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## **Internationalisation and diversification of Indian academic careers**

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## Abstract

This paper examines the major patterns and drivers of interlinked geographical and career mobilities of Indian-born researchers and scientists. Based on a global survey of 4,600 Indian researchers and 40 in-depth interviews, this study provides evidence on the internationalisation of careers and the diversification of destinations of Indian-born academics. Our survey indicates that about a third of all Indian researchers have some international study or professional experience at some stage of their career. Prime destinations are still the US, Canada, and the UK, but outside these ‘academic core’ destinations some new European and East Asian destinations are emerging and are expected to play a more prominent role in the future.

Mobility of Indian researchers is mainly driven by an intrinsic motivation to internationalise their scientific careers, but has also to do with the status quo of the research environment in India. Moving abroad enables researchers to acquire expertise in a field of research that is not sufficiently developed back home, and provides exposure to research facilities and personnel deemed better and more qualified than those back home. In this respect, international study and work experience are often perceived of as providing professional merits which are instrumental in career progression upon return to India. This happens through the acquisition of tangible – specialisation, access to new networks and funding – and immaterial resources: ‘know-how’, quality and reputation of degrees and work experience, new managerial skills.

This study also sheds some light on the role of destination countries’ immigration policies, which seems to play a minor role in the mobility decisions of Indian scientists. However, even if researchers do not really take migration policies into account in their decision making process, we cannot conclude that their international mobility is barrier-free. Immigration policies and rights to work may affect the mobility of scientists rather indirectly by influencing the recruitment decisions of employers and departments in destination countries, without the candidates themselves being aware of these criteria.

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# 1 Introduction

As provider of scientific knowledge, the research profession is often considered the ‘linchpin of development’ (Altbach 2011). Known as a highly mobile occupation, researchers and scientists are driven by a rising ‘expectation for mobility’ (Ackers 2005), scientific curiosity and ambition (Stephan 2010), or simply by a lack of adequate research and employment opportunities in the home countries (Altbach 2011). However, less is known about the evolution of (international) career and mobility paths of research professionals. This paper examines the major patterns and drivers of interlinked geographical and career mobilities of Indian-born researchers and scientists. Based on a mixed methods data collection approach within the framework of the ‘Global Survey of Indian Researchers’ (part of the ‘Drivers and Dynamics of High-skilled Migration’ (DDHSM) project at the University of Oxford), this paper is particularly concerned with the internationalisation of careers and the diversification of destinations of Indian-born academics.

The focus on Indian researchers is motivated by the sheer size of the Indian higher education system, which has expanded rapidly over recent decades and is now the third largest academic system after China and the US. More important for this analysis however is the fact that the Indian academic diaspora is the largest worldwide and in many (Western) countries Indians are among the largest groups of foreign students and academics (OECD 2013). We consider study and professional academic career paths as highly integrated processes and therefore examine the internationalisation of higher education and the international mobility of students and researchers from a life-course perspective. Evidence shows that a large proportion of researchers working abroad have also studied abroad, most often in the same country (Van de Sande et al. 2005; Hansen 2003). Thus, examining the motivations of the migration of (Indian) researchers and scientists should also imply an analysis of the motivations underlying student mobility and the retention of students in the destination countries. A recent analysis on the path-dependency in academic mobility trajectories has shown that the location of prior educational and professional career stages are relevant long-term drivers of future mobility pathways (Czaika and Toma 2015). The notion of academic path-dependency implies that the likelihood of a (or another) geographical mobility step declines with the intensity of location-specific investments into skills, degrees, professional and social networks, etc. made by an individual student or academic. Thus, path-dependency in academic career trajectories is built up over time and constrains future mobility behaviour by reducing people’s willingness and/or abilities to realise opportunities elsewhere at a later career stage. This study investigates the extent to which such internal dynamics have facilitated or constrained a spatial re-orientation of Indian researchers towards newly emerging destinations, which increasingly seem to offer attractive alternative study and employment opportunities for mobile academic workers in general, and Indian scientists in particular.

Academic mobility can be seen as an integral part of the global scientific system, in which the mobility of researchers is a consequence of international and inter-institutional opportunity differentials for conducting high-level scientific research (King 2002; DTI 2002; Ackers 2005). The prestige and the scientific quality of an institution or even a country for a particular scientific discipline are seen as important pull factors, but also social and professional networks have been found to influence scientists’ mobility decisions (Bauder 2012; Korys 2003; Williams et al. 2004). Beyond professional motives, economic and non-economic factors, such as those related to individuals’ lives, seem to be influential in academics’ mobility decisions (Stephan 2010; Oliver and Ackers 2005). Furthermore, the motivation to move, collaborate and exchange knowledge with other researchers is often linked to collegial affinity and complementarity and overcomes cognitive, scientific and other resource limitations (Katz and Martin 1997).

Based on these insights, this paper maps the internationalisation and diversification of career paths of Indian researchers, and examines the mechanisms behind the decision making process of whether to move abroad, stay or return. We identify some ‘early signs’ of a shift in international mobility patterns of Indian-born academics away from the traditional ‘scientific core’ countries the US, Canada, and the UK. These seem to lose a bit of their scientific edge over rising scientific ‘middle powers’ mostly in Asia (such as China, Korea, Japan, Malaysia, Singapore) or continental Europe, partly due to a significant rise in attractive opportunities for scientific research and academic employment in some leading elite universities and research institutions in these scientifically emerging regions.

The next section introduces the two main sources of information for this study. First, we draw on quantitative data collected through a global online survey on Indian-born researchers, and second, we refine our analysis by some in-depth qualitative interviews with a sub-sample of 40 respondents who were employed either within or outside India at the time of interview (mid–end 2014). Section III investigates the extent of international mobility among Indian-born researchers at different career stages. It also examines the motivations as well as the facilitating and constraining factors underlying international mobility experiences across various career stages. Section IV elaborates on the rise of newly emerging international destinations for Indian academics outside the traditional ‘scientific core’ countries of the US, Canada, and the UK. We find some clear evidence also in the narratives of Indian academics for the rising importance of some European and ‘Asian Tiger’ countries (e.g. Taiwan, Singapore, South Korea) as competitive alternatives to Anglo-Saxon institutions, which potentially nurtures a fear of ‘falling behind’ (Teitelbaum 2014). Section V concludes with a discussion of some of the implications of this study.

## 2 Data

### 2.1 Global survey of Indian researchers

In order to study the patterns of international academic mobility among Indian researchers, we use data from the ‘Global Survey of Indian Academics’, an online survey we conducted between February and July 2014. We adopted a multi-sited strategy, interviewing both mobile researchers currently living in different countries around the globe, as well as researchers based in India who never lived abroad or who had returned to India. Since researchers are a highly educated group, it was possible to use web-based survey methods to reach them, thereby enabling us to interview Indian academics in a large number of countries. We surveyed active researchers<sup>1</sup>, who published at least one article, research paper, conference proceeding or book indexed in Thomson Reuter’s ‘Web of Knowledge’ database in the last four years in all disciplines. Thus, our survey is not only focused on academics – i.e. those who hold an academic position in a higher education institution – but targets all those publishing academic research, whether they are employed in a public or private research institute, a university, still studying, retired or unemployed.

On the other hand, the target population is substantially selected as our survey only targeted those who published in the last four years in an ISI-indexed journal, hence being the most active researchers. We may expect this criterion to be particularly selective in countries situated on the ‘scientific periphery’. In other words, India-based researchers will probably be more selected than

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<sup>1</sup> A similar methodology was successfully adopted by the ‘Global Science’ (GlobSci) project (Franzoni et al. 2012), but its focus was rather on obtaining representative samples of scientists in four disciplines in 16 (destination) countries.

America-based (Indian) researchers. At the same time, this selectivity is decreasing to the extent that Thomson Reuters is constantly increasing the pool of journals indexed (currently approximately 12,000), seeking in particular to increase its regional coverage. Moreover, the fact that Indian journals are mostly in English increases their likelihood of being indexed by Thomson Reuters, which may further reduce the selectivity bias affecting the India-based sample. Finally, the selectivity entailed by the sampling strategy is also expected to be higher for researchers in arts, humanities or social sciences, as Thomson Reuters has a better coverage of natural sciences.

In order to especially target Indian researchers, we adopted a name-based sampling strategy. Among this population, we selected those with an Indian surname<sup>2</sup>. We then selected those co-authors for whom an email address was present in the database. This generated a target population of almost 150,000 different researchers who published at least one article in the last four years in a journal indexed by Thomson Reuters, who had an Indian surname according to our definition, and for whom an email address was recorded.

We contacted all these researchers and invited them to fill our questionnaire, which collects information on their educational and professional trajectories, including the locations (country and institution) for each major degree or work transition (BA, MA, PhD, first job, current job, aspired-to future job) as well as the reasons for choosing these locations. Information was further collected on the academics' shorter mobility trips – such as visiting fellowship or fieldwork abroad – and on their patterns of international collaboration. Their professional aspirations in terms of location and position were also recorded, and how their aspired-to position would compare with their current one on a series of dimensions. Last, the questionnaire also collected socio-demographic and other background information from the respondents, such as their region of origin, their end of high school examination grades, their parents' educational background and their family situation (marital status, partner's educational and professional background, children's ages and location). As the survey was implemented online, a full retrospective design was not possible since it would have been too time-consuming. Nonetheless, time-dated information was collected on several dimensions of respondents' trajectories (year highest degree was obtained, year of start of first and current job, year of marriage, ages of children, etc.). This allows the taking into account of the sequencing of events when studying their drivers, thus going beyond what has been done by other surveys on academic mobility that have been entirely cross-sectional in their design.

