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Determinants of international mobility decision:

The case-study of India

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DETERMINANTS OF INTERNATIONAL MOBILITY DECISION: THE CASE-STUDY OF INDIA

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ABSTRACT

Faced with a situation in which countries compete for international students, it becomes especially important to understand students' preferences regarding migration behaviour. This paper looks at the determinants of international mobility intentions in the specific situation of Indian students in sciences and engineering. It uses data collected from a survey of students at five Indian universities, complemented by qualitative data from interviews. We looked at the role of students' personal and family background, university-related factors, their social network and preferences for living location in their motivations for moving abroad. The type of university and field of studies work as strong predictors for students' desire to move abroad. Whether a student plans a career in academia or wants to work in a company has a decisive influence on where they see themselves in the near future. Professional aspects are confirmed to be the most prominent in the decision-making regarding international mobility. People who place high importance on work-related factors are more mobile, while people who place higher importance on family-friendly environment and public safety prefer staying in India. International student mobility is clearly a family decision. Parents' support is crucial for moving abroad, in moral as well as in financial terms. Normally, obligations towards family are put in first place ahead of potential individual initiatives.

Key words: location choices; pull factors; higher education; student migration; India

JEL codes: F22 - International Migration; J61 – Geographic Labour Mobility; Immigrant Workers; I23 - Higher education, research institutions; J24 Human Capital, skills, occupational choice, labour productivity

1. INTRODUCTION

Students are increasingly interested in spending at least part of higher education abroad. Some 4.3 million tertiary students were enrolled in a higher education institution outside their country of origin in 2011. The numbers of internationally mobile students are increasing at a fast pace, with more than a threefold increase from 1990 (1.3 million) to 2011 (OECD, 2013). This is not surprising, given the large benefits that are attached to studying abroad for the student. Students can benefit from study provisions on a higher level of quality or in the field of specialization which is not available in their home country. 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 which creates a further need for students to seek higher education opportunities abroad, preferably at highly reputed institutions (Cant, 2004; Cubilo, Sanchez, & Cervino, 2006; Shaftel, Shaftel, & Ahluwalia, 2007). Studying abroad is perceived by individuals as a boost to their career in their home country as well as on the international job market. Often, studying abroad is considered a stepping stone towards migration in the future (Vincent-Lancrin, 2008). Foreign students, especially those from developing countries, demonstrate high stay rates in a host country after graduation (Finn, 2003; Hein & Plesch, 2008; Rosenzweig, 2006). A degree obtained in a host country's institution is often 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 host

countries reward degrees obtained in their country by 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 to 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 to become more attractive for highly-skilled migrants, with enhancement of student mobility as one of the mechanisms to achieve this goal. Easy and transparent access to visas, possibility to work while studying, and extended job-searching periods after graduation are among the policy measures introduced to attract international students, who might then potentially move into the labour market of the host country.

Faced with a situation in which countries compete for international students, it becomes especially important to understand students' preferences regarding migration behaviour. This is important for all actors involved in international higher education, including educational institutions, governments and employers in receiving as well as in sending countries. Knowledge of decisive factors for mobility helps competitors for highly-skilled migrants in attracting people, and contributes to understanding why certain countries attract dominant shares of foreign students while other countries, in spite of increased efforts to attract students, have not been so successful.

This paper uses the collected data from the survey held among students at five Indian universities to describe and analyse the decision-making about moving abroad in the future. In total, 412 students in science and engineering fields participated in our survey, answering sets of questions on their personal situation, their preferences to move abroad and their social networks. Of those 412 students, 262 indicated to have an interest to move abroad, and 150 indicated no desire to leave India. The survey data were complemented with qualitative data, obtained during interviews in India.

The main objective of the paper is to observe the factors which influence the decision to either stay in India or move abroad. Firstly, we offer a brief account of migration from India with an emphasis on student mobility. The paper continues with a descriptive analysis of collected data at five Indian universities and observes whether there are any characteristic differences between those students who plan to move abroad compared to those that do not have such plans. In the third section, we identify which factors influence the decision on moving abroad by using logistic regression analysis. The last section reflects on the results of the quantitative analysis, supporting it with results from the qualitative interviews.

2. STUDENT MIGRATION FROM INDIA

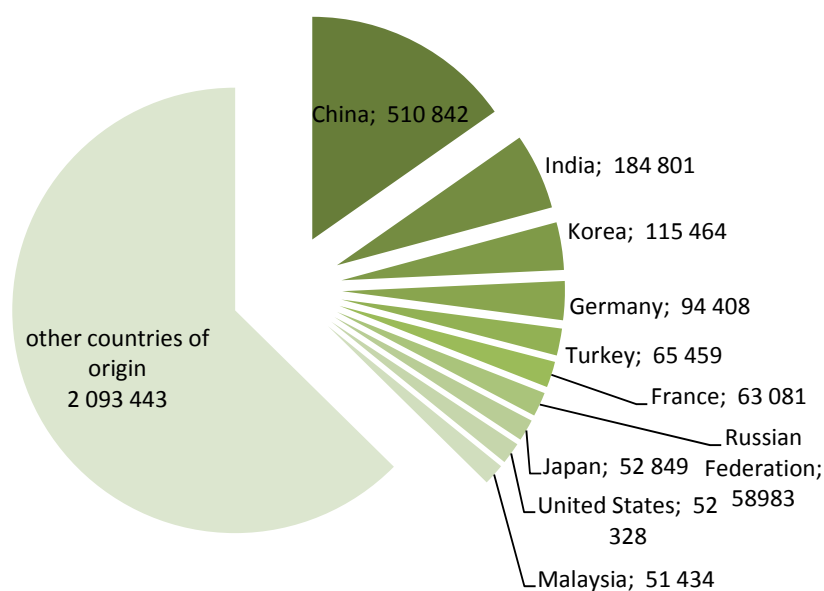
Skilled Indians increasingly emigrate as students through the academic stream. The growth of international student mobility from India in recent years is remarkable. In the last decade alone, student mobility from India increased by more than three times. Internationalization of higher education has been a major driving force behind this trend, as well as a rising middle class in India which is increasingly able to afford foreign university programmes (Kumar, Sarkar, & Sharma, 2009). In addition, foreign student policies have become a tool in the international competition for skilled persons. This takes place through the so-called "two-steps migration"; namely, first through the attraction of international students, and then by their retention as skilled workers for the national labour markets (OECD, 2010a). In fact, many students decide to gain working experience abroad upon completion of their studies.

At the country level, India does not have systematic data on emigration of students or emigration of migrants in general. Concerning the emigration and student mobility, there are only some institution-based sample

surveys from specific institutions like IITs. It is thus more reliable to use the data from destination countries. The figures on Indian student mobility in this section are therefore based on the data from host countries collected by OECD and UNESCO Institute for Statistics.

The data clearly show that Indian students have become a relevant country group in international migration flows. Figure 1 demonstrates numbers of international students from ten major countries of origin for all reporting countries to OECD¹. Students from these ten countries represent 37.4 per cent of all international students. After China, India is the second major country of origin for students who study abroad. In 2008, there were 184,501 Indian students in all reporting destination countries, of which 173,114 were reported for OECD countries (OECD, 2010c). UNESCO statistics demonstrate slightly different figures: in 2008, 170,256 Indian students are reported to be studying abroad. However, because of the high number of domestic students, they only represent 1.0 per cent of the total tertiary enrolment in India. China, for comparison, had 441,186 students studying abroad in 2008 with an outbound mobility ratio of 1.7 per cent (UNESCO-IUS, 2010). Even though the overall mobility ratio for Indian students is low at only 1 per cent, they signify a noticeable portion of student body in certain countries (15.2 per cent in the United States, 13 per cent in New Zealand, 11.5 per cent in Australia and 7.7 per cent in United Kingdom) (OECD, 2010b).

