

Will They Return?

The willingness of potential faculty to return to India and
the key factors affecting their decisions

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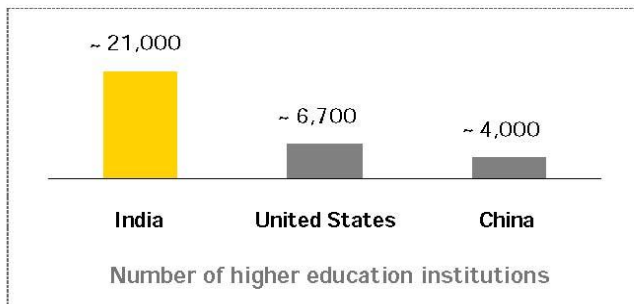
Executive Summary

India needs to recruit at least one million new faculty members for its college and universities if it is to meet the government's ambitious target to offer a higher education (HE) place to 20% of all young people by 2020. The number of PhDs being produced by the current Indian HE system falls far short of meeting this need. The most promising way to fill this gap is to recruit back many of the over 100,000 Indians who are studying in the US each year to obtain a graduate degree and the many others who are studying in other nations or who have completed their degrees and begun academic careers abroad. The results of this new survey of nearly 1,000 Indians who are currently undertaking, or have completed, graduate study in the US suggest that a great opportunity exists to attract this group back to India: only 8% of the sample strongly prefer to remain in the US, with the remainder either planning to return to India (preferably after some work experience abroad) or undecided. The survey also identifies some key factors that must be addressed to increase the likelihood that individuals will return for academic careers in India: removing red tape, reducing perceived corruption, and expanding research opportunities for faculty.

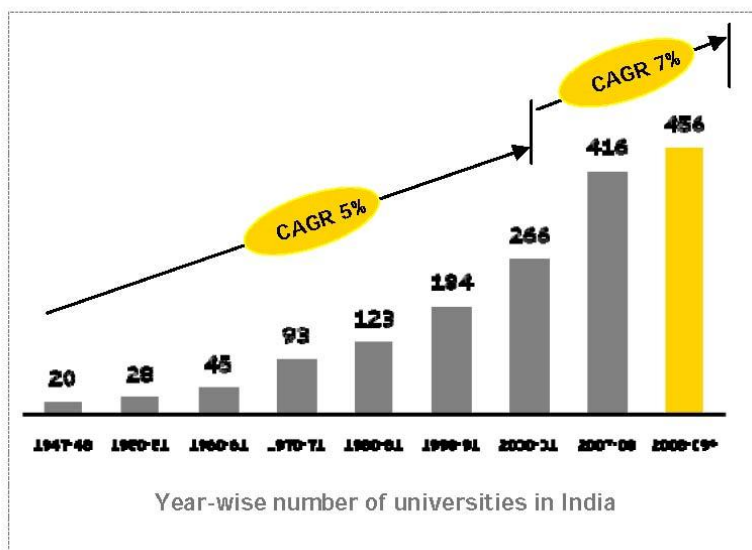
I. Introduction: The Talent Challenge

The Indian Government has set very ambitious targets for enhancing both the number and quality of places available in HE. India already has the largest number of college and universities in the world and the government has plans to more than double HE capacity in the next decade. To reach the goal of providing HE opportunities for 20% of Indian young people (40 million/year) by 2020, the government would need to add roughly 800 universities to the 504 operating in 2009-10 and expand the number of colleges from roughly 26,000 to 61,000, as the following figures from a recent FICCI report on Indian HE demonstrate.(1)

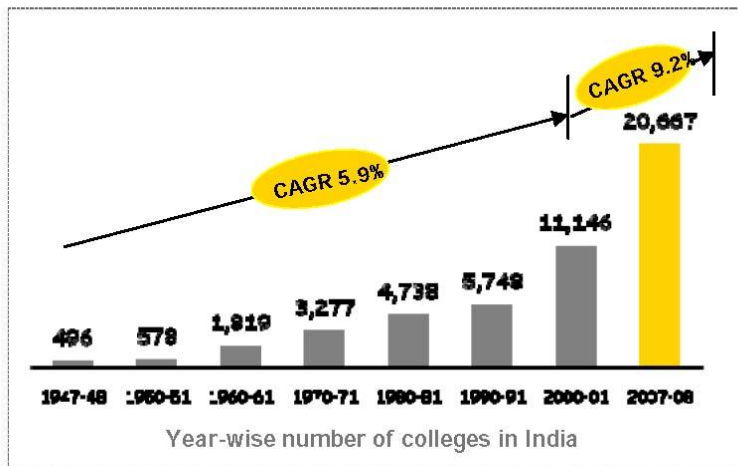
India has the largest number of higher education institutions in the world



There has been a significant growth in the number of universities in the last decade