We used the platform Qualtrics ([www.qualtrics.com](http://www.qualtrics.com)) to administer the questionnaire. The language of the survey and of the invitation letter was English. Each researcher was emailed at most three times (of which two were reminders) during a period of three months (between February and July 2014). The platform also recorded partial answers, allowing respondents to return to the survey at a later date (but within three months of starting the survey). Around 19,000 researchers started our survey, amounting to a total response rate of 14.3 per cent (excluding bounced emails). A recent feature of the Qualtrics platform allows us to see the number of emails that were opened, and thus the

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<sup>2</sup> In order to determine whether a name was Indian or not, we first generated a comprehensive list of surnames of researchers affiliated at an India-based institution and who published an article in the past 12 months that was indexed in the Thomson Reuters 'Web of Knowledge' database. We then compared the frequency of each of these 24,000 different surnames within the pool of India-based researchers to their frequency in the worldwide pool of researchers. We considered those names that were more frequent in the Indian pool than in the worldwide pool as Indian (for example: Kumar, Singh). We further selected the names that were similarly frequent in the Indian pool and in the worldwide pool in order to capture such names as D'Souza (that may be Indian but also Portuguese or Brazilian). We excluded names that were more frequent worldwide than in India (the most extreme example being Wang or Kong).

number of panel members who actually saw our invitation. Only about 30 per cent of the panel members opened the email invitation; it is likely that a high number of unopened emails actually arrived in spam folders. The total response rate out of the opened emails is 46.3 per cent. In this paper, we use only complete answers (i.e. respondents who got to the last question of the survey and submitted their responses) of Indian-born researchers who have obtained their PhD degree, which gives us a sample size of almost 4,600 individuals.

## 2.2 Semi-structured interviews

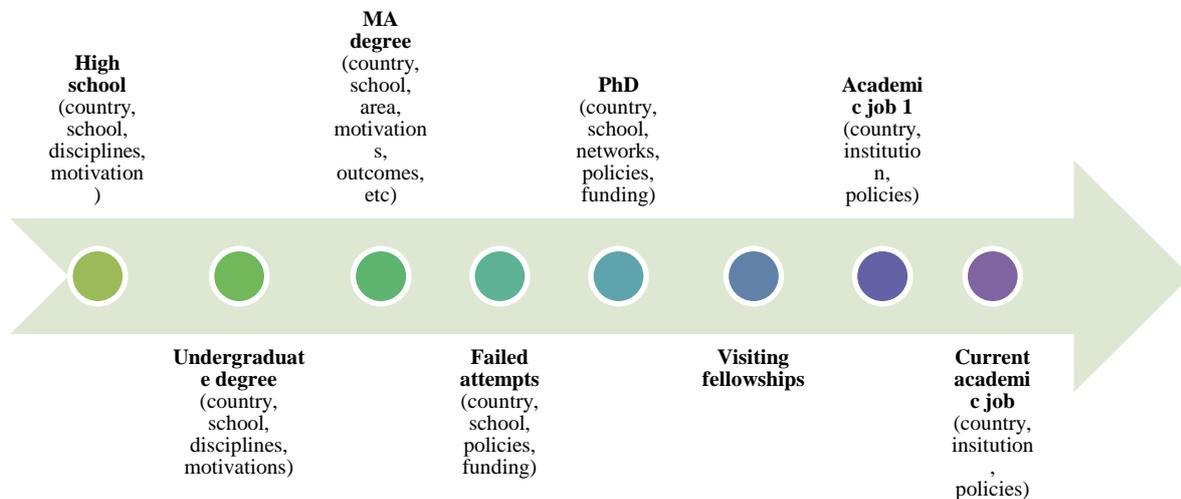
The second stage of our data collection consisted of conducting qualitative interviews. This part of the study was aimed at unpacking some of the mechanisms and processes behind the different aspirations and experiences throughout the career of Indian researchers. A total of 40 interviews were carried out with a sub-sample of those researchers who completed the online questionnaire. Respondents expressed their interest to be contacted for a follow-up interview at the end of the questionnaire. Interviewees were selected only if they were born in India, and held an academic job at the time of the interview (either in a university or research institute). This selection allowed us to focus on the specificities of the trajectories of Indian-born researchers within the academic sector. Both researchers currently living in India and those residing elsewhere in the world were selected. We also included researchers born in India who have never emigrated, or who have returned to India after a period spent abroad. Including ‘non-migrants’ was an important aspect of both the quantitative and qualitative components of the project, since we have also been able to capture the experiences of those who have not had the aspirations and/or capabilities to emigrate.

Interviewees were then contacted via email and a video call interview was scheduled. All interviews were conducted using Skype software, with a duration of between 40 and 70 minutes, audio recorded and fully transcribed. The interviews were carried out between February and July 2014. Among the 40 interviewees, the sample is predominantly male with a total of 30 men and 10 women, which roughly reflects the gender-based composition of our online survey. Over half of the interviewees are between 30 and 39 years old, eight between 40 and 49, and seven are over 50 years old. In relation to the current country of residence, 15 were in India at the time of the interview, eight in the US, and four in the UK. The remaining countries of residence are: Australia, Belgium, Canada, Czech Republic, Germany, Ireland, Switzerland, and Taiwan. Most of the interviewees were outside India at the time of the interview (24), nine were returnees in India with international experience abroad, and seven never emigrated. The most common broad disciplines among the researchers interviewed are Physics (9), followed by Mathematics (5), and Engineering (5). Biology, Chemistry, Computer Science, Social Sciences, and Medicine complete the list (see Appendix, Figure A1 for a detailed list of the profiles of the interviewees).

Encompassing the same aim as the online survey, the qualitative interviews focused on the professional and life trajectory of the researchers. We particularly explored decision making processes in relation to whether to stay, move, return, and the different options of destinations explored. The interviewers used a semi-structured interview guide, which enabled a structured conversation allowing for cross-comparison across the different cases, but also giving enough freedom for the interviewee to further elaborate upon other topics. The conversation followed a biographical approach, starting from the moment they started their undergraduate degree (or further back where respondents had pre-higher education international experience), and progressing to their aspirations for the future. There are obvious limitations when inquiring about decision making processes in a biographical or retrospective design, as individuals may reinterpret their past choices in light of the consequences these had (or alter their stated preferences), thus ensuring a retrospective consonance

between their actions and preferences. In an attempt to minimise this bias, we have also inquired about future aspirations to move, stay or return, and the relative importance of factors involved in this decision making processes.

**Figure 1 Biographical periods examined during interview**



Some of the themes touched upon during the interview were: the relative importance of factors such as prestige, research facilities, financial aspects of their decisions to stay in India, emigrate, re-emigrate somewhere else or come back; as well as the mechanisms that facilitated and/or constrained their (im)mobility aspirations (e.g. scholarships available, friendship and academic networks, migration and integration policies, regulations at the institutional level, socioeconomic background); the intersection of family and life cycles with professional life; and aspirations for the future. The interview timeline follows the graphic representation of Figure 1.

Once the data was collected and transcribed, the interview material was coded using QSR International NVivo software. The coding process facilitated a structured categorisation of the data in the main nodes of information that surfaced from the interview guide, as well as new themes that emerged during the data collection. The identities of the interviewees have been anonymised. The excerpts from the interviews utilised in this paper only account for a sample of the interviews carried out, and exemplify some of the recurrent narratives for each of the themes analysed. The qualitative interviews unveil some of the processes and discourses behind the factors driving the mobility of Indian researchers that are not captured through the quantitative component, or help to complement the statistical findings.

### 3 Internationalisation of academic careers: patterns, drivers, and motivations

#### 3.1 International mobility at different career stages

Our global survey shows that the extent of international mobility among active Indian researchers is substantial (Figure 2): a third were abroad for one of their main degrees (BA, MA or PhD) or for work which is not necessarily academic work. Few start their international mobility already at BA level (3 per cent) or at Masters level (10 per cent), whereas mobility for PhD or a first job abroad, which is most often a post-doc position, are much more common (around 22 per cent and 30 per cent of the

sample, respectively). However, patterns of mobility seem to have changed across generations: those in their fifties or over at the time of the survey (in 2014) were more likely to have studied abroad for their BA, whereas the younger generations (under 36) appear the most likely to work abroad<sup>3</sup> (38 per cent compared to 30 per cent and 27 per cent in the older generations).