Figure 1: Major countries of origin for internationally mobile students for all reporting destinations, 2008



Source: (OECD, 2010c), Author's analysis

3. DESCRIPTIVE ANALYSIS: PLANNED MOVE ABROAD VERSUS STAY IN INDIA

¹ Education at a Glance 2010: OECD Indicators features data on education from the 31 OECD member countries and five countries that participated in the OECD Indicators of Education Systems Programme (INES), namely Brazil, Estonia, Israel, the Russian Federation and Slovenia (they were not yet OECD member states at the time), and three non-OECD member countries that participate in the OECD's Enhanced Engagement process, namely China, India and Indonesia.

3.1. CHARACTERISTIC DIFFERENCES OF MOVERS AND NON-MOVERS

In line with expectations, a large share of survey respondents stated that they consider moving abroad in the future, with 63.6 per cent of the studied students. These results are in line with findings from the survey among Indian IT students, conducted by Mahmood and Schömann (2003), which found that 68 per cent of their student sample replied that they do wish to migrate upon completion of their studies.

Since this study addresses a student population, it is in line with expectations that the majority of respondents indicate education as the main reason for moving abroad². This study includes any plans for international mobility, either for the purpose of education, for work or for another reason. Reasons for going abroad are strongly interconnected and oftentimes it is difficult for respondents to single out only one single reason. People often change from one migrant category to another or are at one given time in-between such categories. Working while studying, shifting to employment upon graduation, looking for employment abroad in order to accompany a partner are just some examples of how different reasons for mobility take place at the same time. Furthermore, it is very uncommon to go abroad for work directly from a university. As it was explained by several interviewees, most common options for students are to either first go abroad for postgraduate studies and stay longer for some work experience or find a placement with a multinational company in India, which then often sends people for assignments abroad. Therefore, the remainder of the paper addresses exclusively the general question of having mobility plans or not.

To understand the factors which influence migration decision-making, we analyse if those students that wish to go abroad differ in characteristics substantially from those that wish to stay in India. The Pearson's Chi-square test is used to observe whether people with different characteristics also differ in frequency with which they report plans on moving abroad in the future.³

Table 1 (in the Appendix) illustrates the differences between the two groups. We observe that there are proportionally less female students among the ones that plan to move abroad. Within a group which reported plans on moving abroad, there are 26.9 per cent female students, while among students without plans to move 32.3 per cent are female.

Age clearly also plays a role in plans related to migration, with students who plan to move abroad being on average older.⁴ Among the students who report migration plans, around 35 per cent are 27 years or older, while only 10.8 per cent of "non-movers"⁵ belong to this age group. With respect to students' community belonging, we notice that students from minority communities are highly represented among students with plans to move abroad.⁶ Among students with migration intentions, students from non-Hindu communities represent 25.1 per cent, while in the group with no migration aspirations, they represent only 13.4 per cent. Similarly, the proportion of students belonging to a reserved group under the quota system is bigger among

²Among students who have plans to move abroad, 68.1% indicated further studies as the main reason for moving abroad, 25.5% choose work-related reasons and 6.4% other reasons.

³The test of independence measures whether paired observations on two variables are independent of each other. Since our sample is small, we also use the Fisher's exact test for some of the variables. We further assess with a two-tailed test whether any of the categories of the selected values have an effect in terms of having plans for moving abroad or not. These tests are not aiming to make causal claims for determining the decision to move abroad; they only show correlations between intentions to move abroad and the selected variables, which provide us with additional information on determinants, opening the field for further causal empirical evaluations.

⁴The results from the Chi-square test indicate a statistically significant relationship between plans on moving abroad and age groups at 99% confidence level.

⁵For the purpose of simplicity, we henceforth refer to students who report plans on moving abroad also as "movers" and to those that do not have plans on moving abroad also as "non-movers".

⁶The relationship between community belonging and plans to move abroad is statistically significant at 95% confidence level.

“movers” in comparison with their proportion among “non-movers” (18.6 per cent and 13.1 per cent, respectively). In relation to students’ relationship status, we observe a statistically significant correlation with mobility plans. Students who are married indicate a higher intention to move abroad.

With respect to the university background of the students, we observe a number of differences in their reported plans on mobility. The differences between universities are statistically significant.⁷ Students from JNU are more likely to express plans to move abroad, while BHU-IT stands out with predominantly home-oriented students. Compared to students of engineering fields, those in natural sciences have a higher representation among the students who plan to move (38 per cent) as compared to the group of students without such plans (29.4 per cent). Also, the level of studies influences the plans on mobility.⁸ PhD students and post-doctoral students indicate more often that they want to move abroad than Bachelor and Master students.⁹ PhD students and post-doctoral students also represent the largest share of “movers” (49 per cent) and a lot smaller share among the “non-movers”(21 per cent). Bachelor students, on the other hand, represent the smallest share (19.9 per cent) among the “movers” and a considerably larger share among the students, who are not planning to move (37.8 per cent). Also in terms of study achievements, we find a difference between “movers” and “non-movers”.¹⁰ Students who have high grades consider moving abroad more often than students with lower grades. 77 per cent of the sub-sample of students with moving intentions has first class grades, which is substantially higher than 67 per cent of first class students among those with no moving intentions. Proficiency in English also divides the students in two dissimilar groups.¹¹ Students with mobility plans have a better command of English and in 80.8 per cent of cases report that their English is either good or very good. Only 67.4 per cent 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 incomes are similar between the two groups. There are differences, however, in the family support to move abroad.¹² While students with moving intentions report in 67 per cent of cases that their family encourages their move abroad, this share drops to only 46.5 per cent 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.

The results of the survey comply with the expectation that students with prior migration experiences more often have plans to move again in the future. Looking at the network that students might have in their family and friends with prior migration experiences, we expect that students with plans to move abroad more often have access to such networks. This proves to be the case for friends and colleagues, but less with respect to close and extended family networks. It is interesting to note that among students who do not have plans to move abroad, larger proportions have siblings or extended family members who live or have lived abroad, in comparison to students who have plans to move. However, when observing students’ network of friends and colleagues, 57.1 per cent of students with mobility plans have friends who live or have lived abroad and only 42.1 per cent of students without mobility plans have such friends. With respect to colleagues, this difference

⁷ Relationship between the chosen universities and plans on moving abroad is statistically significant at 99% confidence level.

⁸ Relationship is statistically significant at a 99% confidence level.

⁹ For Bachelors and PhD students, these results are significant at 99% confidence level. Master students are more likely to among the “non-movers” at 95% confidence level.

¹⁰ The difference is statistically significant at 90% confidence level.

¹¹ The difference is statistically significant at 99% confidence level.