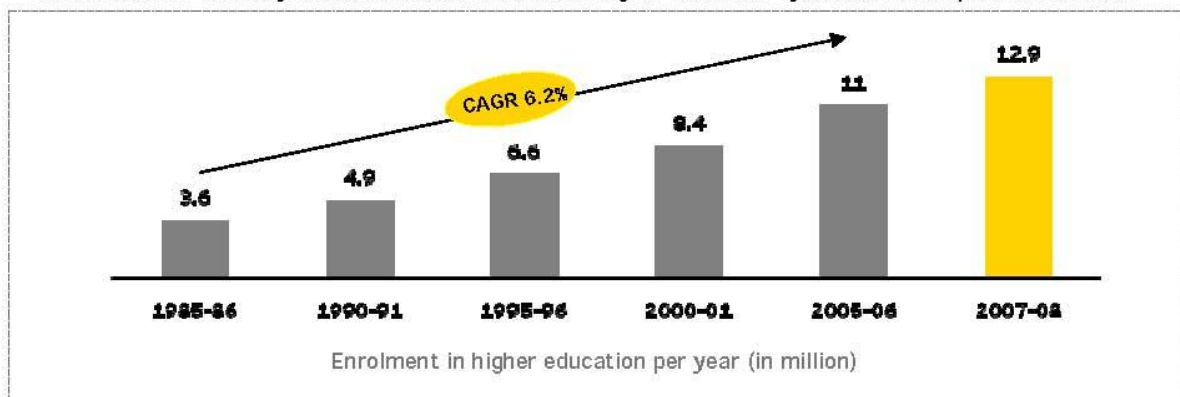


India has more than 20,000 colleges, with almost 10,000 colleges being set up in the current decade



Sources: EY- EDGE 2009; Private enterprise in Indian higher education; UGC: Annual Report 2005-06; MHRD: Annual Report 2007-08; UNESCO: Global Education Digest 2009; U.S. Department of Education: Postsecondary Institutions in the United States Fall 2007; American Council on Education: Higher Education in China 2008; * 2005-06

There has been a steady increase in enrolment in the higher education system over the past two decades

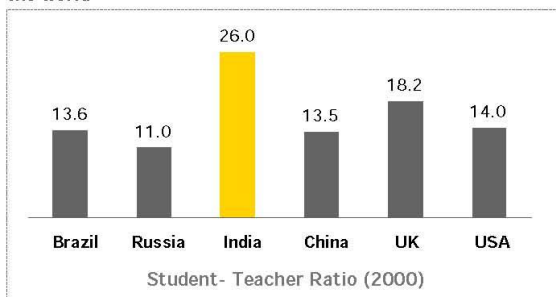


Sources: EY- EDGE 2009; Private enterprise in Indian higher education; UGC: Annual Report 2005-06; EY-EDGE 2008: Globalising Higher Education in India *2005-06

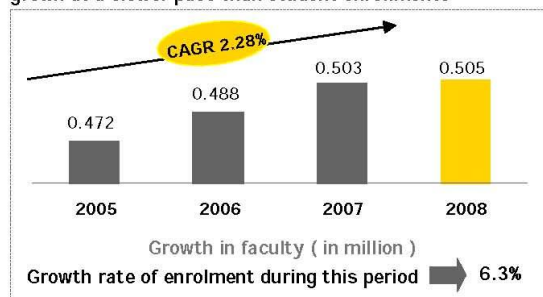
Perhaps the biggest constraint on being able to meet these ambitious growth targets while improving, rather than diminishing, quality is the availability of a sufficient supply of well-qualified faculty members with advanced degrees. India already has one of the worst faculty-to-student ratios of any nation: at 26:1, it is roughly twice the ratio of China. And the number of faculty has been growing at less than half the rate of student numbers. Faculty shortages at universities and colleges are alarming and growing, as roughly half of faculty positions are going unfilled. If India is simply to maintain its current faculty-student ratio it will need to add over a

million net new faculty members to a current base of roughly 600,000. And this does not include replacing those retiring or leaving the HE system.

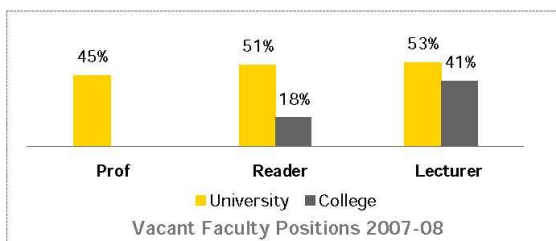
India has one of the highest student-teacher ratio's in the world



Moreover, faculty appointment for higher education has grown at a slower pace than student enrollments



Currently, many faculty positions in higher education institutes are not filled



▶ According to an AICTE report in 2003 there was a shortage of 33,574 PhDs and 42,831 M.Techs in engineering institutions