**Figure 2 Internationally mobile Indian researchers, by career stage and age cohort**

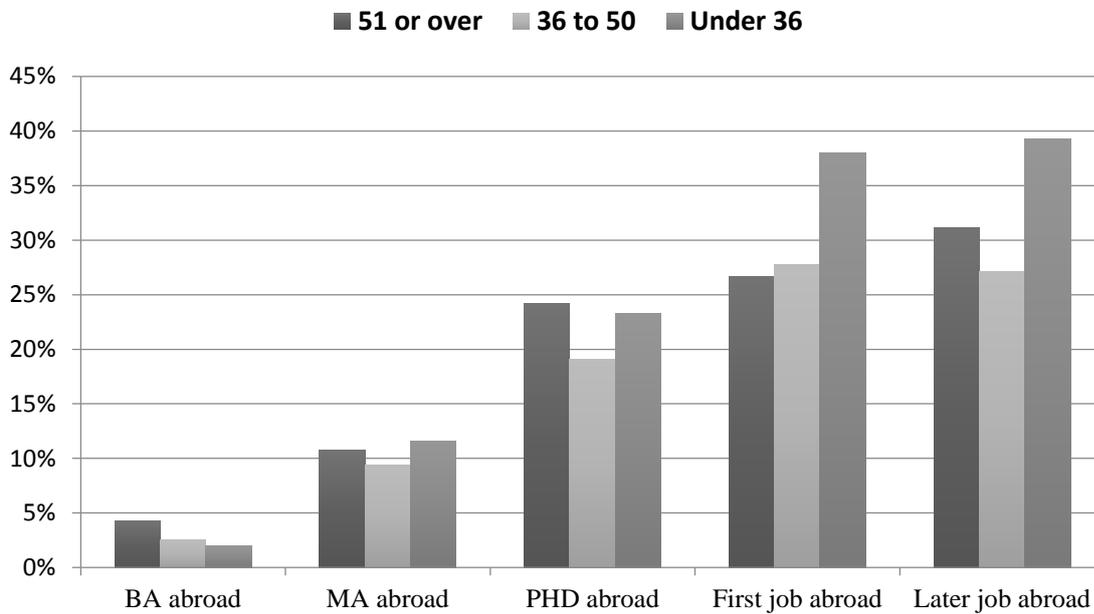


Table 1 lists the main countries in which Indian researchers earned their PhD degree or took up employment. Almost three quarters received their PhD degree from an Indian university while only slightly more than half of all Indian academics decided to take up a first employment at an Indian institution. For many, a post-doc abroad seems to be a temporary endeavour as about two thirds of all (more senior) Indian academics are employed in India at the time of the survey.

The prime destinations or ‘academic core’ countries, i.e. the US, Canada, and the UK, award PhDs to about 17 per cent of all Indian-born researchers in our sample. This share of the ‘academic core’ countries increases to about a third when it comes to the post-doc stage and declines at a later employment stage back to about 18 per cent. Outside these prime destinations, some European countries such as Germany, Sweden, France or the Netherlands, as well as a few East Asian countries such as Japan, South Korea, Singapore and Malaysia, are among the destinations that are increasingly trying to attract talented students and scientists. Overall, the importance of those second-tier destinations is still limited, but as we argue later, as scientifically-emerging destinations this group of countries is expected to play a more prominent role in the future not only for Indian academics.

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<sup>3</sup> Among the youngest cohort, the share of those having worked or working abroad would probably be higher if they were observed longer: since some of them are still completing their PhD they have not yet started their employment careers.

**Table 1 Allocation of top 15 PhD destinations and subsequent employment (in percent)**

Rank	Country	PhD	First job (post-doc)	Current job
1	India	72.18	55.47	65.98
2	US	13.25	21.48	13.43
3	UK	2.91	4.48	3.31
4	Canada	1.03	3.20	1.71
5	Germany	0.99	1.16	0.86
6	Australia	0.94	1.11	1.18
7	Japan	0.39	0.81	0.46
8	France	0.33	0.87	0.25
9	Sweden	0.28	0.52	0.36
10	Italy	0.24	0.47	0.07
11	Singapore	0.24	0.76	0.50
12	South Korea	0.22	1.40	0.71
13	Netherlands	0.22	0.47	0.29
14	Switzerland	0.18	0.29	0.25
15	Malaysia	0.12	0.47	0.82

Source: Czaika and Toma (2015)

### 3.2 Motivations behind mobility decisions

Why do Indian researchers move? The mobility decisions of researchers have been analysed as being driven by an ‘expectation of mobility’ (Ackers 2005) that is internalised as a key driver for acquiring international experience. This expectation is rooted in ‘mobility as an academic practice’ (Bauder 2012:5) as one of the constituent characteristics of science *per se*: diversity, shared methods, techniques that are positive for the progress of science, but also for the individual advancement of researchers (Bauder 2012). Looking at mobility at the European level, Morano-Foadi (2005) explains how, despite the lack of standards regarding the necessity of having international experience, the expectation of mobility is a recurrent narrative within the scientific community. This is analysed as having a twofold effect on the quality of the research: on the one hand it pushes researchers to learn from international experiences; on the other hand, it plays on the aspirations to subsequently look for employment, which is related to their international experience as having a competitive advantage (ibid).

The qualitative material gathered in the project captures narratives that reflect some of the aforementioned phenomena. The ‘expectation of mobility’ (Ackers 2005) is strongly internalised by our interviewees (both those mobile and non-mobile), who narrate an encouragement to go abroad emanating from their peers and supervisors. However, this intrinsic motivation to internationalise their CV is also encompassed by more tangible drivers for mobility. These reflect issues such as (a) the prestige of the institution, better studying/working conditions and/or research facilities, but also to (b) increase the chances of employability back in India. These different factors are frequently

intertwined in the narratives of the interviewees, but we categorise these two broad aspects separately for analytical purposes.

Many of our informants report how the prestige of the institution, in terms of research outputs and its having internationally recognised academics in their discipline, is a decisive element in the decision making process. Those researchers with the aspirations to move in order to get accepted by the 'best' institutions narrate how, before applying, they have considered what the ideal places within their field would be. This initial evaluation is made through formal rankings, but also through formal and informal channels of information (from supervisors, peers, professional bodies, etc.). The process generally consists of an initial screening of the best institutions, followed by the application for the top ones, and a subsequent selection from within those who have accepted them. This is explained by respondent I12 when describing that he aspired to go to the best possible place, and did so by looking at the university rankings in the US and elsewhere, and then selected from amongst those which made him an offer:

I wanted to go to the best university [...] So I sort of looked at the rankings and depending on my application status and the letters of recommendation that I was able to get I decided to apply to around eight places perhaps. So all of them ... I told them that I wanted to study this particular subject. So this was the very top, Michigan and Berkeley didn't accept me. All the others did. I think six accepted me. So this one was the best reputed so I just went there.

(I12, male, mid 30s, Mathematics, current migrant in the US)

However, the decision making process is not necessarily always based on the aforementioned steps (i.e. ranking of the best institutions, application to the best ones, and selection of the best among the available offers). The application process might also be driven by the intersection between an evaluation of 'realistic' aspirations and the opportunities available. Some of the interviewed researchers suggest that they would not necessarily apply for the best institutions in their field, since they evaluate that the likelihood of their acceptance might be low. Thus, they carry out a more 'realistic' appraisal of the opportunities available to maximise their chances, and apply for other universities that might not be at the top of the excellence rankings. This is narrated by respondent I19, when explaining that he applied for universities in the US that are not necessarily considered the best ones, and by respondent I30, when describing that the high selectivity of Oxbridge departments deterred him from applying there:

So we chose, many of us applied in the same place and things like that and we would choose some good places but we were realistic and did not apply for the really top places like Princeton or Harvard. The places that I applied to at that time are Chicago, University of Maryland and Rochester.

(I19, male, 40s, Physics, returnee to India)

Well, to be really honest I think these were the only two that I looked at that time ... I have heard of Oxford, Cambridge, but I wasn't really sure if I was qualified enough to get into these universities that time. So I applied for Edinburgh ... there's a book in mechanical engineering, actually materials and it has been co-authored by someone from the University of Edinburgh so I thought I'd try this as well.

(I30, male, early 30s, Engineering, current migrant in the UK)

The named 'prestige' of the institution as a driver for mobility, was frequently broken down into factors such as better resources and facilities (equipment, research funding) when compared to the standards of the institutions in India. Moreover, interviewees frequently pointed out the possibilities of looking for spaces where they can bloom in their area of work, benefit from contact with other researchers in the field, as the underlying factors driving mobility to 'prestigious' institutions. This was generally narrated in juxtaposition to the early development of certain research fields in India,

and frequent references to under-resourced departments when compared with institutions abroad. I9's narrative is representative of responses referring to the role of the field of specialisation and facilities when deciding whether to emigrate:

It was fantastic, because in India for molecular biology we had to wait for the resources. Sometimes it took over six months for things to come and since there were patents we could not make it locally. So experiments took a longer time to get done and so if you had a novel idea, it was never realised. But coming to the US, if you had ideas, you could realise it. There was less bureaucracy, less hurdles to jump. I mean I can see that now. Because now there is a great increase because of the tight funding scenario. But at that point of time oh boy. I thought of a project, it was possible to take on it and go with it and try to get it done.

(I9, male, mid 40s, Genetics, current migrant in US)

Researchers interviewed not only refer to the characteristics of the institutions in relation to infrastructures and facilities available, but also to the working conditions. They frequently refer to the balance between research and teaching workload at Indian institutions, and how getting a position abroad would facilitate focusing mainly on research for a period of time. For example, respondent I20 considers that, outside of India, academic positions have generally a higher weight on the research component, while in India the teaching workload does not allow them to dedicate themselves to research full-time:

[...] top-level universities, institutions, so where research is given the equal priority with the teaching. Such institution they recognise the people who do research and, that is the reason why I'm coming here, and also for getting some publications of research, that is the main reason.

(I20, male, mid 30s, Mathematics, current migrant in Czech Republic)

Thus, Indian researchers consider better-resourced and research-focused departments as central drivers to engage in academic mobility. These decisions are expected to better equip them with the skills and academic merits necessary for their career progression. However, the underlying objectives of having international experience for career advancement does not necessarily entail only settlement outside of India; our respondents often refer to how the internationalisation of their educational credentials and working experience is expected to have a positive impact in their chances for better employability back in India. This factor explains how mobility is used as a tool to 'stay' in Indian higher education institutions.