¹² The difference is statistically significant at 99% confidence level.

becomes even more apparent; 50.3 per cent of the “movers” have colleagues abroad compared to 26.3 per cent for “non-movers”.¹³

3.2 EVALUATION OF THE FACTORS INFLUENCING MIGRATION INTENTIONS

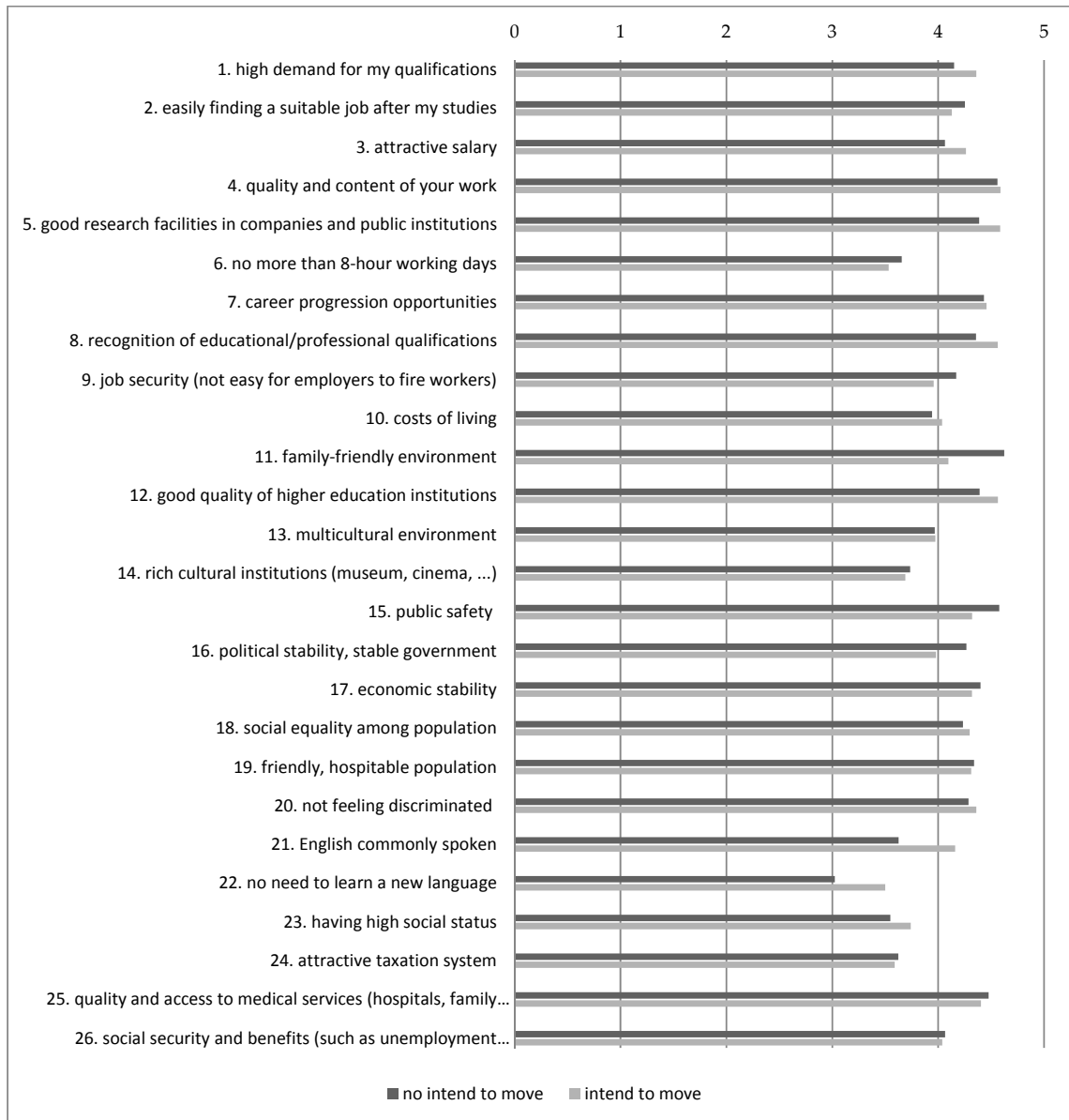
In this section, we examine how students’ preference influences plans of Indian students on future mobility. The students were asked to rank a list of 26 factors on a five-point Likert scale, indicating for each factor the importance this factor has in selecting the place where they would like to live¹⁴. These factors are not all seen as exogenous to migration planning but we view them as a helpful descriptive instrument for better understanding migration decisions (Gibson & McKenzie, 2009).

We are interested to see whether preferences for the named factors differ among people who plan to move abroad and the ones that do not have such plans. The differences in preferences can help us explain which factors draw students abroad and which factors make them want to stay in their home country. Figure 1 presents mean responses for each factor separately for people that plan moving abroad in the near future and for those who did not report such plans in the survey. If people in these two groups view factors differently, it might help us explain why some of them want to migrate and the others do not.

¹³ The differences in reporting plans for future mobility are statistically significant for the variable on friends (at 5%) and colleagues (at 1%). The differences are not statistically significant for the variable on parents, siblings or extended family.

¹⁴ The students were asked to rank the importance of specific factors on a scale from 1 to 5, with 1= not important at all, 2 = somewhat unimportant, 3 = neutral, 4 = somewhat important 5 = very important.

Figure 1: How important do you consider the presence of the following characteristics/facilities in a country where you want to live?



Notes: Answers on a scale from 1-5 (1 = not important at all, 2= somewhat unimportant, 3= don't know/neutral, 4=somewhat important, 5 = very important) in mean values

Our hypothesis was that people who value work-related factors higher will more often express plans to move abroad and people who value local environment, social contacts and public services will prefer staying in India.

This hypothesis is, however, only partially proven. Observing the individual factor evaluation, we notice a general agreement across both groups of students. We can observe that all students rank work-related factors as the most important, regardless of their plans to move abroad. Quality and content of work and career progression opportunities are on average considered among the most important for both groups of students. There is also an agreement on the least important factors for the choice of the place where they want to live in the future. The need to learn a new language does not appear to play an important role for either of the two groups of students. Although students, who want to move abroad, give this factor a much higher average score, they still assess it as on average the least important in comparison to the other factors. An 8-hour working schedule, having high social status and an attractive taxation system are among the other factors which also rank low in importance for both groups.

What is most relevant for this study are those factors which are viewed differently by “movers” and “non-movers”. Factors which are assessed higher by students with migration plans concern the use of spoken languages in the place where they want to live. Understandably, they consider it much more important that English is commonly spoken in the host country. Likewise, it is more relevant for students with moving intentions that they would not have to learn a new language. These students also assess the demand for their qualifications, recognition of qualifications, good research facilities and high salaries higher compared to students without mobility intentions. This is in line with our hypothesis that career advancement opportunities draw people abroad. At the same time, family-friendly environment, political stability, public safety and job security are on average evaluated higher by people who did not express plans to move abroad. The difference in the importance of the named factors can be explained by risk preferences of respondents. These results are in line with earlier studies which have shown that more risk-averse people are less likely to have ever migrated (e.g. Gibson & McKenzie, 2009; Jaeger et al., 2008).

We have so far demonstrated that there are characteristic differences between people with plans to move and those with plans to stay, as well as at point significantly different evaluations of factors influencing migration intentions. To identify which of these factors really increase the likelihood that students express plans to move, we use a logistic regression analysis in the next section.

4. EMPIRICAL ANALYSIS OF MIGRATION INTENTIONS

4.1 LOGISTIC REGRESSION MODEL SPECIFICATIONS

The purpose of this paper is to observe which individual and structural characteristics and perceptions determine whether individuals have plans to move abroad in the near future or not. The dependent variable is the existing disposition of a student to move to another country. This variable is based on the answer to the first question in the survey: “Are you considering moving abroad?” There were two possible answers to this question: yes and no, which allows us to use the binary logit model.

The dependent variable “plan to move abroad” is a binary variable where

$$Y_i = \begin{cases} 1; & \text{if the student intends to move abroad} \\ 0; & \text{if the student does not plan to move abroad} \end{cases}$$

with $p(x_i) = p(y_i = 1 | X = x_i)$ as the conditional probability of $y_i = 1$ given the covariate $X = x_i$.

