n=287	80.45 19.55	86.11 13.89	82.58 17.42
Relationship 1=single 2=relationship (boyfriend/girlfriend) 3=married n=294	76.11 11.11 12.78	78.95 15.79 5.26	77.21 12.93 9.86
Children 0=no children 1=children n=294	73.18 25.82	75.65 24.35	74.15 25.85
<b>University characteristics</b>			
Field of studies 1=natural sciences 2=engineering N=297	42.31 57.69	29.57 70.43	37.37 62.63
Level of studies 1=Bachelor programmes 2=Masters programmes 3=PhD and Post-Doc n=285	20.81 32.95 46.24	35.71 45.54 18.75	26.67 37.89 35.44

Average grade 1=First class (A+, A, A-) 2=Second class (B+, B, B-) 3=Third class (below C+) N=281	77.06 21.76 1.18	64.86 35.14 0	72.24 27.05 0.71
Proficiency in English 0= Medium, Bad, Very bad 1=Very good and Good n=293	18.54 81.46	29.57 70.43	22.87 77.13
<b>Family background</b>			
Mother's highest education level 0=less than university education 1=university education N=294	49.16 50.84	48.70 51.30	48.98 51.02
Father's highest education level 0=less than university education 1=university education n=294	28.49 71.51	28.70 71.30	28.57 71.43
Support of family to move abroad 0=prefers stay or doesn't care 1= encourages move n=292	34.83 65.17	56.14 43.86	43.15 56.85
Average monthly income of the household 1=Less than Rs. 25000/- 2=Between Rs. 25001/- and 30,000/- 3=Between Rs. 30,001/- and 40,000/- 4=More than Rs. 40,000/- n=290	40.91 19.32 15.91 23.86	38.60 21.93 16.67 22.81	40.00 20.34 16.21 23.45
Area of residence 1=Urban metropolitan area 2=Semi-urban, smaller cities and towns 3=Rural area n=292	31.07 51.98 16.95	36.52 47.83 15.65	33.22 50.34 16.44
<b>Migration history</b>			
0=not lived abroad 1=lived abroad n=285	83.14 16.86	88.50 11.50	85.26 14.74
<b>Network abroad</b>			
Parents 0=not lived abroad 1=lived abroad N=259	96.18 3.82	94.12 5.88	95.37 4.63
Siblings 0=not lived abroad 1=lived abroad N=259	87.90 12.10	82.35 17.65	85.71 14.29
Extended family 0=not lived abroad 1=lived abroad N=241	73.79 26.21	67.71 32.29	71.37 28.63

Friends 0=not lived abroad 1=lived abroad N=228	59.15 40.85	69.77 30.23	63.16 36.84
Colleagues 0=not lived abroad 1=lived abroad N=225	65.93 34.07	83.33 16.67	72.89 27.11

Table 4: Comparison of country preferences by student characteristics (Significance levels for the chi-square test: \* 10%, \*\* 5%, \*\*\* 1%)

	USA	Other Anglo-Saxon countries	European countries	Other countries
<b>Personal characteristics</b>				
Gender 0=female 1=male Pr=0.656	26.97 73.03	24.44 75.56	18.42 81.58	33.33 66.67
Age 0=24 years or older 1=younger than 24 years Pr = 0.888	62.07 37.93	54.76 45.24	60.53 39.47	60.00 40.00
Community 1=Hindus 2=other communities Pr = 0.295	79.76 20.24	66.67 33.33	67.65 32.35	81.82 18.18
Reserved group 1=not reserved group 2=reserved group Pr = 0.816	82.02 17.98	86.36 13.64	78.38 21.62	80.00 20.00
Relationship** 1=single 2=relationship (boyfriend/girlfriend) 3=married Pr = 0.026	81.11** 6.67*** 12.22	75.00 15.91 9.09	72.97 10.81 16.22	40.00*** 33.33*** 26.67
Children*** 0=no children 1=children Pr = 0.004	70.79 29.21	95.45*** 4.55***	67.57 32.43	60.00 40.00
<b>University background</b>				
Field of studies 1=natural sciences 2=engineering Pr = 0.313	41.11 58.89	35.56 64.44	55.26* 44.74*	46.67 53.33
Level of studies** 1=Bachelor programmes	23.26	14.63	21.62	13.33