Our interviewees pin down these increased odds for employability to a set of both tangible and immaterial resources. The more 'tangible' criteria linked to international exposure are defined as access to new knowledge, techniques, research facilities, new academic contacts and potential new funding sources. For example, this is the case for those researchers who aim at pioneering particular sub-fields that are not sufficiently consolidated in India: moving abroad to an institution doing research in a field not yet adequately established in India, can provide the researcher with a robust competitive advantage on return. For example, this is narrated by respondent I11, who has moved to Taiwan, and who elaborates upon the importance of international experience in attaining proficiency in a field not widely developed in India:

Well the first thing is if I want a job in India I need some experience from abroad. If it goes on the CV it makes a much better impact in India, so that was the first thing. And the second thing was I wanted to change my field and I wanted to go somewhere where I could work with some, a group where they are working on a new field, more applications. As I mentioned earlier, I was not working on a regular area in Physics before. So when I wanted to change field, I wanted to do it in a regular group. In India such regular groups are very rare. When I am back, I will be able to bring that expertise.

(I11, male, mid 40s, Physics, current migrant in Taiwan)

Moreover, these candidates might have had better chances of publishing in more reputable journals than those without the international experience, due to the access to networks and other resources abroad. This also relates to what has been investigated elsewhere (Didou and Gerard 2009) in relation to the progressive adjustment of excellence criteria following the indices of impact factor commonly used in the US or Europe in non-Anglo-Saxon higher education contexts, such as in Latin America in recent years (ibid). This is explained by respondent I25, who explains how the ability to publish in the right journals might be enhanced by international experience:

The question is a very interesting one and basically what happens when you come back from abroad, then there is a prospective in the employer's mind that these candidates are better than those who have worked in India. Actually, they get a publication or something like that, this is much higher than Indian counterparts. That is why people prefer to go outside India, in places where the opportunities are better in the area of science, and you can adjust to the new forms of judging the quality of publications.  
(I25, male, mid 50s, never emigrated, Biology)

This 'desirability' of the candidate with experience abroad seems to respond to the expectation of excellence from Indian employers: it is assumed that those researchers with international experience are better qualified because they have already passed a high selection process when going abroad. Hence, the international experience has a reinforcing effect on the chances of employability since it confirms other scientific merits of the researcher. Our interviewees have repeatedly framed the advantages of having an internationalised CV as being an unwritten rule in the selection processes in India. As respondent I21 narrates, this 'unofficial' criterion has been the main driver for the mobility decisions for him and his wife:

Both of us [he and his wife, who is currently based in France], we finally want to go back to India and work there if possible if we get reasonable options there. But in India the selection process has been most of the cases, it's not really official but you can see from your friends and colleagues and others that if you sort of have experience of working outside India, either in Europe or in the US, then you get a higher priority in job search, so that's sort of the main reason why we move out of India.  
(I21, male, mid 30s, Astronomy, current migrant in Germany)

As I told you, eventually I would love to come back to Germany or Europe and I had long discussions with senior people and unanimously they would say yes, it's worthwhile to go there and spend some time. It is not written in the job description [...] But then when you come back here your chances of getting a permanent position become higher. And it just happened that I also got a good fellowship so I thought yes, I'll just go.  
(I6, male, mid 30s, Engineering, returnee to India who will shortly move to Czech Republic)

Our respondents also mention intangible resources from the experience abroad that might be valued, such as learning 'new ways of working', having the 'brand' in your CV of a reputable international institution, or 'growing up' outside the protection of your research group or supervisor in India. These experiences are meant to provide the researcher with new learning experiences outside their scientific expertise, such as career development in areas such as leadership, managerial skills or time management, which might be transferrable once back in India. As respondent I1 puts it, you are encouraged by the institution to 'go out', in order to experience the research world outside the environment where you did your PhD:

So at that time, in my institute, even now I think it prevails in India in many institutes, that is wherever you do your PhD, however good you are, you are encouraged to go out. Do some post-doc in some foreign countries and come back. Because they say if you continue to work in the same institute [...] you stuck to a group, stuck to your problems, stuck to your mentor or something like that. So we were encouraged, or I should say discouraged in getting a job immediately, we were encouraged to go out [...] And you also learn the way people behave, in meetings. You don't waste your time with chitchat. You go to the point. It is good to learn how others work. Then

some of these new learnings might work here or not, but you have that knowledge forever  
(I1, male, 50s, Atmospheric Science, returnee to India)

However, the strategy of ‘working abroad to stay’, also requires the management of how long researchers should stay outside of India, in order to come back at an optimal time. The ‘timing’ of international experience has been explored by Morano-Foadi (2005) when looking at regional experiences of internationalisation of working life, and the ‘mobility dilemma’ (2005: 147) that, in the case of this study, Italian researchers confront. The author describes how, although Italian mobility is high in comparison to other European countries, ‘the extent to which a period of work in another country is necessary for a scientific career progression in Italy needs to be addressed. Most of the scientists face the “mobility” dilemma [...]. Their supervisors have stronger powers of negotiation and can call them back home as soon as there is a position available. On the contrary, those who move on their own initiative have no connection at home, or have lost their contacts, lose the possibility to go back home’ (2005:147). In a similar fashion, Indian research institutions require tight management of the timing of stays abroad. The narratives analysed show that the experience and networks acquired in international destinations should not preclude an up-to-date knowledge of how the Indian scientific system operates, as well as maintaining contact with key networks in the country of origin. Calculating ‘the right time’ to stay abroad enables sufficient international exposure without causing their disenfranchisement from the modes of work, rules, norms and networks of the Indian academy. This is illustrated by respondent I2, who narrates how he advises his students to follow the path of balancing both national and international experience for a successful return:

More than before are staying back in India and getting their PhDs done here. I think getting jobs is definitely an issue. What they want to do is do a PhD here, build their networks in India, then go out, do a post-doc somewhere in Europe or in the US and then come back. That's what I also tell my students. That they should build networks and then go to the US and to develop is more about getting experience and seeing how other people work basically but still being able to find your way here [in India].  
(I2, male, early 40s, Physics, returnee to India)

The narratives reveal a rather consistent approach to the minimum and maximum period of time that early career scholars should spend abroad in the current Indian academic system, as a strategy to be employed when back in the country: a minimum of four years and a maximum of seven was frequently conveyed by our interviewees. Others make a similar evaluation of the optimal time, but in relation to the age of the researcher when coming back to India (not over 35 years old), demonstrate also how precise the estimations of career timing are.

We have explained elsewhere (Toma and Villares-Varela forthcoming) the role of institutional practices in delimiting the right period of time abroad: fellowships aimed at ‘attracting Indian talent back’ into the country, also have an age limit. However, it is revealing to see that this shared knowledge about the optimum time to return is internalised even when looking for a job through these institutional grants. Respondents I21 and I1 explain the importance of internationalising the CV without compromising a rapid enough return:

Both of us we finally want to go back to India and work there if possible if we get reasonable options there. Yes, so, ideally, I would like to go back in maybe one or one and half year from now, and, that comes around like, 5.5 years roughly after finishing my PhD, so I have started sort of approaching different institutes and universities, already.  
(I21, male, mid 30s, Astronomy, current migrant in Germany)

So if that man has to take a decision before 35 if he wants to come back and some people have come back, but normally doesn't work like a clock, he may be in a nice work, but he maybe that contract may be coming to an end he is just 37 so he arrives and tell us that 'sir, I'd like to stay but I'm 37 – ok'. You have to come back at 35.  
(I1, male, 50s, Atmospheric Science, returnee to India)

### 3.3 Facilitating and constraining factors

The main motivations for the mobility of Indian researchers are frequently interwoven with the factors that might facilitate or block the realisation of these aspirations. Indian researchers identify different facilitating or constraining mechanisms that have helped to or prevented them from materialising the aspirations to emigrate and/or return. Among these, the qualitative data have revealed the following four dimensions as salient in shaping mobility trajectories: (a) financing (wages, scholarships); (b) exchange programmes; (c) academic networks; and (d) the migration policy regulations.

Despite the fact that higher skilled migrants are often termed as 'knowledge migrants' (Ackers 2005) who are not prioritising the economic aspect of migration (Mahroum 2001), our interviewees frequently alluded to the importance of the financial side when deciding whether, when and where to move. For example, being offered a scholarship that would fully fund your education, and also give you a chance to enter the labour market, would make a difference to the decision of whether to emigrate or not. Financing also seems to play a role in encouraging early career researchers to gain economic independence while studying, in opposition to remaining dependent on family income. For example, respondent I2 recalls that the driver for his mobility was twofold: looking for a more suitable PhD programme than those in India, and getting financial independence through a scholarship in the US:

Basically the reason I wanted to go was twofold. One was that our Master's programme, from our local universities, and was not very happy with that [...] And that was one reason, the other was that I also wanted to be a little independent at that time. I was still studying from home and not earning any money, so I thought that going to the US will give me a reasonably good scholarship so I could sustain myself and do my studies. So this is the sort of thing, nothing out of the ordinary let's say.

(I2, male, early 40s, Physics, returnee to India)

When analysing the narratives of those Indian researchers with international experience, we noted how financial aspects have generally been a facilitating factor, and the lack thereof is very rarely revealed as a constraining element in their decision making process. However, when considering the narratives of those who have not left India, the interviewees show that the funding availability can also build upon the aspirations to emigrate. Having in our sample Indian researchers whom have not emigrated balances out the selectivity bias that our data would have had if mobile researchers were the only ones included in this study. For example, respondent I10, who has never left India, states how funding is of vital importance when aspiring to emigrate, and knowing that it might be challenging to get funding from excellent institutions has a deterring effect when considering whether to apply:

I think the first thing anyone, in any Indian person's mind would be funding. Because most programmes ... so that's a big turnoff to apply. So for example you get in let's say Oxford or Cambridge in Britain, but you wouldn't be able to go there because although you've got admission they can't offer you a scholarship. So it's a pretty nice place to work in but you can't go because the economics just don't add up. So I think scholarships will be the number one line item in any Indian person's list.