The independent variables are a vector of individuals’ characteristics and perceptions, which are used to predict which individuals are more likely to intend moving abroad. Logistic regression allows the estimation of a discrete outcome from a set of independent variables, that can be categorical, continuous, dichotomous, or a mixture of these types. The results of the logit probability model show which variables increase or decrease the

likelihood of having plans to move abroad and whether these influences are significant. Table 2 presents the marginal effects from logit estimation of the correlates of planning the move abroad.¹⁵ Because of item non-response, not all variables are available for every respondent. Therefore, we first investigate the role of various sets of variables, before combining all of them together. Since the estimations in different models have different numbers of observations, it is difficult to interpret R2. To have a measure which is comparable across models, we use a measure of goodness of fit (GOF) which shows the percentage of correctly estimated cells. GOF describes how each model fits the set of observation.

We test for a subset of models, in which we explore the role of different sets of variables. In the last model, we combine all variables. In all models, we include gender, community belonging and reserved status as control variables.

The first model looks only at the role of personal characteristics and shows significant effects only for belonging to a reserved group, i.e. plans to move abroad are more likely among students who belong to a reserved group. However, these significant effects disappear in the more comprehensive models. Another interesting finding, however with statistically insignificant results, is that students belonging to Hindu communities are less likely to have mobility plans. This is consistent with the hypothesis that people from minority groups attribute higher benefits to moving abroad since their options in the home country are worse in comparison with the majority group. We also find out that female respondents are less likely to express moving intentions, however, the results are not significant.

As shown in the descriptive statistics in Table 1 age visibly plays a role in plans related to migration, with students who plan to move abroad being on average older. When estimating logit regressions models with the same specifications as presented in Table 2 and including the variables for age, we see that age has statistically significant effects on plans to move abroad in all of the models. In line with the expectations, we find that older students are more likely to plan moving abroad. The odds for students who are 27 or older to express mobility plans are more than six times bigger in comparison to the reference group (students till the age of 22). Since the variable for age is strongly correlated with some other explanatory variables such as having children or the educational level of students, it takes a lot of explanatory power from the other variables. We hence decided to present the regression results for models without the age variable, while recognizing the relevance of respondents' life cycle for their decision about moving abroad or staying in India.

Model 2 investigates the role of university background. This model and all other models also include variables on gender and community belonging, together with other variables of interest. We do not find significant differences between students in engineering and natural sciences. We divided the five observed universities in two groups along the line of practical universities and research oriented ones. JNU, University of Jammu and IISc Bangalore are grouped together as research-oriented institutions. IIT Delhi and BHU-IT are clustered in the second group of practical institutions. The results show that there is significant difference between these two groups, with students from research-oriented universities more likely reporting mobility intentions. Employment opportunities for students from practical universities, such as IITs, have improved greatly in India, which decreases the motivations for looking for opportunities abroad. The Associate Dean of Students at IIT Delhi, Prof. Shashi Mathur explains that due to lack of financial assistance for studying abroad and difficulties of finding jobs, most IIT students opt for joining multinational companies which come to on-campus placements. On the contrary, for students, who want to specialize in academic research, the expectation to pursue further studies or work abroad still persists. This finding is supported by significant differences in terms of mobility plans for students enrolled in different educational levels. In comparison with students who are enrolled in a

¹⁵ Table 2 in the Appendix shows the coefficients and standard errors of the logistical regression.

Bachelor programme, respondent who are doing a PhD or hold a post-doctoral position are significantly more likely to have plans to move abroad, which demonstrates the international orientation of people pursuing academic careers.

Model 3 further examines whether plans on mobility vary according to family background of students. Education of parents and household income do not show significant effects on students' mobility plans. The hypothesis that families matter in the decision-making on moving abroad is, however, proven by the result that students who have support from their family are significantly more likely to plan a move abroad in the near future, significant at 1 per cent. Also, students from semi-urban areas of residence (compared to students from urban areas) are more likely to express mobility plans. Family background plays a strong role in students' future plans and a supporting family environment is necessary for peoples' ability to move abroad.

Model 4 further looks at the role of social networks. We observe whether students own migration history or migration experiences of family members, friends and colleagues effect their mobility plans for the future. As mentioned above, very few students have been out of India in the past or have any of their close family members with such experiences, these results have to be treated with caution. It turns out that only having colleagues who have been abroad in the past has a statistically significant effect on mobility plans, while friends abroad also have a small positive effect but insignificant. This is in line with Granovetter's (1973) hypothesis on the "strength of weak ties". Social ties consist of social relationship and of the resources they carry, which means that social networks facilitate migration only when they have access to the right resources.

Model 5 investigates the role of some of the preference variables that represent respondents' choices for working place and lifestyle. We focus on the aspects which are usually omitted from the studies but were assessed with high importance for the place where the studied respondents want to live. Good qualities of higher education institutions and English-speaking environment have a positive and significant effect on mobility intentions. On the contrary, students who assess family-friendly environment and public safety as very important are less likely to plan moving abroad. Importance of quality and content of work and access to medical services do not have a significant effect.

In the last model (6) we combine all these variables together. In the complete model, we see that mobility plans are more likely for male students who come from research universities, whose parents encourage their move abroad, come from semi-urban areas and whose parents and colleagues have lived abroad. In line with other studies and our expectations, the role of salary level is found to be significant. As in Model 5, such plans are more likely for those students who attribute high importance to quality of educational institutions and English-speaking environment. Same as above, importance for family-friendly environment is proven to keep students in the home country.

The reasons for changes in significance levels across the different models for some of the variables have been reviewed by different test. Due to item non-response not all variables are available for every respondent so the models are based on different numbers of observations, from $n=287$ in the most parsimonious specification to $n=194$ in the most complete model. To find out if changes in significance levels happen because of a different composition of observations in the models, we have undertaken several control checks. When testing the same models only on observations which include all of the variables in the models ($n=294$), we find out that the results regarding the effect of belonging to a reserved group on mobility plans should be treated with caution. When testing the models on the smaller sample, the effect of belonging to a reserved group turns negative, just like in the last model, suggesting that changes in the coefficient signs for this variable, as presented in Table 2, are due to dropped observations in model 6. We do not find significant difference for the other variables. The explanatory power of model 6 is the strongest of all models, and we thus believe that the effects

that were picked up by some variables in the earlier models are shifted to more influential variables in the last model.

5. DISCUSSION

In this section, we reflect on the presented findings by taking advantage of the qualitative study. Examining the determinants of international mobility plans for students at five selected universities in India, this study suggests that students' educational and family background matter most for their future intentions. The logistic regression showed that students from research-oriented universities, like JNU and IISc Bangalore, are more likely to report interest in taking up positions abroad. We thus reviewed what the interviewees indicated relating to the importance of work conditions in their decision, as well as the influence of social networks in the decision.

Work conditions: The main motivations were inductively derived from our interview data and reflect the prominence of work-related reasons for their mobility plans. Our in-depth interviews support the findings from the survey as better working conditions for research is the most often mentioned reason for Indian students who want to go abroad. As a male student of mechanical engineering at IIT Delhi put it, "since I'll be going there for work, either for work or for studies, the working environment should be good". Rashmi, a PhD student in life science at JNU, illustrated how for researchers in academia going abroad is a social norm associated with success:

"We need to do it because this is preferred to have good post-docs, good publications in our field. Everybody does it. It's a normal thing, normal trend. Everybody. Our boss has also been for a Post-doc somewhere in USA. So it's a normal thing that everybody goes for."