Sources: UGC: Higher Education in India 2008; ICRIER: Higher Education in India, The Need for Change, Working Paper 180; AICTE: Hand Book for approval process; ISB: Website; IIT Bombay: website; EY Analysis

This challenge is made all the more difficult by the limits on faculty salaries and the accompanying high turnover rates, as professors leave HE for more lucrative opportunities in the private sector.(2) India's HE salaries are difficult to assess in comparative perspective. On the one hand, relative to the average domestic per capita GDP, India's faculty ranked highest among the countries in the sample, and faculty at universities often receive major non-monetary benefits, such as on-campus housing. On the other hand, at an average of \$1,547/month in 2005-06 (ranging from \$1,151 for entry-level faculty to \$ 2,071 for senior faculty), Indian faculty earn just over half of the international average, and also experience, over the course of their careers, the lowest level of salary progression of faculty in any of the 15 countries surveyed. These are major drawbacks when competing for global talent. To address this issue, the government has recently made significant improvements in the salaries of faculty and doctoral students in public universities.

India is very far from developing a sufficient supply of PhDs or Master's graduates interested in becoming academics who could educate the growing number of students the government is seeking. The number of PhD students has failed to keep pace with the growth in overall student numbers – PhD students accounted for 0.7% of all students in 1985, falling to 0.5% by 2000 and then rebounding to 0.64% by 2005. If this ratio were maintained, that would suggest

that roughly 100,000 of the 13.6 million students in India in 2010 were in PhD programs. If the average student takes three years to complete their studies, there is no attrition, and all of these doctoral students chose to pursue academic careers (all assumptions that are likely far too optimistic), this would suggest there are roughly 33,000 PhD graduates ready to enter faculty positions. At this rate of PhD production, it would take 30 years to meet the projected need for faculty growth, by which time many of the existing faculty will have retired or left the system.

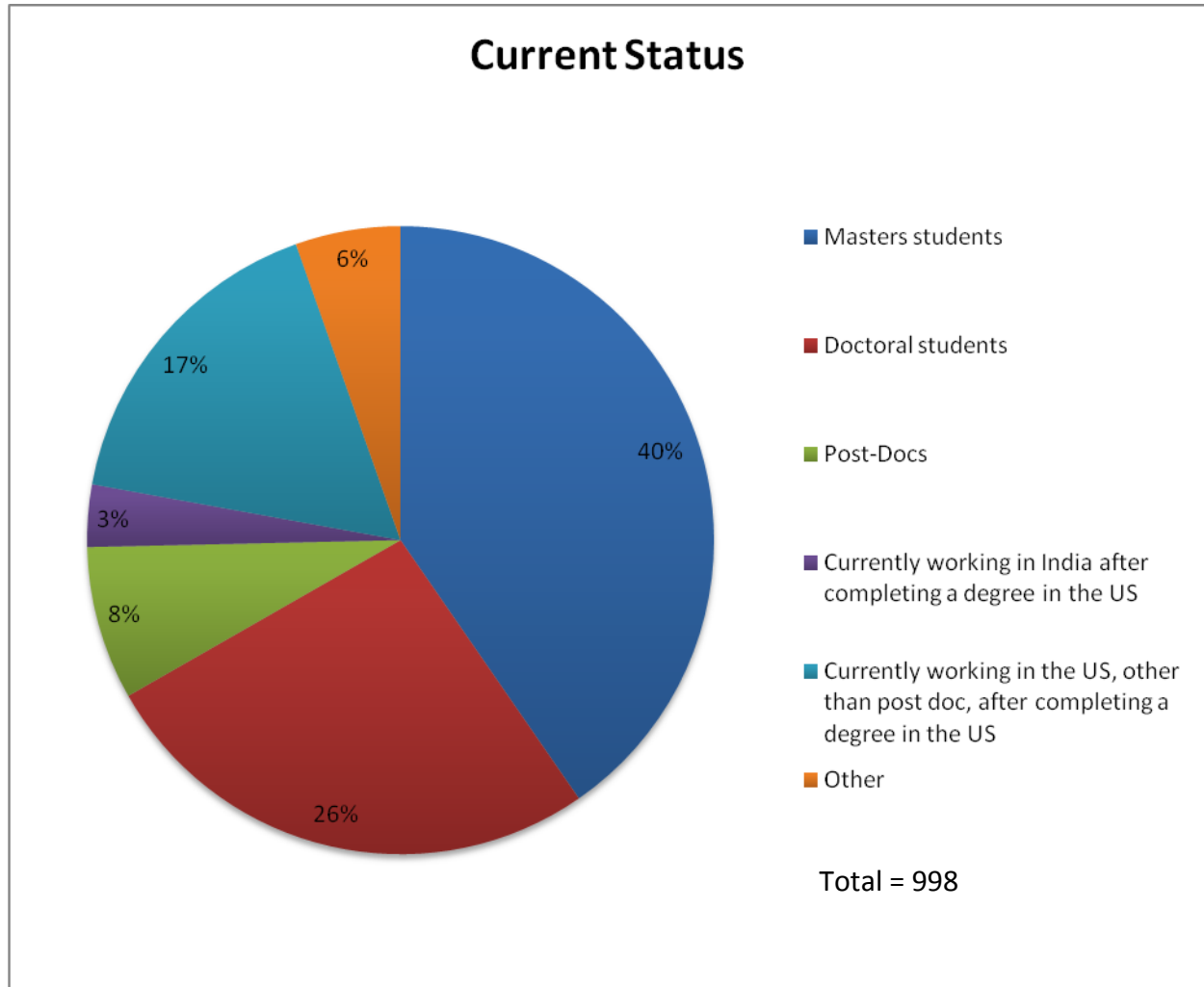
Thus, if India is to meet this pressing need for new faculty, it is vital that it be able to attract back some of the thousands of Indian students who left the country over the last several decades to obtain graduate degrees abroad. This study provides data from a new survey of approximately 1,000 of these potential future faculty members to explore their willingness to return to India and the key factors affecting their decisions.