(I10, male, late 30s, Ecology, in India, never migrated)

Access to finance is also linked to formal institutionalised programmes between countries or institutions, which cushion the hurdles of mobility. These scientific networks or exchange programmes are frequently mentioned as a means of mobility, since they can channel researchers to

specific departments, provide financial support, and contribute to the benefits of being abroad while maintaining links with India. For example, I1 explains how he had the opportunity to go to Germany through an institutional exchange programme between the two countries, which provided assistance with the visa procedures, and also funding for the mobility expenses:

But still I got one opportunity to go to Germany for one year because India and Germany had an exchange program at that time. In fact India and Germany in general but specifically ...Space Research Organization of India and the Space Research Organization of Germany [...] [because of the programme] they helped with the visa, the travel, the accommodation. I only had to go there. And I also brought my wife and at that time two of my children.

(I1, male, 50s, Atmospheric Science, returnee to India)

However, other academic networks that are not necessarily institutionalised in the form of research programmes, are also frequently named as facilitating factors for mobility. These networks largely vary in their degree of formality, but the most common initial connections alluded to by our interviewees are the contacts established by the Master's or PhD supervisor, or other collegial networks. This confirms findings of other research on academic mobility which states that higher education mobility tends to use personal and professional networks that, unlike other forms of high-skilled mobility, are not supported by a large organisation (Ackers 2001; Peixoto 2001; Guth 2007). Researchers who emigrate as students are frequently suggested the 'right places to go to' by their supervisors in India. But the importance of these informal networks seem also to prove useful in suggesting potential departments when applying for salaried positions. Securing positions in institutions embedded in professional networks is referred to as helping to reproduce the institutional links of different generations within a department. As illustrated by respondent I34, who recounts that her supervisor suggested applying for a post-doc position in a Canadian university, where collaboration between this institution and her Indian *alma mater* had been ongoing for some years, and where her role contributed to keeping the network alive:

*My supervisor in India had a project with my current boss a few years ago [...] we work on similar fields, but of course in Canada they have a better lab and they have developed new techniques we don't have access to in India [...] I've also had an offer in the US, but my supervisor suggested this was a better chance, and here they also want me and that I go to India once or twice a year, so I can also be in touch, and bring new things we develop here. My supervisor in India is now about to retire, and this is a way to keep the collaboration, even if I am here.*  
(I34, female, Physics, current migrant in Canada)

We have explored elsewhere (Toma and Villares-Varela forthcoming) that the immigration policies of destination countries do not seem to play a key role in the decisions of academics whether to move for their degrees or for a professional opportunity. This finding does not preclude policies from having an impact on the PhD scholarships available to foreigners, or the selection and recruitment process, which might reflect the actual openness or closedness of the national and institutional regulations in the countries of destination, but also underlying processes of discrimination (ibid). However, when asked about the role of entry visa regulations – or migration policies more broadly – in the decision making process, our interviewees did not recall these factors as having any relevance. They were neither encouraged nor discouraged from aspiring to move, or actually applying for positions abroad. Their narratives confirm a perception of overall openness to the immigration of researchers, and they perceived the legal requirements as a mere administrative process they had to go through. As stated by respondent I9, *the decision to emigrate to the US was never mediated by migration policies:*

*I believe – again – it [decision of where to move] will be driven by the science. If the science is really strong I would be happy to jump through any kind of hoops that are required. (...) I don't find myself restricted to any boundaries. Wherever the science takes me I have no problem going.*  
(19, male, mid 40s, Genetics, current migrant in US)

Thus, Indian researchers do not express legal obstacles for initial entry and residence in the countries of destination; however these narratives shift when looking at subsequent career choices when deciding whether to move, stay or return. The access to rights after entry for foreigners and the highly skilled seem to be conceptualised as a relevant factor for researchers. The different policy regimes might facilitate the retention (e.g. a post-study visa channel, or easier access to permanent residence or citizenship), or being pushed to come back to India or move elsewhere (e.g. in the absence of the aforementioned). This is for example narrated by respondent I8:

I didn't have any problem getting the visa to come here. And I had institutional support. When I had to exchange my visa when they gave me the post-doc. But when I switched to what was then called the HSMP or highly skilled migrants programme and that was, that programme has now been discontinued, so people can't apply. For example my flatmate, she's an economist, she's Indian like me and she did her PhD at the institution A, and after that she applied for a job and got a job but because there was no possibility of post-study visa, it took her eight months for her visa to come through. Some departments won't wait.  
(I8, female, Physics, currently in the UK)

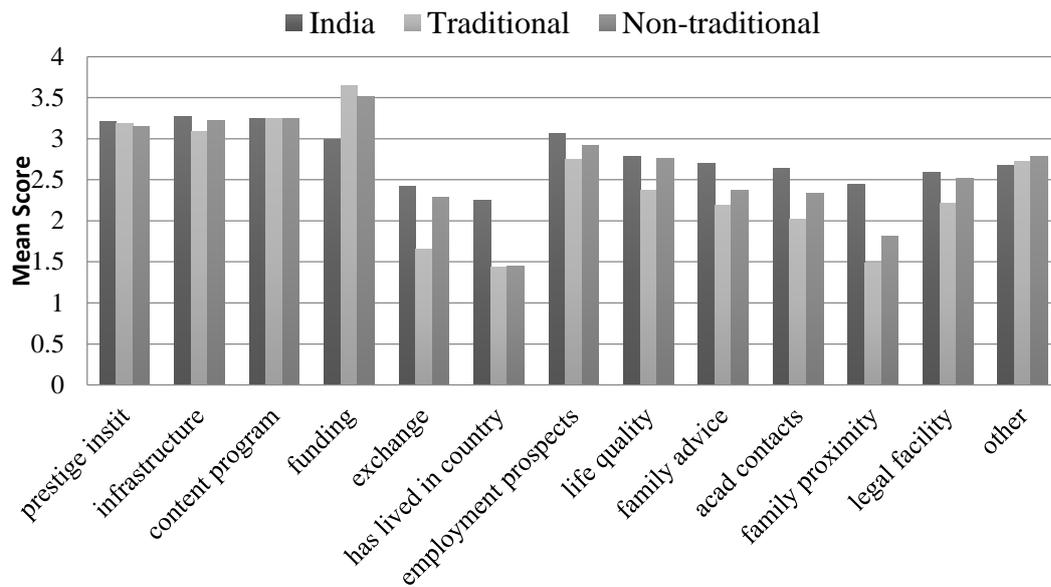
These narratives from our interviewees on the relative importance of different factors motivating, facilitating or constraining their migration decision making process are overall reflected in the survey results. Figures 2 and 3 compare the average weight of different dimensions – related to the institution chosen, the country of destination or the personal network of respondents – in the decision of where to study for one's highest degree (Figure 2) and of where to take up current employment (Figure 3). The respondents were asked to give a score to each factor, from 0 'Not important' up to 4 'Essential'<sup>4</sup>. Both respondents who migrated and those who stayed in India for their highest degree/current employment were asked these questions, in order to examine the extent to which different factors are underlying the decisions to stay or to leave the country. Furthermore, the figures distinguish between those who went to a 'traditional' Anglo-Saxon destination (North America or the UK) and those who chose a 'non-traditional' destination (such as other European or Asian countries), a comparison which will be discussed in the following section.

With a mean of over 3.5, the availability of funding appears to be the most important factor in the decision to study abroad for one's highest degree (in most cases, a PhD), as illustrated in Figure 3. Aspects relating to the prestige of the institution, the available research infrastructure and facilities, as well as the content of the chosen (study/research) programme come next in average importance, which again illustrates the priorities expressed by our interviewees and discussed in section 3a. However, these dimensions appear equally important to those choosing to study in India as well as those deciding to go abroad for their highest degree.

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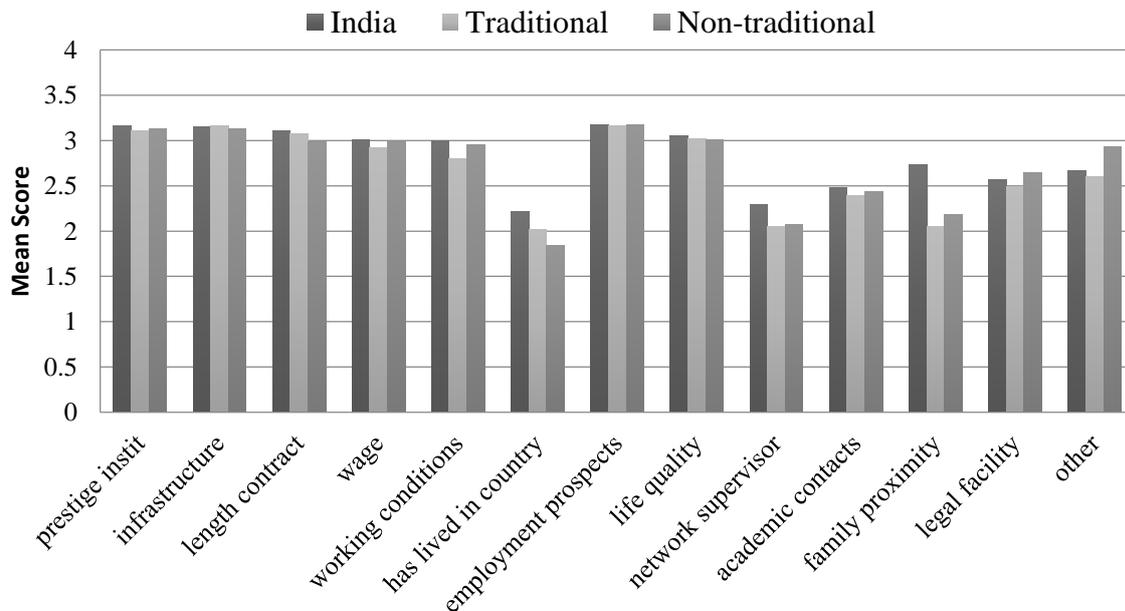
<sup>4</sup> Respondents also had the option of choosing 'not applicable' for each factor, in which case they were excluded from the computation of the average score.