Career progression: One of the key motivations for going abroad are perceived enhancements of career prospects and higher status implied in studying abroad. International positions give students "the edge over other people in India". People who are interested in an academic career have to follow the expectations of their specific fields. In the case of our target group, it appears that international exposure is highly valued. A male PhD student of environmental engineering at JNU describes this type of expectations in the context of India:

"In the context of India, we say that, suppose if we go for future studies, if we see the future prospects in the field of education, it's somewhere a sort of feeling in the community, this whole education field, they think that a person who has gone abroad or so, who has seen all the things and who has got a good exposure out there; so it's sort of self-understanding in them that a person who went abroad, he must be having good knowledge, he must be having good exposure to the things and all that. So it's a sort of understanding. And in some institutes, it's a mandatory requirement that if you are applying for a faculty position that... Suppose we have IITs. So they have a mandatory requirement that your Post-Doc must be done in some other country or so. So it's a requirement in some fields. And to remain in this field, means in education line..."

Similar reasoning was mentioned by several other respondents who want to pursue academic career in Indian universities. Better working conditions abroad are closely linked to reasons for going abroad in order to improve career prospects for the future. Scientific mobility, or as Meyer, Kaplan and Charum (2001) put it, "scientific nomadism" is considered as a normal part of an academic career and increasingly a necessity for career progression. The competition for academic posts is very strong, making at least part of their postgraduate education abroad necessary. The positions targeted by our respondents are at the few selected institutes in India which have many applicants for only a few opening positions. Only having a PhD is not

sufficient for getting an academic post. “As I have seen my seniors without a Postdoc, even with a Postdoc it’s difficult thing. A lot of people who actually have qualifications, they don’t get it.” As another PhD student in Environmental engineering from JNU explains his reasons for planning his post-doctoral studies either in the United States or Europe:

“So in India, now not a lot of good research is going on. In very good universities in India, like JNU or NII (National Institute of Immunology) or the IISc Bangalore, they started good research. All the good research is going on in these universities in India. Average research is also going on so if I want to go in an average institute in India, I will get position but for a good university in India, it is tough for me to get a job there without any experience like a Postdoc. But in Europe even I if I get one Postdoc I can get a job there.”

Better working/research conditions abroad: Better funding and infrastructure needed for research drive people to research institutes in which they can advance best during their stay abroad. “The primary reason for people going abroad from India is that they want to work in a good environment where people are dealing with new highly advanced technology,” explains a male Master student of mechanical engineering at IISc Bangalore. Our respondents are currently based in good universities in India and for those who want to pursue their careers in academia, it is important to improve their technical skills in places with better infrastructure, where they get acquainted with different facilities and procedures. Sharmila, a PhD student in Environmental Sciences at JNU, wants to go abroad for postdoctoral research because of better facilities, the use of which would improve her future career prospects in academia.

“Even in India to get into academic field position or becoming a professor, a postdoc is very necessary. And in India due to limited resources it would be nice if I could get an exposure to the advanced instrumentation so we can start things like that in India. ...of course with exposure to these instruments and facilities you will learn more and get more. It has an advantage if you do your Postdoc abroad compared to India.”

Lack of facilities in India is related to the lack of financial support for research, which is especially relevant in certain fields. A PhD student of environmental engineering at JNU explains the problems with funding at Indian universities and why, according to him, this is the main reason for being able to do better research in Europe:

“As far as Indian scenario, if I join as an assistant professor, then I will get the project here but the funding is less fast. Secondly, I cannot do average research if without funding. So if I am holding the same position in India as I will hold in Europe, I will do better research in Europe than in India. Because funding is the main problem. Also there is a lot of collaboration between all the European countries. So if you will get a project you will easily jump from one country to another for a research purpose. But for India you have to go for something like the visa and for funding.”

Access to good facilities is more important in certain fields, especially when it comes to experimental research. A Master student in electronics and instrumentation from IISc Bangalore, explains why better research infrastructure is such an important drive for applying for PhD positions abroad.

“If you have any plans for your theoretical works, I would prefer India. If you are going for some practical work, then the possibilities of funding here, when it reaches you, the time it takes ... it takes a lot of time. So in that sense, foreign or any developed country, mostly I will prefer that, because the funding will be free-going. Here, it is also free-going but it is very time consuming compared to the funding of the projects we would get there... Here the funding becomes difficult when it comes to engineering; if it comes to theoretical work, it is easy, just a scholarship will do. But if it comes to engineering or whatever research, you need a good funding. Maybe the industry or the industry

sponsor there would get advantageous. Here, even in that sense you would not get it. In industries, there is reluctance towards research. So, obviously in other countries where they are investing they have good faith in research. They feel that it is good and that it is going to develop their own business. So, obviously they are interested in investing.”

The malfunctioning of the system in India was mentioned as a push factor by several other respondents. Because of bureaucratic hurdles and alleged corruption, “they are not able to do big things very fast and quick” (20). A Master student of technical engineering at IISc Bangalore complains about the system in India:

“So it’s like I told if I go even for small things, like driver’s license or to get a passport or things like that. Or dealing with government institutes like if I want to start my own company I have to get licenses or I have to get land and things like that. At every step I have to face corruption or biases like people out there in government organizations, they don’t have a say fair approach, I mean maybe even in the US they might not be fair. But at least if you are working, you should be given a little smooth drive you know. It’s not absolutely frictionless but at least it will be smoother than what currently exists in India. Yeah I mean I expect the overall quality of life to be better outside India, maybe it has to improve in India”...

International exposure: Next to better working conditions, several students mentioned exposure to foreign cultures as an important drive for spending some time abroad. By going abroad, students get to “interact with students from different countries, teachers from different countries” and in this way “come to know about cultures of different countries”. For example, Khartik, a Master student at the Centre for Electronics Design and Technology explains:

“You can get a global exposure other than staying only in India. You get to know people and their culture indeed. That is one of the aspects other than the studies, of course. You can learn how the people are there and see what other opportunities you might have. That is what I expect.”

Financial benefits: Several respondents mentioned that the salary levels in India have improved a lot and that despite the fact that salaries would be higher abroad, this is not the turning point in the decision for international move. Especially for people in science and engineering, it is typical that they place less importance on monetary benefits of their work (De Grip, Fourage, & Sauermann, 2009). Nevertheless, higher remunerations abroad can make our respondents consider staying abroad for longer periods. Abijey, a Master student of aerospace engineering at IISc, who plans to stay abroad for some work experience after finishing his PhD says that his impression is that “if I work for two years, I will make as much money as here in India in maybe 10 years”, which also means that his savings will be that much higher. Similarly, a Bachelor student in Mechanical engineering from IIT Delhi explains that after doing an MBA abroad “even if I don’t want, I’ll have to work (abroad) since going abroad to study is a very costly affair. So you can’t pay back your loan or you can’t support yourself without working there.”

Our hypothesis was that for students who want to move abroad career-advancement opportunities are especially relevant. This is supported by results of the regression analysis as well as the information from in-depth interviews. Students who want to stay in India are found to have different preferences for the place where they want to live. Family-friendly environment and public safety in India are most often set against the benefits of living abroad. For example, a PhD student in mathematics at IISc Bangalore explains:

“Obviously if you go outside of India you will get good progress, basically money wise, if you think then you can go outside of India, money will be more there. But the life will be, I think not that much more beautiful. Because when you live with your family when you live in your country, your top satisfaction will be there. So outside India if you go, you can get the money; fine, but then you have to sacrifice a lot of things. That is my idea. So money does not mean everything if I say, so for me living in India will

be much better than going outside. When I will not be getting more money, but it is still it's fine to stay with the family, with the people I know, and miss. In India it is good to work for your country."