II. The Survey and Sample

We designed a survey to try to understand why Indian students had traveled abroad for their studies and what key factors – e.g. career, quality of life, and desire to give back to their country of origin – would affect their wish to return. The survey instrument was piloted with current students and graduates, and the questions modified based on their feedback. A web-based survey was posted online from November 1, 2010 to January 17, 2011. We sent e-mail invitations to approximately 2,500 individuals in Indian student and alumni organizations at US public and private research universities, using a snowball method that encouraged them to share the survey in their personal networks. Approximately one thousand (998) current or recent Indian students completed the survey.

Two-thirds of those surveyed are current graduate students -- 40% Master's and 26% PhD -- with another 8% completing a post-doc. Another 17% had entered the US workforce after completing their degrees, while 3% had returned to India. Nearly three-quarters of the sample is male (73%). The vast majority (85%) are under the age of 30 -- 52% are 20-25, 33% are 26-30, with another 10% 31-35. Additional demographic details on the sample (e.g. Indian state of origin, marital status) can be found in the Appendix.

Figure II.1



The current degree/working status of respondents differs significantly from one field of study to another (see Table II.1). Natural science is a field dominated by PhDs and Post-docs (79%) as is medicine and health (56%). Half the engineering and over half the professional degree (business, law) respondents are pursuing a Master's in the US.

Table II.1
Field of Study by Current Degree or Working Status

	Master's	PhDs / Postdocs	Working India/US	Total*
Natural Science	6%	79%	11%	98
Engineering	50%	24%	23%	478
Social Science	23%	60%	9%	35
Humanities	11%	33%	33%	9
Business, Law	63%	8%	25%	52
Health/Medicine	21%	56%	13%	48
Multiple Fields	27%	52%	18%	62
Average*	40%	35%	20%	858

*Includes other

III. Why They Left India to Study?

Before exploring the willingness of Indian graduates to return to India for careers, it is useful to understand what prompted them to seek their degrees abroad. A combination of factors – high-quality teaching, cutting-edge research, professionalism and post-graduation options – were all deemed to be very important in attracting young people to study in the US. High-quality teaching was the single most important factor for half of the respondents, but a number of factors were rated as “important” or “most important” by roughly four-fifths of all those taking the survey. A surprisingly low percentage (8%) reported that the desire to find a job and settle in the US after graduation was the most important factor in their decision to study abroad.

There were relatively minor differences between the sexes, with women significantly more likely to cite high-quality teaching and family reasons as important reasons for studying in the US (see Table III.2). Family reasons for studying abroad were also more important for older respondents, although this must be treated with caution since this was the smallest part of our sample; individuals over 36 were more than twice as likely to cite family as the youngest respondents. In contrast, those under 26 placed the highest weight on high-quality teaching, while those who were 36-40 placed the strongest emphasis on access to cutting-edge research.

Cutting-edge research, better options after graduation, and a desire to emigrate to the US varied significantly by field of study (Table III.7). Those pursuing a natural science degree found cutting-edge research most important (62%), while business and law students rated better options after graduation (43%) and desire to emigrate to the US (12%) as more important than students in other fields.