**Figure 3 Importance of different factors in deciding where to study for highest degree**



Institution-related factors such as prestige or infrastructure as well as job-related factors, such as salary, contract length and working conditions, are also highly important in the decision of where to take up current employment (Figure 4). However, ‘future employment prospects’ take the lead as respondents reach this more advanced stage of their career; a factor which is also important in determining the location of one’s PhD programme, although we do not find significant differences between major destination categories. This may partly illustrate the views held by many interviewees that international study or work experience increases their employability back in India.

**Figure 4 Importance of different factors in deciding where to take up current employment**



‘Soft’ factors, such as the quality of life, the proximity of family or prior residence in the host country are seen as contributing less to the choice of destination for one’s highest degree. In contrast,

the quality of life is one of the most important considerations with respect to where to take up current employment. Social capital in terms of some pre-existing professional (academic) network seems to be of minor importance in making the decision where to study or work. Finally, legal facility is of secondary importance in migration decisions, reflecting the lesser importance interviewees attributed to immigration policies in their destination aspirations. However, this factor seems to carry more weight with respect to decisions of where to take up work than on where to study, which may reflect the less restrictive nature of international student migration compared to economic migration flows.

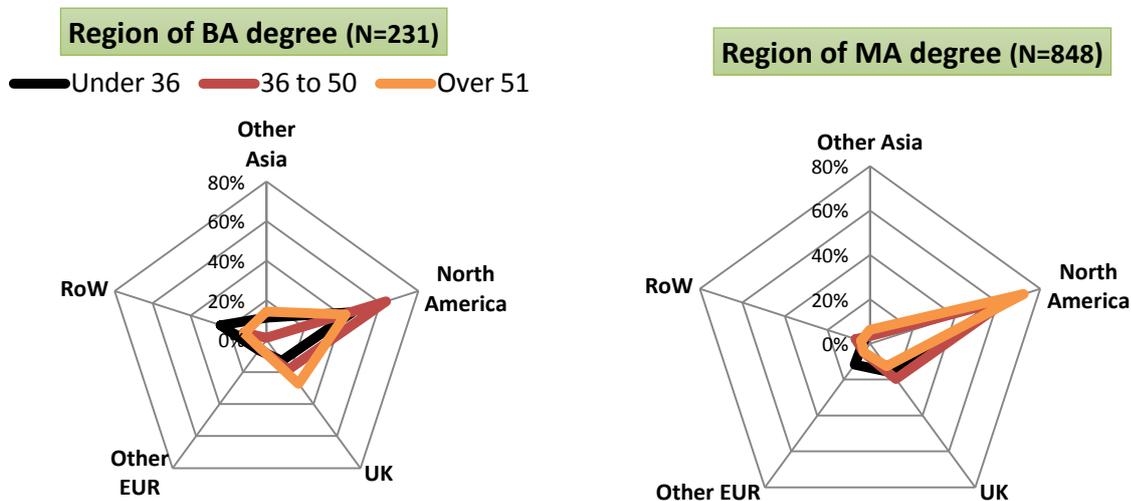
## 4 Beyond the ‘scientific core’: diversification and the emergence of new destinations

In the previous section, we examined the extent of international migration among Indian researchers at different career stages, as well as the motivations and factors facilitating or constraining their mobility decisions. We now turn to their choice of destination, discussing the diversification of geographic patterns of Indian academic mobility and the factors attracting students and academics to emerging destinations in Europe and Asia.

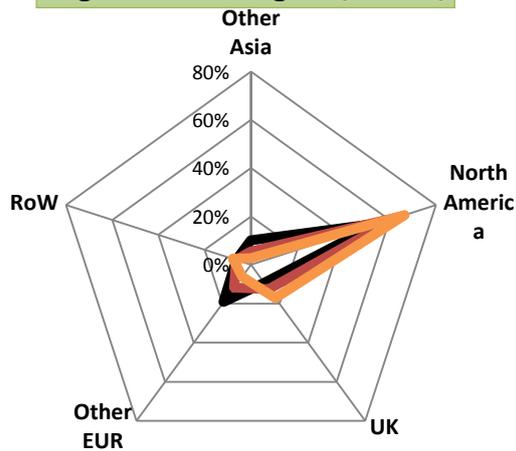
### 4.1 The growing importance of new destinations in Europe and Asia

Figure 5 illustrates the main regions of destination at different career stages (BA, MA, PhD, first and current jobs) for those who were abroad at these stages. It also distinguishes between three different age cohorts: researchers under 36, between 36 and 50, and 51 or more at the time of the survey, to examine changes in geographic patterns over time.

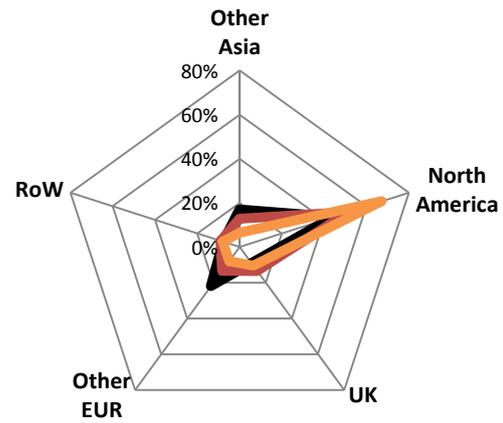
**Figure 1 Destinations at different career stages, by age cohorts**



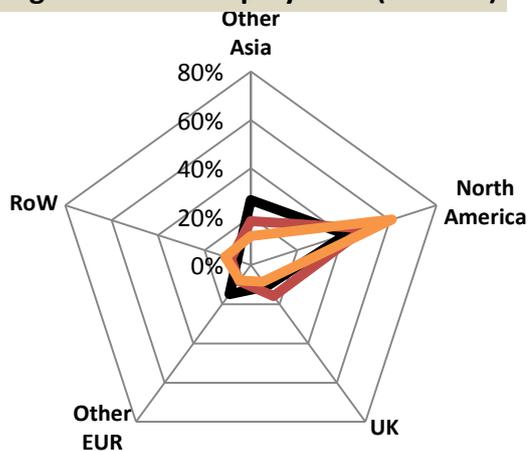
### Region of PhD degree (N=1280)



### Region of Post-doc (N=1785)



### Region of later employment (N=1053)



Note: 'RoW' represents Rest of World outside North America, UK, other Europe, India, other Asia.

First, the predominance of North American destinations (and in particular the US) is clearly apparent at almost all levels of the academic career. Around two thirds of Indians who studied or worked abroad went to the US. The second destination, among those studying abroad for their BA or MA, is the UK. Destinations are more diversified at the PhD and at the professional level, where the predominance of North America is lower. Other European and Asian countries are better represented, whereas the UK is less often chosen.

Second, the relative importance of these traditional Anglo-Saxon destinations appears to have decreased over time (across cohorts). Younger researchers are more likely to go for a PhD in other European countries besides the UK (20 per cent among the under-36, compared to 10 per cent among those over 51) and, to a lesser degree, in other Asian countries. In contrast, the share of those obtaining their PhD in the US or Canada decreased from 66 per cent to 55 per cent between the two generations, while those choosing the UK – 17 per cent among the oldest generation – make up only 9 per cent among the youngest cohort.

The diminishing importance of North America as a destination is even more accentuated when considering professional moves. 67 per cent of the oldest generations chose the US or Canada for a first employment opportunity, whereas only 44 per cent of the youngest Indian researchers still do so.

In contrast, the share of other European destinations increased from 8 to 22 per cent and of other Asian countries from 6 to 17 per cent. The UK's share has however remained constant over the three generations. Similar trends can be observed with respect to later employment.

We thus observe a relative shift in the geographical patterns of Indian academic mobility. Younger cohorts are moving less often than their older peers to traditional destinations, such as the US or the UK, and are increasingly choosing other countries in Europe or Asia in which to obtain their PhD or to take up employment. But are these 'emerging' destinations places of longer-term settlement for Indian academics or mostly used as stepping stones for reaching the still-prized Anglo-Saxon countries?

Table 2 shows the region of current employment for Indian PhD graduates depending on the country in which they obtained their PhD. North American PhD graduates are the most likely to remain in the region where they obtained their PhD (mostly the US), as two thirds of them are working in the same region at the time of the survey. If Indian graduates from North America leave the region, they mostly do so in order to return to India; only a small share chooses to relocate elsewhere for their current job. In contrast, the retention 'capacity' of the UK is lower than that of the US, as slightly less than half of Indian graduates from a British university remain in the UK for their current employment. Furthermore, onward mobility represents a larger share for Indian graduates from the UK (24 per cent) than for those from North America (13 per cent). Indian graduates from other European destinations are the least likely to remain in the region where they obtained their PhD – only a third do so. These countries seem particularly likely to be stepping stones to obtaining a job in North America, where 17 per cent of European graduates choose to relocate, and to a lesser degree the UK (10 per cent). On average, one out of four Indians who graduated from their PhD abroad return to India. Those who graduate in other Asian countries are the most likely to return (one in three), followed by European graduates; North American graduates are the least likely to return.