Among all students which were interviewed and are not planning to go abroad (6 out of 35 in-depth interviews), the prime reason for wanting to stay in India was related to their family. Staying in India means that "you're with your parents, with your family. It is like a different level of comfort and mental stability which helps you to work." (8) A female student in physics at JNU explains that staying close to her family is so important to her that no opportunities abroad would make her change her mind about staying in India:

"I don't want to leave my family members and stay away for like, lifelong. I mean, ultimately it's for them and therefore I am... If I'm not able to see my parents when they are old, then I feel there's no point in me doing anything. Ultimately, it's for them, and they are the people who are the most... Who are like happiest if I do something? And if they are unable to see my happiness, then I don't think it makes any sense to me at least staying abroad away from them. So I feel nothing could change me. I mean nothing could actually stop me if I want to come back to India; any of the opportunities I get." (

That moving abroad is a family decision is clearly exemplified in the opinion of a male student pursuing Masters of computer science at JNU who puts the decision about the actual move abroad in the hands on his family:

"From my point of view, I am ready to go, live there, permanently but it depends on many things, on my family members. I have to take decisions on their ambitions because my mother, who has given birth to me, really doesn't want that. So I am an Indian and to go abroad just for money... and money is not the all. My parents is also one of the most important thing and I know one thing exactly that if you want to be happy then you have to be in your own country ... It depends on them if they will deny me to go abroad, then surely I will not go. I will do everything by taking permission from my parents."

Those people who stayed abroad are considered to have foregone their family obligations. When talking about his friend, who intends to stay in Canada, a male student of computational and systems biology at JNU thinks that "this is a very bad practice. If your parents are here, they have cared for you, they have made everything for you in their life and now you have left them just for your opportunities in staying in some other country. Because your parents can't come to that country."

In the logistic regression we find that if parents encourage the move, or are neutral, the fellow is more likely to be interested in going abroad. This is in line with common expectations. However, in our qualitative study we find that family support depends on how long our respondents are planning to stay abroad. While shorter stays are often encouraged, longer stays are less desirable. One respondent indicated that when planning to move abroad "for a short period, they will be happy that I am going abroad, that I will earn more money and make my financial situation better but if I will go for a long period or for a lifetime, then I don't think they are going to support me." Similarly, a Bachelor student in mechanical engineering at IIT Delhi talks about his family's feelings towards his potential move abroad:

"My family is not very supportive I would say, I mean it's not about supportive, they are quite sceptical of me moving abroad due to the fact it happens very often in a society that when a person moves abroad, he shifts his residence permanently there, he doesn't come back to India and this is something which they fear, which families are afraid of. Because when you are away from your family and something very urgent happens, your family needs you very urgently, you cannot come back because of the, you know, getting visa and all this. Going through all this formal procedures. So my family is not very sure or not really keen on me moving abroad. They do have reservations, at least permanently,

but they do not have these reservations sending me abroad for temporarily 5 years, 6 years. They are ok with that, but certainly not permanently.”

The importance of family in the decision-making process of migration cannot be neglected as it is crucial either in a form of family support as a facilitator for the move or it inhibits people from considering new undertakings. Tight social networks involve obligations which may undermine individual economic initiatives through claims on individuals to support family and community members (de Haas, 2010). Not only that the moral support from family matters for international move, family is also crucial in terms of financial support. Khartik, pursuing a Master in Technology at IISc Bangalore, explains his situation:

“I have two brothers, they are married. My brothers are supporting my family. This makes it fine for me to go abroad and come back and support also.”

Despite the fact that family income does not have a significant effect on migration plans in our survey, several respondents in the in-depth interviews brought up the financial aspect of their decision and its link to family support. A male PhD student in chemistry from BHU-IT explained that he was already accepted for a PhD abroad but due to financial problems he could not leave. Getting financial support from his parents is not an option:

“I didn’t want to get money from my family. I am from a very poor family. Right now my father is a street hawker. He supported me and I am here right now. So it’s really difficult to manage.”

His low household income has also been an obstacle for him to obtain a loan for education because he cannot secure it with family assets. Similarly, his colleague from BHU-IT explained that lack of financial assets is the main barrier for going abroad:

“The main problem is, that we don’t have enough money to go there, that we have to spend the money in living there and joining their colleges. But people in India are not in that much good level that they can spend that much money so they have to go for the loans ... We have the capabilities, but we have to think about the scholarships and all that.”

Safety abroad also repeatedly came up as a concern for Indian students in the interviews. The results in the logistic regression indicate that a higher rating of safety in the Likert scale has a negative effect on the chances of going abroad. People consider staying in India safer than going abroad. The qualitative results confirm this finding. Respondents often mentioned fear of being discriminated because of their skin colour, which would dissuade them from the choice of living abroad. As a Master’s student of Aerospace engineering from IISc Bangalore accounted for his reasons for preference to stay in India:

“I think if you are in a foreign land so there are security issues... Because you are minority right, so there is obviously a security issue, because anyhow if you are doing wrong thing, so no one will protect you. Something like that you have in your mind and this is too hard, because this is human nature. This is everywhere, even in India, where as you can see as abroad also, these kind of things. So people prefer their homeland basically. These foreign lands are just to visit things and see what they are made of and these kind of things ...For the proper living and the proper staying as your life, so this is probably according to this, best in home land.”

As most respondents do not have plans to settle down abroad for a longer time period. They focus their deliberations on their main rationale for going abroad, which is in general work or study-related. Out of 29 respondents in our in-depth interviews only 7 said they could stay abroad a bit longer while all the others strongly affirmed that they want to return to India immediately after finishing the programme they plan to attend abroad. Whether international mobility is seen only as a short-term stay abroad or as a permanent

move, it will have an impact on what they consider important. In the quantitative analysis, social security and benefits did not appear to be significant in migration decisions, which is confirmed by the qualitative data. As a male student in aerospace engineering at IISc Bangalore puts his preferences:

“Yes, job security definitely matters, but all this social security for me personally doesn’t matter. I can’t just hang on the social system, ok. But for people there, for any people basically, they will also think about social securities and also about medical systems. Medical systems, if you have a family, then medical systems are important, otherwise if you’re single it doesn’t affect your decision much, ok that is not a priority. But job security and all these things might be a priority. If you have seen, if I go to this company where the job security is very low, well then I’ll think twice before going to that company”.

For considerations of both shorter and longer mobility periods, people take these conditions into account, but indicate that job security is more important than medical insurance or pension security. A Bachelor student in chemical engineering at BHU-IT reiterates the importance of work-related factors compared to social security as a drive to move abroad:

“The people in India are not going to abroad for the healthcare and the pension they are only going there because the opportunities there are high compared to India. And I don’t think that any of the Indians want to go there, want to spend a lot of money to get the pension and the health care, they’re only going because the opportunities there are very high. If the opportunity in India was high in the end, then I’m sure that no one would be going in the US, in Germany and other countries.”

It could be expected that people, especially when they plan to move with families, choose to go to countries with good medical provisions and if they intend to move abroad for a long term it can also be expected that they would care for good pension arrangements. As such, both might not be reasons for going abroad, but could be conditions for choosing the destination country.