Table III.1: Reasons to pursue US higher education

	most important	important and most important
High-quality teaching	50%	83%
Cutting-edge research	43%	79%
Professionalism and work ethic	43%	81%
Better options after graduation	39%	80%
Desire to find a job and emigrate to the US	8%	18%
Family reasons	6%	16%

Table III.2: Reasons to pursue US higher education, by gender

	men	women
High-quality teaching	47% (81%)	58% (88%)
Cutting-edge research	46% (81%)	40% (78%)
Professionalism and work ethic	43% (82%)	44% (81%)
Better options after graduation	39% (81%)	36% (75%)
Family reasons	4% (14%)	11% (23%)
Desire to find a job and emigrate to the US	8% (19%)	5% (15%)

Table III.3: Important + most important reasons to pursue US higher education, by age group

	20 - 25	26 - 30	31 - 35	36 - 40	> 41	Average
High-quality teaching	86%	82%	78%	77%	71%	83%
Professionalism and work ethic	80%	84%	80%	91%	67%	81%
Better options after graduation	82%	74%	82%	77%	64%	80%
Cutting-edge research	81%	79%	84%	91%	60%	79%
Desire to find a job and emigrate to the US	18%	15%	19%	29%	43%	18%
Family reasons	15%	14%	22%	32%	46%	16%
Total number of respondents*	442	280	90	22	14	848

Table III.4: Most important reasons to pursue US higher education, by age group

	20 - 25	26 - 30	31 - 35	36 - 40	> 41	Average
High-quality teaching	52%	48%	43%	55%	57%	50%
Cutting-edge research	41%	47%	53%	43%	40%	43%
Professionalism and work ethic	41%	45%	45%	55%	40%	43%
Better options after graduation	37%	37%	44%	32%	36%	39%
Family reasons	5%	6%	8%	11%	23%	8%
Desire to find a job and emigrate to the US	7%	6%	9%	10%	21%	6%
Total number of respondents*	442	280	90	22	14	848

Survey respondents showed substantial variation based on their level of education and career stage in their prime reasons for studying in the US. All groups placed a high value on professionalism and work ethic. PhDs and Post-docs placed the greatest stress on access to cutting-edge research, while Master's students were nearly three times as likely as PhDs to indicate that a "desire to find a job and emigrate to the US" was one of their prime motivations for studying abroad – a likely source of future disappointment, since it is more difficult for Master's students to obtain a work permit in the US. High-quality teaching was most important for those who'd already returned to work in India, while, not

surprisingly, those who were working in the US placed greater weight on “better career options after graduation” and the “desire to find a job and emigrate to the US.”

Table III.5: Important + most important reasons to pursue US higher education, by current status

	Master's	PhDs	Post-docs	Working India	Working US	Other	Average
High-quality teaching	84%	79%	71%	97%	90%	81%	83%
Professionalism and work ethic	79%	82%	89%	78%	85%	80%	81%
Better options after graduation	85%	72%	74%	72%	88%	71%	80%
Cutting-edge research	72%	94%	87%	72%	75%	71%	79%
Desire to find a job and emigrate to the US	19%	7%	21%	19%	26%	34%	18%
Family reasons	19%	10%	24%	19%	13%	29%	16%
Total number of respondents*	400	258	73	32	166	52	981

Table III.6: Most important reasons to pursue US higher education, by current status

	Master's	PhDs	Post-docs	Working India	Working US	Other	Average
High-quality teaching	54%	45%	41%	69%	51%	50%	50%
Cutting-edge research	34%	64%	60%	38%	30%	33%	43%
Professionalism and work ethic	39%	48%	45%	47%	45%	39%	43%
Better options after graduation	41%	34%	33%	28%	46%	35%	39%
Desire to find a job and emigrate to the US	8%	4%	11%	6%	11%	12%	8%
Family reasons	6%	4%	7%	6%	4%	15%	6%
Total number of respondents*	400	258	73	32	166	52	981

*provided for answers for high-quality teaching, total number varies from 967 to 982

Table III.7: Most important reasons to pursue US higher education, by field of study




	Natural Science	Engineering	Social Science	Humanities	Business, Law	Health/Medicine	Average
High-quality teaching	47%	50%	34%	78%	54%	49%	50%
Cutting-edge research	62%	43%	49%	44%	8%	48%	44%
Professionalism and work ethic	57%	40%	43%	33%	46%	43%	43%
Better options after graduation	34%	39%	43%	44%	43%	28%	38%
Desire to find a job and emigrate to the US	0%	9%	6%	11%	12%	2%	7%
Family reasons	4%	5%	12%	0%	12%	12%	5%
Total number of respondents*	96	475	35	9	52	45	848

*provided for answers for high-quality teaching, total number varies from 843 to 849, omitted multiple fields and other

To try to retain some the more than \$4 billion that Indian students are now spending on education abroad, and to increase domestic capacity to offer high-quality HE to a greater number of Indian students, the government has proposed reforms to allow foreign universities to offer degrees in India. The IITs have also petitioned the HRD Ministry to allow them to hire permanent foreign faculty to help fill the estimated 40% shortfall in qualified professors needed to achieve the ambitious growth targets they have been set. With these reforms in mind, we asked respondents whether they would have preferred to study in India if they could have done so with US faculty: 21% indicated they would, while 35% preferred to go to the US, with the highest percentage choosing “maybe” (Table III.8). There were no significant differences based on age, gender, marital status, or type of degree being pursued in the response to this question.