**Table 2 Region of current employment of Indian PhD graduates, by country of PhD**

Region PhD	Region current job [in %]						N
	India	Other Asia	North America	UK	Other Europe	Rest of the world	
India	<b>87.44</b>	4.27	4.41	0.61	2.05	1.22	3,606
Other Asia	37.7	<b>50.82</b>	4.92	1.64	3.28	1.64	61
North America	20.56	2.96	<b>67.31</b>	3.7	2.51	2.96	676
UK	29.71	3.62	7.97	<b>46.38</b>	7.25	5.07	138
Other Europe	32.09	2.99	17.16	9.7	<b>36.57</b>	1.49	134
Rest of the world	21.31	3.28	11.48	0	3.28	<b>60.66</b>	61
[in % of total N]	72.97	4.62	14.07	2.67	3.29	2.37	4,676

## 4.2 Deciding where to go: 'traditional' versus 'emerging' destinations

When we explore the narratives of researchers we have interviewed regarding destination selection, we find that the decision of 'where to go' has to do with an assessment of the prestige of the departments, and a selection of the available offers. When elaborating upon which are the 'best' destinations within their fields, Indian researchers would acknowledge the predominance of US-based institutions. These would be followed by other Anglo contexts such as the UK, Canada and Australia. European continental institutions, particularly in Germany and France, would come next in the

ranking, although clearly behind the US and UK, and always in reference to very particular institutes and departments. For example, respondent I13, who has never left India, explains how in his opinion, US and European institutions are deemed as ‘good’ countries to go to for international experience:

[I wouldn't go to] not to China. Any good countries, any good places, if they allow me I will go.

[Interviewer: What do you mean by good countries?]

Just like England, like USA.

(I14, early 40s, Chemistry, never migrated)

As mentioned earlier, when choosing between ‘traditional’ and non-traditional, or emerging, destinations, Indian researchers have generally indicated that US-based institutions are the primary option, but emerging destinations are frequently mentioned in the narratives of our interviewees as new trends and potential opportunities. Among these, Asian institutions were identified as relevant destinations for Indian researchers, particularly those in Singapore, Japan, and Taiwan, which are recalled as attracting a growing number of scientists in the last decade. The competitive advantage of these new destinations is explicated in relation to three main aspects: (a) salience of specialised departments or research institutions, (b) financing and positions available, and (c) quality of employment. According to some of our informants, certain departments within specialised fields are blooming in some of the emerging destinations, which have a competitive advantage when compared with average departments in ‘traditional destinations’. This is illustrated by the way they would favour going to a ‘good’ department in an emerging destination than to an average US-based university. As respondent I14 describes, the main driver for him was getting his research profile consolidated, and this could be better achieved in a top Asian institution than in a ‘bad’ US institution.

My supervisor suggested me that first better to choose that university or place where your profile can fit well.

Suppose I am from Physics background, Electronics background, so better to go to such places where you can do better in your particular field. Nor directly would you choose any such country or such place where the work is not so recognised globally. So my professor asked me first to go to US [he was accepted in a non-top US university], and then he said it is better to go to the Asian countries, because they are also doing good in electronics as my background was basically from Electronics. So he said it is better to go to an Asian country that is good than to a bad university in the US.

(I14, male, early 30s, Physics, Taiwan, going to Canada)

Our respondents allude to this competitive advantage of emerging destinations in providing enough funding to attract Indian researchers, particularly when compared to the US and European institutions. For example, respondent I11 describes how he had applied to do his PhD abroad in the US and the UK, but he failed to be accepted in the US and to secure a full scholarship in the UK. An emerging destination (Taiwan) offered a good balance between funding and quality of the institution.

After my masters I applied for PhD abroad. I applied to the US and UK. In the US I didn't get anywhere. In UK I got a couple of places but not on a full scholarship [...] They would only pay my fee, and there was a departmental scholarship for £3000, but nothing else. The funding was not enough.

(I11, male, mid 40s, Physics, current migrant in Taiwan)

The knowledge of the availability of funding and its role in shaping the aspirations to emigrate to emerging destinations is also described in how recruitment practices are implemented. Our interviewees describe how emerging destinations advertise upfront the funding provided, while US and European schools are perceived as not needing to advertise their funding schemes since they get enough self-funded applicants from which to choose. Respondent I23 describes how, during the search for a host institution, emerging destinations were forthright in their funding schemes, while US and European universities were not clearly advertising that they would offer fully-funded degrees:

I wouldn't say I saw many advertisements from European universities, but there was a lot of representation from Australia and Singapore, who put up a lot of advertisements in my university for attracting people, attracting talent for research or for other jobs. And the – I would also see some advertisements from the universities in the US, but ... but, but notwithstanding the fact that they were not promising any funding, so it was just the advertisement for the university. But from places in Singapore and Australia, funding ... the funding confirmation was much clearer in their advertisements. But I never saw anything from the European countries.  
(I23, male, mid 30s, Computer Science, current migrant in Belgium)

The availability of positions and the lower selectivity of emerging countries make these also an attractive destination for our informants. As the excerpts below describe, sometimes opportunities in these countries were the only positions offered to the informants, therefore they did not have to select from among a wide pool of options in which 'traditional' and emerging destinations would come up against each other. When looking at these emerging destinations, once again an evaluation of the quality of the institution and the offers available are taken into account when deciding where to go.

When I noticed that I will not get admission from US, then I focused on Asian countries, especially Japan, Korea, Taiwan, Singapore and China. So that time I heard Taiwan is doing very good in Electronics, especially in fabrication, in device fabrication. And I got a scholarship very easily, and then I applied here. But before applying here I saw the ranking and the status, conditions of the university, so I found that after searching on Google internet, I found that this university is one of the best universities in Taiwan in the engineering field, and doing very good in applied science. So I decided to come and to choose this university for my research programme. And even I got some offer from Singapore and South Korea, but I found that the field was not interesting.  
(I14, male, early 30s, Physics, Taiwan, going to Canada)

The availability of funding or a position is not the only driver to move to other destinations outside the US and UK, and even emerging destination in Asian countries. The quality of the employment in terms of permanency, access to funding and freedom are also taken into account when applying for 'alternative' destinations. Our informants mention the increasing difficulties in securing permanent jobs in traditional destinations and how these opportunities are more likely to open up in alternative destinations. Hence, for those researchers trying to secure permanent employment, emerging destinations appear as an 'easier' path towards permanency.

There are places, there are certain institutions in the US that, there are very liveable, but I think in Australia, it's definitely easier. Of course the number of universities here is not as high and competitive, probably like, less than 10 universities, maybe 15 total universities that are quite OK to work at. But it is much easier to find a permanent position [...] In the US, people work very hard to secure a tenured track position, and they cannot find a balance with life.  
(I16, male, early 30s, Physicist, current migrant in Australia)

The decisions of where to go do not necessarily evaluate a 'traditional' against an 'emerging' destination. Instead, having study and/or professional work experiences in both contexts seems to be highly valued for most Indian researchers, at least those who aspire to come back to India. For example, having both a US and a European experience, or a US and an Asian country, is perceived as a combination that would provide one with more skills and contacts than a single destination. This will increase the chances for a better reintegration in the labour market back in India, but also, in the case of a desire to settle abroad, it would not have negative consequences for their employability. As respondent I21 describes, the 'ideal' combination for employability back in India is the US–Europe experience, while having work experience from an Asian country enhances the knowledge of how to boost research activity in a non-Western destination and institution that is more similar to India:

Since I already had like 3 years' experience in US, I thought that either I would come to Europe to get a different type of experience or I will probably go back to India. So far, for most of these people I see is what they plan to do is, most of them are certainly going to apply for a second postdoc position in either Europe or US. And then they move there and apply from there [...] but having also experience in an Asian country, that it is more like India, would help to set things in departments in India, and learn from labs that are not so well resourced as in the US. (I21, male, mid 30s, Astronomy, current migrant in Germany)

The survey results presented in Figures 3 and 4 only partly reflect these qualitative findings with respect to the motivations behind choosing emerging destinations. They distinguish between the scores attributed to the different factors by those who studied or work in a traditional Anglo-Saxon destination (North America or the UK) and those who moved to a non-traditional destination (other European or Asian countries). The availability of funding was the most important decision making factor for both groups of migrants, though it was ranked significantly, albeit not substantially, higher by those studying in traditional destinations.

Institutional-level aspects, such as the prestige of the institution or the content of the programme, were considered equally important by those who either went to traditional or to emerging destinations. Only the research infrastructure was considered as a significantly more important factor in the decision making process by those who studied for their PhD in a non-traditional destination<sup>5</sup> (but the difference is not significant with respect to the decision of where to take up current employment). Furthermore, Indian researchers in traditional or emerging destinations did not evaluate differently the importance of job-related factors, such as the length of the contract or the wage, in their destination choice. Only the working conditions were considered more salient by those currently employed in emerging destinations.

Interestingly, those going to emerging destinations evaluated soft factors, such as life quality and proximity to the family, on average as being more important in making the decision of where to study for their PhD. Academic contacts were mentioned as being significantly more important in the decision to do the PhD in an emerging destination for Indians rather than in a traditional one. However, these aspects bear a similar relevance for the two groups in employment-related decisions.