6. CONCLUSION

This paper looked at the determinants to plan a move abroad in the specific situation of Indian students in sciences and engineering. We looked at the role of students’ personal and family background, university-related factors, their social network and preferences for living location in their motivations for moving abroad. We find that age clearly plays a role in mobility planning, which is related to the stage in the education career. Going abroad for work straight out of the university is very uncommon. More common paths are either going abroad for advanced studies or joining a company in India at a campus placement, after which people are often sent abroad for specific assignments. Studying abroad still represents an insurmountable financial burden for most Indian students, making plans to go abroad only feasible in the situation of offered scholarship or paid positions. As very few Bachelor and Master programmes offer any scholarships, it is unlikely that students will plan the move abroad at this stage. Our survey confirms that PhD students are most likely to plan their future career outside of India, expecting to get accepted to paid positions. This difference obviously also occurs because people who are currently in PhD programmes mostly envisage their future in academic careers, for which international experience is highly appreciated and often even compulsory, indicative of increasingly global research labour market (Ackers & Gill, 2005). The quantitative survey as well as the in-depth interviews show us the difference in career planning between students at different universities. Especially students at universities focused on applied work, like in our case IIT Delhi and BHU-IT, are more likely to get hired by companies in India straight after their finished studies. As a result, the type of university and field of studies work as strong predictors for students’ desired move abroad which is in line with other research indicating enormous differences in mobility between disciplines and scientific specialties (Ackers, 2005; Laudel, 2005).

Whether a student plans a career in academia or wants to work in a company has a decisive influence on where they see themselves in the near future.

Professional aspects are confirmed to be the most prominent in the decision-making regarding international mobility. Our interviews highlight their importance as the following were four of most often mentioned reasons for going abroad: better possibilities for career advancement, better working and research conditions abroad, international exposure and financial benefits. It has been confirmed that students in sciences and engineering place less importance on financial aspects of their future jobs. The main pull factor to go abroad is the expectation of a better working environment, either because of better facilities or smoother bureaucracy. The aspects put forward by the New Economics of Labour Migration, which highlight the importance of stability and social security, as well as the aspects of amenities literature about the attractive local environment turn out to be secondary in the importance of preferences for the place of living. However, the survey shows preference variables as strong predictors for mobility plans. As expected for people who place high importance on work-related factors to be more mobile, the results equally follow our expectation that people who place higher importance on family-friendly environment and public safety prefer staying in India.

International student mobility is obviously a family decision. Parents' support is crucial for moving abroad, in moral as well as in financial terms. Very few students have any of their family members who have lived abroad, so they are mostly not able to provide them with valuable information about international opportunities. However, when parents withhold their support for moving or they are in a constraining situation, for example because of their old age or financial difficulties, this would usually undermine individual's own interests. Among all our interviewees, we find only one non-conforming student who was applying for positions abroad despite clear disapproval from his family. Normally, obligations towards family are put in the first place ahead of potential individual initiatives.

7. BIBLIOGRAPHY

- Ackers, L. (2005). Moving People and Knowledge: Scientific Mobility in the European Union. *International Migration*, 43(5), 99-131.
- Ackers, L., & Gill, B. (2005). Attracting and Retaining 'Early Career' Researchers in English Higher Education Institutions. *Innovation*, 18(3), 277-299.
- Cant, A. G. (2004). Internationalizing the business curriculum: developing intercultural competence. *Journal of American Academy of Business*, 5(1/2), 177-182.
- Castles, S. (Ed.). (2008). *Comparing the Experience of Five Major Emigration Countries*. Geneva: IOM.
- Chanda, R., & Sreenivasan, N. (2006). India's experience with skilled migration. In K. Kuptsch & E. F. Pang (Eds.), *Competing for Global Talent* (pp. 215-255). Geneva: International Institute for Labour Studies.
- Cubilo, J. M., Sanchez, J., & Cervino, J. (2006). International students' decision-making process. *International Journal of Educational Management*, 20(2), 101-115.
- Davis, K. (1951). *The Population of India and Pakistan*. Princeton, NJ: Princeton University Press.
- De Grip, A., Fourage, D., & Sauermann, J. (2009). What Affect International Migration of European Science and Engineering Graduates? *IZA Discussion Paper*, 4268.
- de Haas, H. (2010). The Internal Dynamics of Migration Processes: A Theoretical Inquiry. *Journal of Ethnic and Migration Studies*, 36(10), 1587-1617.
- Finn, M. (2003). *Stay Rates of Foreign Doctorate Recipients from U.S. Universities*. Oak Ridge: Oak Ridge Institute for Science and Education.
- Gibson, J., & McKenzie, D. (2009). The Microeconomic Determinants of Emigration and Return Migration of the Best and the Brightest: Evidence from the Pacific. *IZA Discussion Paper*, 3926.
- Granovetter, M. S. (1973). The Strength of Weak Ties. *American Journal of Sociology*, 78(9), 1360-1380.
- Hein, M., & Plesch, J. (2008). How can scholarship institutions foster the return of foreign students? *Diskussionspapier der Forschergruppe (Nr.: 3468269275) "Heterogene Arbeit: Positive und Normative Aspekte der Qualifikationsstruktur der Arbeit"*, 8(2).
- Jaeger, D., Dohmen, T., Falk, A., Huffman, D., Sunde, U., & Bonin, H. (2008). Direct Evidence on Risk Attitudes and Migration. *ROA (Research Centre for Education and the Labour Market), Maastricht, Research Memoranda*, 11.
- Khadria, B. (2009). *Indian Migration Report 2009: Past, Present and Future Outlook*. New Delhi: Jawaharlal Nehru University.
- Kumar, P., Sarkar, S., & Sharma, R. (2009). Migration and Diaspora Formation: Mobility of Indian Students to Developed Countries. *IMDS Working Paper Series*, 8(May 2009), 29-45.
- Laudel, G. (2005). Migration currents among the scientific elite. *Minerva*, 43, 377-395.
- Mahmood, T., & Schömann, K. (2003). On the Migration Decision of Indian IT-Graduates. *Wissenschaftszentrum Berlin, Discussion Paper SP, II(23)*.

- Meyer, J.-B., Kaplan, D., & Charum, J. (2001). Scientific nomadism and the new geopolitics of knowledge. *International Social Science Journal*, 53(168), 309-321.
- MOIA. (2010). *Annual Report 2009-2010*.
- OECD. (2010a). *International Migration Outlook: Annual Report 2010*. Paris: OECD.
- OECD. (2010b). Table C2.2. Distribution of international and foreign students in tertiary education, by country of origin (2008), *Education at a Glance 2010: OECD Indicators*. Paris: OECD.
- OECD. (2010c). Table C2.7. Number of foreign students in tertiary education, by country of origin and destination (2008), and market shares in international education (2000, 2008) *Education at a Glance 2010: OECD Indicators*. Paris, France: OECD.
- OECD. (2013). *How is International Student Mobility Shaping Up?*, Education Indicators in Focus, No. 14, OECD Publishing.
- Rosenzweig, M. (2006). *Higher Education and International Migration in Asia: Brain Circulation*. Paper presented at the Regional Bank Conference on Development Economics: Higher Education and Development.
- Shaftel, J., Shaftel, T., & Ahluwalia, R. (2007). International Educational Experience and Intercultural Competence. *International Journal of Business & Economics*, 6(1), 25-34.
- Singhvi, L. M., et al. . (2001). *Report of the High Level Committee on Indian Diaspora*.
- UNESCO-IUS. (2009). *The 2009 Global Education Digest: Comparing Education Statistics Across the World*. Montreal: Canada.
- UNESCO-IUS. (2010). Table 10: Internaitonal flows of mobile students 2008, *Global Education Digest 2009: Comparing Education Statistics around the World* (pp. 176-181). Montreal, Canada: UNESCO-IUS.
- Vincent-Lancrin, S. (2008). Student mobility, internationalization of higher education and skilled migration. In G. Appave & R. Cholewinski (Eds.), *World Migration 2008* (pp. 105-123). Geneva: IOM.