Table III.8

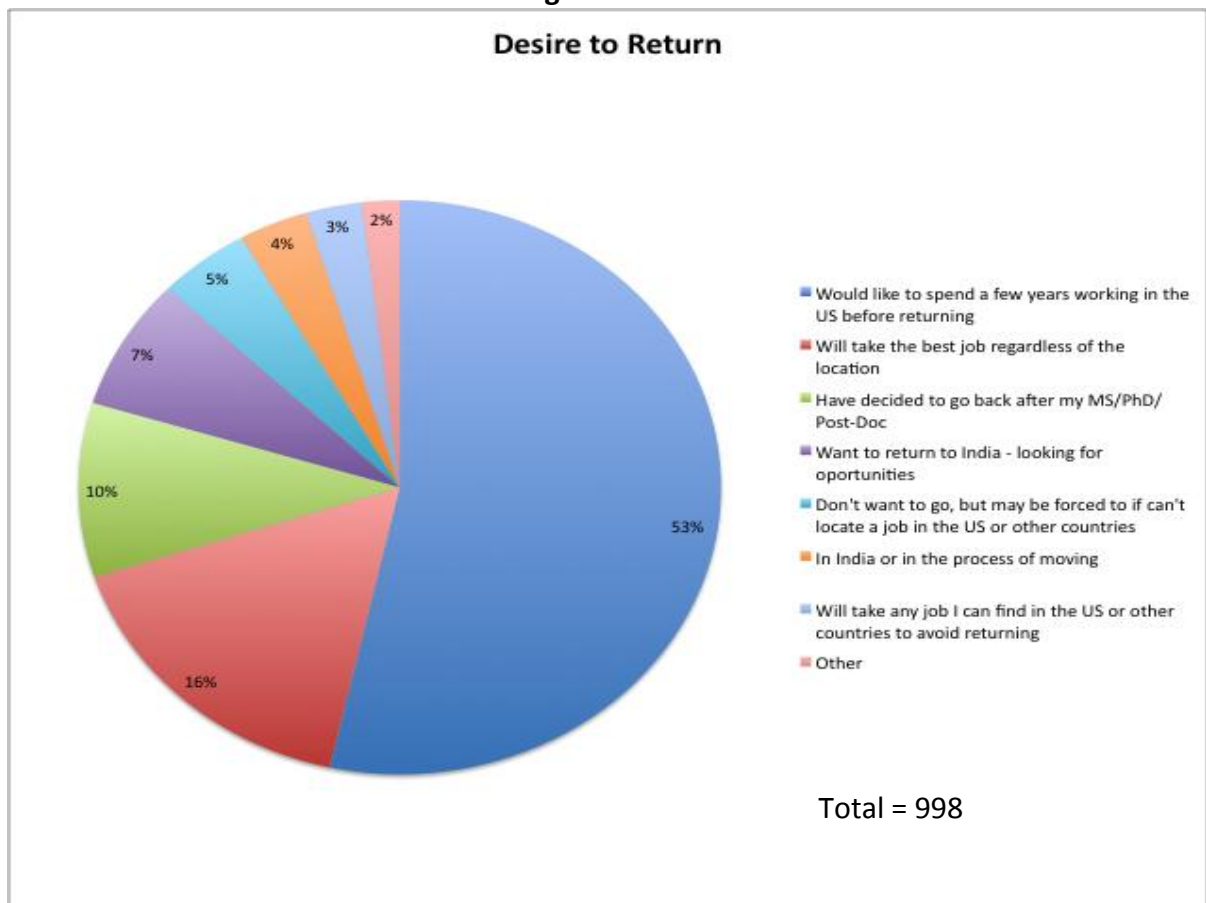
If you had the option to study with US faculty in India, would you have preferred to enroll in India?

Answer	Bar	Response	%
Yes		180	21%
Maybe		374	44%
No		301	35%
Total		855	

IV. Desire to Return to India

The most striking finding from the study, and encouraging news for Indian policymakers, is that the vast majority of current graduate students and of those who've already completed their studies indicate an openness to returning to work in India (see Figure IV.1). Nearly three-quarters of respondents (74%) plan to return to India eventually or had already done so, with most (53% of whole sample) preferring to get a few years of work experience in the US prior to returning. In contrast, only 8% of respondents said either that they preferred not to return; with half of these indicating they'd take any job they could to avoid returning. Another 16% were looking for the best job in whatever location they could find it.