Finally, one possible explanation for the shifting geographic patterns of Indian academic mobility in favor of newly emerging destinations could be the increasing difficulty for Indians to get legal admission to immigrate in the US or the UK. In accordance with this hypothesis, respondents who studied for their PhD or are currently employed in an emerging destination considered legal facility a significantly<sup>6</sup> more important factor in their location decisions than those moving to traditional destinations.

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<sup>5</sup> An average score of 3.09 for those going to traditional destinations compared to 3.22 for those choosing emerging destinations, significant at  $p < 0.10$ .

<sup>6</sup> At  $p < 0.05$  for PhD location decision and  $p < 0.10$  for current employment location decision.

## 5 Conclusion

This paper examined the internationalisation and diversification of academic career paths, focusing on the case of Indian researchers, a large and highly mobile group. The use of both quantitative and qualitative methods allowed us to uncover the changing patterns of international mobility as well as to understand the motivations underlying them.

One of the key findings stemming from our survey is that the level of international mobility experience among Indian researchers is particularly high and is increasing, especially at professional career stages (i.e. post-doc, later employment). On average, about a third of our respondents studied or worked abroad at some time during their academic career, whereas this reaches 40 per cent among the youngest researchers (who are 36 or younger). These estimates are likely to be somewhat biased upwards due to the fact that our population of reference is composed of active researchers, who published at least one article referenced in Thomson Reuter's 'Web of Knowledge' in the last five years. Indian researchers who move abroad, particularly to Anglo-Saxon countries, may be more likely to publish<sup>7</sup>. Despite this limitation, the 'Global Survey of Indian Researchers', due to its multi-sited methodology (online survey in all countries where active Indian researchers are based), is to our knowledge the only sources to date that allows the quantification of the intensity and diversification in terms of destinations of international mobility among one national group of researchers.

The motivations underlying the mobility decisions of Indian researchers were examined through qualitative interviews with a subsample of our respondents, with or without international experience. Our findings confirm the weight of the 'expectation of mobility' among academics that other studies also emphasised (Ackers 2005). Younger generations in particular are increasingly seeing international experience as a requisite for their own scientific development as well as for maximising their chances of employment (for those wishing to remain in/return to India). Moving elsewhere equips researchers with expertise in a field of research that is not sufficiently developed in the country of origin, but also where research facilities and prestige of the destination institution are deemed better than those back home. Interestingly, the aspirations to move outside the country do not necessarily overlap with aspirations to settle abroad as a foreign academic. International study and work experience is often perceived to provide professional merits which are instrumental in career progression upon returning back home through the acquisition of tangible (specialisation, access to new networks and funding) and immaterial resources ('know-how', international branding of degrees and work experience, new managerial skills). This indicates the rising importance of short-term circulation and mobilities of scientific workers for international knowledge transfers and spillover. In many parts of the world policy making has not fully recognised and addressed the immense potential of these types of mobilities for scientific capacity building and national innovation processes.

Aspirations and decisions about whether to emigrate or not are mostly fostered (or constrained) by opportunity structures such as access to finance, networks, institutionalised exchange programmes and migration policy regulations. In this sense, having also included 'immobile' researchers in our sample allowed us to balance the view of mobile researchers as 'knowledge' migrants who are not constrained by financial limitations. The narratives of Indian researchers who have not left India show that the availability of a funded scholarship, or of being fully self-funded, would have played a role in the decisions to apply and move elsewhere. Furthermore, scientific

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<sup>7</sup> Either because the international mobility experience provides a more conducive (and competitive) environment that stimulates publication or simply because they represent a selected group. As prior work showed, those with the best exam scores are the most likely to move abroad (Czaika and Toma 2015).

networks or exchange programmes are frequently mentioned as channels that are facilitating international mobility. The networks vary in their levels of formality, from institutionalised exchange programmes to personal networks, but both have the aim of cushioning the possible funding limitations, accessing relevant information, and directing researchers to specific departments.

The study also confirms the predominance of the US, Canada, and the UK, which jointly award PhDs to about one in six of all Indian-born researchers. However, outside these ‘academic core’ destinations, some new destinations in Europe (Germany, Sweden, France, the Netherlands) and East Asia (Japan, South Korea, Singapore, Malaysia) are emerging and are expected to play a more prominent role in the future. Younger generations of researchers are more likely than their older peers to choose such emerging destinations for their first or later employment and, to a lesser extent, also for their PhDs. When comparing traditional and emerging destinations, our respondents allude to the highly regarded US-based and Anglo-Saxon institutions as offering the best possible international experience to consolidate one’s career, followed by European continental institutions, particularly in Germany and France. Emerging destinations, particularly in East Asia, are increasingly attracting Indian researchers to study at the post-doctoral stages. The competitive advantage of emerging destinations over the traditional destinations is due to factors such as the availability of fully-funded scholarships or positions, as well as the development of particular departments or disciplines of their speciality. Indian researchers have also narrated how the increasing competitiveness to secure permanent positions or promotions in ‘traditional’ destinations makes East Asian institutions more attractive in terms of obtaining satisfactory employment.

The survey results also suggest that student and professional mobility to traditional and emerging destinations is motivated by similar factors. Students and researchers seem to be ranking countries and institutions in similar ways, i.e. by using similar evaluation and selection criteria. That they end up moving to different types of destinations may be related to the different types of human capital they possess (e.g. their previous academic scores, the level of their CV and of their publications), their economic capital (in terms of the financial means they have available), and their social capital and academic networks. Furthermore, we have shown that decision making processes do not necessarily oppose ‘traditional’ with ‘emerging’ destinations. On the contrary, bringing the material and immaterial resources of having studied and/or worked in a multiplicity of destinations is perceived as increasing the chances of employability when returned to India.

This study has further shed some light on the role of destination countries’ immigration policies, which seems to play a minor role in the mobility decisions of Indian scientists. Our survey largely confirms the finding that skill-attracting policy instruments implemented over the last two decades do not seem as effective as expected in recruiting high-skilled workers (including academic talent) in international labour markets (Czaika and Parsons 2015). But path-dependent behaviour is not the only reason why high-skilled migrants may not respond to policy-induced incentives to migrate internationally. Another reason Toma and Villares (forthcoming) have identified is that highly educated and trained talent do not have strong perceptions about any political or institutional obstacles to migrate. Their main motivations are scientific and economic (both in terms of material gain and employability chances). However, even if researchers do not really take migration policies into account in their decision making process, we cannot conclude that their international mobility is barrier-free. Immigration policies and rights to work may enter in the recruitment decisions of employers and departments in destination countries, without the candidates themselves being aware of these criteria. More research should focus on such *indirect* mechanisms of policy influence on the mobility of the highly-skilled.

Future research on academic mobility should also aim to improve our understanding of the mutually reinforcing processes of academic mobility and knowledge production and transfer. The contested role of academic mobility on the dissemination of knowledge reveals a limited understanding of academic mobility as an integral part of processes of global scientific production and dissemination of knowledge. This is partly due to the absence of studies that embed the systematic empirical analysis of the drivers of academic mobility into a comprehensive analytical framework of multi-level forces driving the internationalisation and diversification of scientific knowledge.

## 6 Appendix

**Table A1. Summary of interviewees' profiles**

Code	Gender	Age group	Migrant status	Current location	Broad discipline
1	Male	50s	Returnee	India	Physics
2	Male	early 40s	Returnee	India	Physics
3	Male	early 30s	Current migrant	Switzerland	Computer science
4	Male	late 40s	Current migrant	US	SSH
5	Female	early 40s	Returnee	India	Biology/Genetics
6	Male	mid 30s	Returnee	India	Engineering
7	Male	early 30s	Current migrant	US	Physics
8	Female	late 30s	Current migrant	UK	Physics
9	Male	mid 40s	Current migrant	US	Biology/Genetics
10	Male	late 30s	Never migrated	India	Earth science
11	Male	mid 40s	Current migrant	Taiwan	Mathematics
12	Male	mid 30s	Current migrant	US	Mathematics
13	Male	early 40s	Never migrated	India	Chemistry
14	Male	early 30s	Current migrant	Taiwan	Physics
15	Female	mid 30s	Current migrant	US	Biology
16	Male	mid 30s	Current migrant	Australia	Physics
17	Female	mid 40s	Current migrant	Australia	Biology/Genetics
18	Female	50s	Never migrated	India	Biology/Genetics
19	Male	60s	Returnee	India	Physics
20	Male	mid 30s	Current migrant	Czech Republic	Mathematics
21	Male	mid 30s	Current migrant	Germany	Astronomy
22	Male	mid 30s	Returnee	India	Nutrition
23	Male	late 30s	Current migrant	Belgium	Computer science
24	Male	70s	Returnee	India	Engineering
25	Male	late 30s	Never migrated	India	Biology/Genetics
26	Male	late 30s	Never migrated	India	Earth science
27	Male	70s	Never migrated	India	Chemistry
28	Male	60s	Returnee	India	Earth science
29	Male	late 30s	Current Migrant	Canada	Medicine
30	Male	early 30s	Current migrant	UK	Engineering
31	Male	50s	Current migrant	Ireland	SSH
32	Male	early 30s	Current migrant	UK	Physics
33	Male	mid 30s	Current migrant	Germany	Mathematics
34	Female	late 30s	Current migrant	Canada	Physics
35	Female	mid 40s	Current migrant	UK	SSH
36	Female	early 30s	Returnee	India	Engineering
37	Female	late 30s	Current migrant	US	Biotechnology
38	Female	early 50s	Current migrant	US	Mathematics
39	Male	late 20s	Never migrated	India	Medicine
40	Male	early 50s	Current migrant	US	Engineering

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