2=Masters programmes 3=PhD and Post-Doc Pr = 0.052	30.23 46.51	56.10*** 29.27***	24.32 54.05	26.67 60.00
Average grade 1=First class (A+, A, A-) 2=Second class (B+, B, B-) 3=Third class (below C+) Pr = 0.427	75.00 23.81 1.19	79.07 18.60 2.33	73.53 26.47	100**
Proficiency in English 0= Medium, Bad, Very bad 1=Very good and Good Pr = 0.680	18.18 81.82	20.45 79.55	10.81 89.19	20.00 80.00
<b>Family background</b>				
Mother's highest education level 0=less than university education 1=university education Pr = 0.623	47.73 52.27	57.78 42.22	48.65 51.35	60.00 40.00
Father's highest education level 0=less than university education 1=university education Pr = 0.631	28.41 71.59	36.36 63.64	23.68 76.32	26.67 73.33
Support of family to move abroad 0=prefers stay or doesn't care 1= encourages move Pr = 0.502	38.20 61.80	25.58 74.42	37.84 62.16	40.00 60.00
Average household monthly income 1=Less then Rs. 25000/- 2=Between Rs. 25001/- and 30,000/- 3=Between Rs. 30,001/- and 40,000/- 4=More than Rs. 40,000/- Pr = 0.187	44.32 15.91 13.64 26.14	30.95* 33.33*** 19.05 16.67	48.65 16.22 16.22 18.92	46.67 6.67 6.67 40.00
Area of residence 1=Urban metropolitan area 2=Semi-urban, smaller cities and towns 3=Rural area Pr = 0.870	29.21 52.81 17.98	25.58 53.49 20.93	40.54 43.24 16.22	33.33 46.67 20.00
<b>Migration history</b>				
0=not lived abroad 1=lived abroad Pr = 0.281	84.88 15.12	90.91 9.09	75.68 24.32	78.57 21.43
<b>Network abroad</b>				
Parents 0=not lived abroad 1=lived abroad Pr = 0.271	97.50 2.50	92.31 7.69	100	91.67 8.33
Siblings 0=not lived abroad 1=lived abroad Pr = 0.379	86.08 13.92	85.00 15.00	96.77* 3.23	91.67 8.33
Extended family 0=not lived abroad	68.49	75.00	78.57	75.00

1=lived abroad Pr = 0.740	31.51	25.00	21.43	25.00
Friends 0=not lived abroad 1=lived abroad Pr = 0.402	56.76 43.24	67.65 32.35	50.00 50.00	72.73 27.27
Colleagues 0=not lived abroad 1=lived abroad Pr = 0.322	65.67 34.44	75.00 25.00	51.85* 48.15*	66.67 33.33

Table 7: Question on importance of facilities for the country where students want to live

How important do you consider the presence of the following characteristics/facilities in a country where you want to live? Answer for each category. *Please indicate on a scale from 1-5 by ticking the appropriate box with an X.* (Everyone should answer this question)

- 1= not important at all
- 2= somewhat unimportant
- 3= neutral
- 4=somewhat important
- 5= very important

#### Work

- 1) high demand for my qualifications
  - 2) easily finding a suitable job after my studies
  - 3) attractive salary
  - 4) quality and content of my work
  - 5) good research facilities in companies and public institutions
  - 6) no more than 8-hour working days
  - 7) career progression opportunities
  - 8) recognition of educational/professional qualifications
  - 9) job security (not easy for employers to fire workers)
- Local environment
- 10) costs of living
  - 11) family-friendly environment
  - 12) good quality of higher education institutions
  - 13) multicultural environment
  - 14) rich cultural institutions (museum, theatre, cinema...)
  - 15) public safety
  - 16) political stability, stable government
  - 17) economic stability
  - 18) social equality among population
- Social contacts
- 19) friendly, hospitable population
  - 20) not feeling discriminated
  - 21) English commonly spoken
  - 22) no need to learn a new language

- 23)having high social status
- Public services
- 24)attractive taxation system
- 25)quality and access to medical services (hospitals, family doctor)
- 26)social security and benefits (such as unemployment benefits, pensions)