Figure IV.1



Not surprisingly, as individuals progress in their studies and careers, they clarify their preferences regarding where they wish to work. Over four out of five Master's students are undecided where they would like to work, or keen to spend some time in the US before returning to India, compared with 67% of PhD students and only 48% of post-docs (see Figure IV.2). In contrast, post-docs, most of whom are actively looking for their next position, are both the most likely to declare firmly that they don't want to return to India (10%) and also more likely than any group (other than those who've already returned to India) to say they are actively looking to return (42%). The survey response suggests that only a small percentage of US graduates who returned to work in India would have preferred to remain in the US.

A similar pattern holds based on respondents' age, with 25-and-under the most undecided, while those 30 and over have developed significantly more set preferences about the desire to return or avoid returning if at all possible (see Figure IV.3). Individuals who are single are less likely to want to return to India than those who are or have been married. Neither the number of children an individual has nor the number of relatives they have in the US had a significant effect on the desire to return.

Individuals' willingness to return differs significantly by their field of study (Table IV.1). Over a third (36%) of both natural science and medicine/health fields indicated that they would return or have already returned compared to 21% on average. Engineers (77%) and professional degree students (business, law) (86%) were the most likely to be undecided.

Figure IV.2
Desire to Return by Degree Status

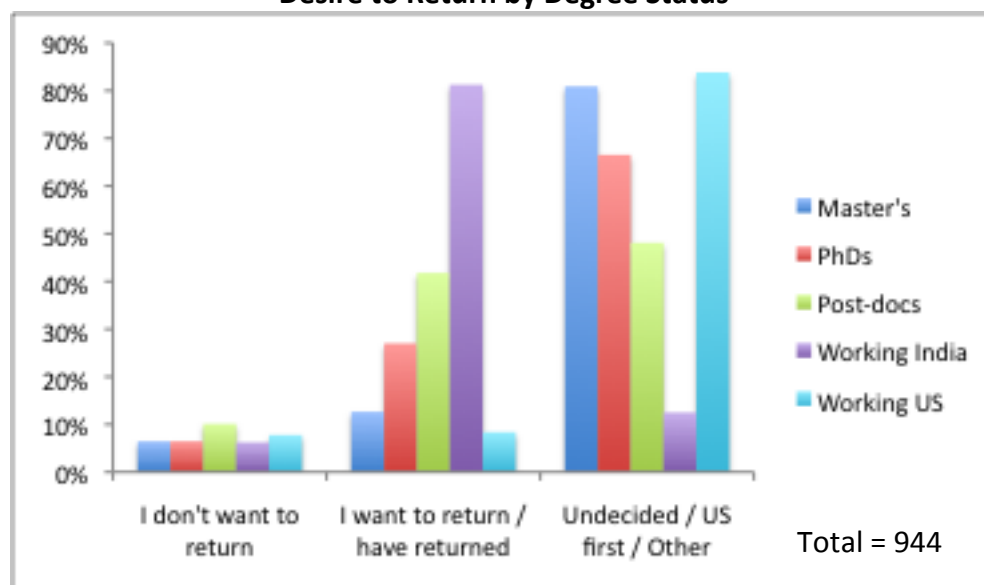


Figure IV.3
Desire to Return, By Age

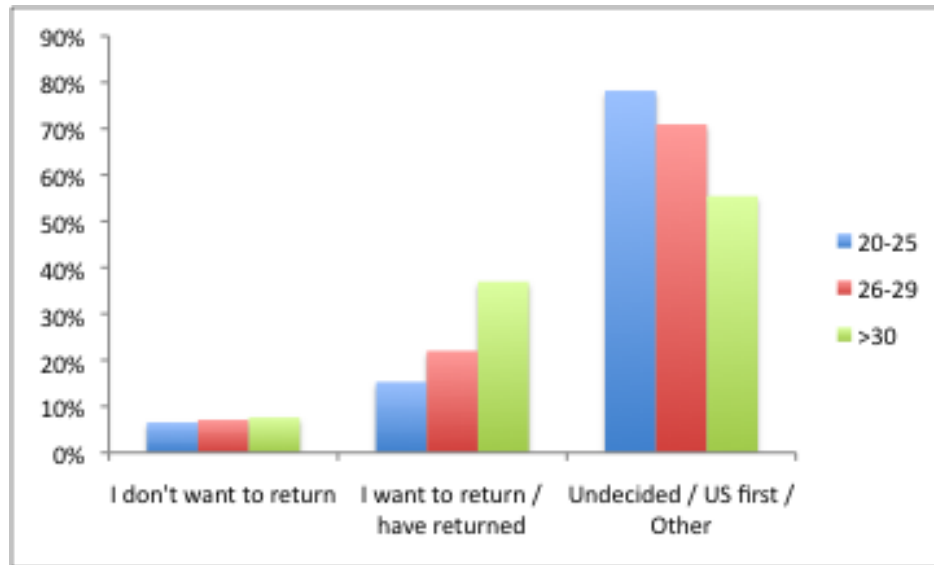


Table IV.1
Desire to Return, By Field of Study

	I don't want to return	I want to return / have returned	Undecided / US first / Other	Total
Natural Science	7%	36%	57%	95
Engineering	7%	16%	77%	474
Social Science	12%	26%	62%	34
Humanities	11%	33%	56%	9
Business, Law	6%	8%	86%	51
Health/Medicine	9%	36%	55%	47
Multiple Fields	7%	33%	61%	61
Average*	8%	21%	72%	843

*includes other field (72)

What types of jobs in India are most attractive?