8. APPENDIX

Table 1: Comparison of the S&E students by main characteristics (in percentages)

	No plan to move abroad	Plan to move abroad	Total
Total N=412	36.41	63.59	100
Personal characteristics			
Gender (Pr=0.292) female male N=327	32.31 67.69	26.90 73.10	29.05 70.95
Age*** (Pr=0.000) younger than 22 years*** from 23 to 26 years 27 and older*** N=318	56.92 32.31 10.77	27.66 37.23 35.11	39.62 35.22 25.16
Community** (Pr=0.012) Non-Hindu Hindu N=302	13.39 86.61	25.14 74.86	20.20 79.80
Reserved group (Pr=0.202) reserved group non-reserved group N=310	13.11 86.89	18.62 81.38	16.45 83.55
Relationship (Pr=0.125) 1=single 2=relationship (boyfriend/girlfriend) 3=married* N=320	78.46 15.38 6.15	75.79 11.58 12.63	76.88 13.13 10.00
Children (Pr=0.393) 0=no children 1=children N=321	77.86 22.14	73.68 26.32	75.39 24.61
University characteristics			
University*** (Pr=0.000) 1=JNU*** 2=IISc Bangalore 3=IIT Delhi 4=BHU-IT*** 5=Jammu N=350	27.41 19.26 22.96 15.56 14.81	50.23 22.33 6.51 9.77 11.16	41.43 21.14 12.86 12.00 12.57
Field of studies (Pr=0.123) 1=natural sciences 2=engineering N=314	29.41 70.59	37.95 62.05	34.71 65.29
Level of studies*** (Pr=0.000) 1=Bachelor programmes***	37.82	19.89	26.89

2=Masters programmes* 3=PhD and Post-Doc*** N=305	41.18 21.01	31.18 48.92	35.08 38.03
Average grade* (Pr=0.059) 0=Lower than first class (below B+) 1=First class (A+, A, A-) N=293	33.04 66.96	23.03 76.97	26.96 73.04
Proficiency in English*** (Pr=0.006) 0= Medium, Bad, Very bad 1=Very good and Good N=317	32.56 67.44	19.15 80.85	24.61 75.39
Family background			
Mother's highest education level (Pr=0.289) 0=less than university education 1=university education N=315	43.65 56.35	49.74 50.26	47.30 52.70
Father's highest education level (Pr=0.802) 0=less than university education 1=university education N=316	25.20 74.80	26.46 73.54	25.95 74.05
Support of family to move abroad*** (Pr=0.000) encourages move*** doesn't care/neutral prefers stay*** N=317	46.51 5.43 48.06	67.02 6.38 26.60	58.68 5.99 35.33
Average monthly income of the household (Pr=0.959) Less than Rs. 25000/- Between Rs. 25001/- and 30,000/- Between Rs. 30,001/- and 40,000/- More than Rs. 40,000/- N=314	39.84 19.53 17.19 23.44	40.86 18.28 15.59 25.27	40.45 18.79 16.24 24.52
Area of residence (Pr=0.514) Urban metropolitan area Semi-urban, smaller cities and towns Rural area N=319	35.88 49.62 14.50	29.79 53.72 16.49	32.29 52.04 15.67
Migration history			
not lived abroad (Pr=0.195) lived abroad N=371	89.12 10.88	84.38 15.63	86.25 13.75
Network abroad			
Parents (Pr=0.478) not lived abroad lived abroad N=289	93.10 6.90	90.75 9.25	91.70 8.30
Siblings (Pr=0.494) not lived abroad	80.51	83.63	82.35

lived abroad N=289	19.49	16.37	17.65
Extended family (Pr=0.847) not lived abroad	56.67	57.80	57.34
lived abroad N=293	43.33	42.20	42.66
Friends** (Pr=0.012) not lived abroad	57.89	42.86	48.79
lived abroad N=289	42.11	57.14	51.21
Colleagues*** (Pr=0.000) not lived abroad	73.68	49.71	59.30
lived abroad N=285	26.32	50.29	40.70

Notes: Pearson's Chi-square test and Fisher's exact test

Significance levels * p < 0.1, **p < 0.05, *** p < 0.01

Table 2: What determines plans to move abroad? (Marginal effects after logit regression)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Dependent variable: Plan to move abroad						
Female	-0.053 (0.099)	- 0.207** * (0.058)	-0.078 (0.091)	-0.064 (0.082)	-0.062 (0.090)	-0.113* (0.063)
(reference: from a Hindu community) from a non-Hindu community	0.132 (0.128)	0.142 (0.144)	0.128 (0.125)	0.159 (0.113)	0.075 (0.133)	0.121 (0.168)
(reference: from a non-reserved group) from a reserved group	0.092* (0.055)	0.081 (0.062)	0.050 (0.072)	0.045 (0.074)	0.079 (0.054)	-0.044 (0.130)
(reference: single as a reference) in a relationship/married	0.056 (0.069)					0.031 (0.130)
has children	0.059 (0.140)					0.021 (0.055)
(reference: research-oriented universities) Practical/applied universities		- 0.268** * (0.028)				- 0.301** (0.146)
(reference: studies engineering) studies natural sciences		0.005 (0.084)				0.003 (0.121)
(reference: enrolled in Bachelors programme) enrolled in Masters programme		-0.037 (0.105)				-0.046 (0.154)
doing a PhD or Post-Doc		0.166 **				0.030 (0.149)

		(0.076)			
(reference: mother with less than university education) mother with university education			-0.031 (0.079)		-0.193 (0.170)
(reference: father with less than university education) father with university education			0.064 (0.108)		0.001 (0.089)
(reference: parents prefer stay) parents encourage move			0.255** *		0.237** *
parents neutral to move			(0.034) 0.155 (0.149)		(0.054) 0.238** * (0.067)
(reference: below average household income) above average household income			0.016 (0.108)		0.046 (0.157)
(reference: from an urban area) from a semi-urban area			0.103* (0.059)		0.193** (0.098)
from a rural area			0.085 (0.076)		0.068 (0.143)
(reference: respondent never lived outside India) lived outside India in the past				0.160 (0.119)	0.034 (0.097)
parents have lived abroad				0.001 (0.109)	0.157** (0.074)
siblings have lived abroad				0.002 (0.071)	-0.085 (0.146)
extended family lived abroad				-0.096 (0.115)	0.025 (0.192)
friends lived abroad				0.082 (0.076)	0.125 (0.194)
colleagues lived abroad				0.240** *	0.176** (0.078)
importance of quality and content of work				0.053 (0.057)	0.013 (0.063)
Importance of attractive salary				0.043 (0.046)	0.101** (0.048)
importance of good quality of education institutions				0.148 *** (0.042)	0.155* (0.080)
importance of family-friendly environment				- 0.236** * (0.048)	- 0.281** (0.108)
importance of public safety				- 0.105** * (0.017)	-0.124 (0.108)
importance of English commonly spoken				0.146** * (0.035)	0.099** * (0.034)

importance of medical services					-0.035 (0.037)	- 0.122** (0.058)
Number of observations	287	264	273	236	266	194
Pseudo R ²	0.0198	0.1016	0.0604	0.0877	0.1809	0.3250
GOF	60.3%	70.5%	64.1%	67.4%	69.9%	79.4%
Pearson chi ²	14.7 (0.84)	50.9 (0.10)	141.8 (0.03)	73.7 (0.62)	193.7 (0.70)	169.8 (0.36)

Notes: All models are estimated by logistic regression. Dependent variable is the plan to move abroad. All standard errors (in parentheses) are robust and clustered by university groups.

Significance levels ***p<0.01, **p<0.05, *p<0.1

GOF is percentage of correctly classified data points. Pearson is a chi2 goodness of fit test. Number in parenthesis is the p-value of the Pearson test.

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