Graduates are most interested in returning to India for jobs in the private sector, either to work for corporations or to start their own companies (see Table IV.2). Figure IV.4 shows the distribution of responses, with the solid line indicating the average response, and the shaded bar representing the middle half of the distribution (from the 25th to the 75th percentile). Three-quarters or more of respondents are interested in corporate jobs or entrepreneurship

opportunities in India, and HE opportunities that offer the chance to do research are also very attractive. In contrast, teaching-only positions, which historically have constituted most of India's HE sector, are not as attractive to the majority of respondents. More worryingly from the perspective of strengthening the Indian state, far fewer individuals are interested in returning to India to pursue careers in the public sector or politics.

The results differ substantially based on the respondent's level of qualifications. While master's students are attracted to private-sector jobs in India, the vast majority of PhDs and Post Docs are most interested in pursuing positions that combine teaching and research in an Indian university (79% and 81% respectively) or research-only careers (64% and 76%).

Table IV.2
Interest in types of careers in India

Careers	Mean	Variance
Corporate/Private sector	3.75	1.47
Entrepreneurship	3.53	1.81
Teaching and Research	3.37	2.14
Research only (e.g National labs)	3.32	2.07
Non-profits	2.91	1.56
Public sector	2.82	1.71
Teaching-only in Higher Education	2.65	2
Politics	1.92	1.62
Scale: 1-Not at all to 5-Most interested		
Sample: 853 to 898		

Figure IV.4: Distribution of Respondents by Career Types

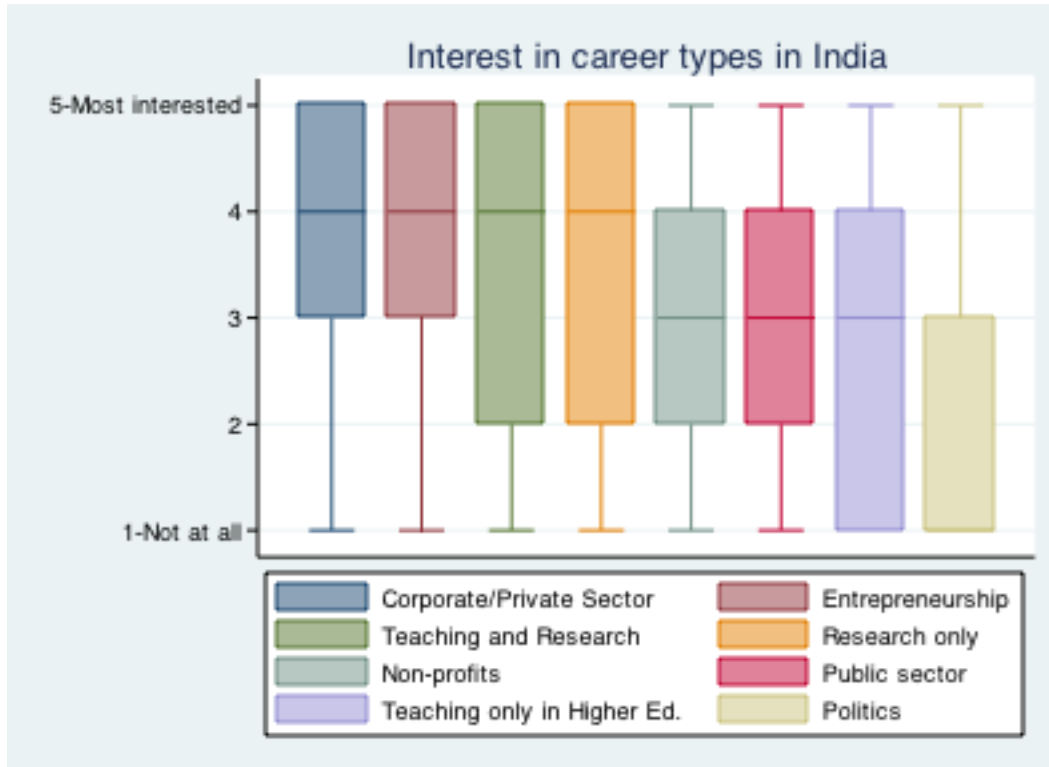
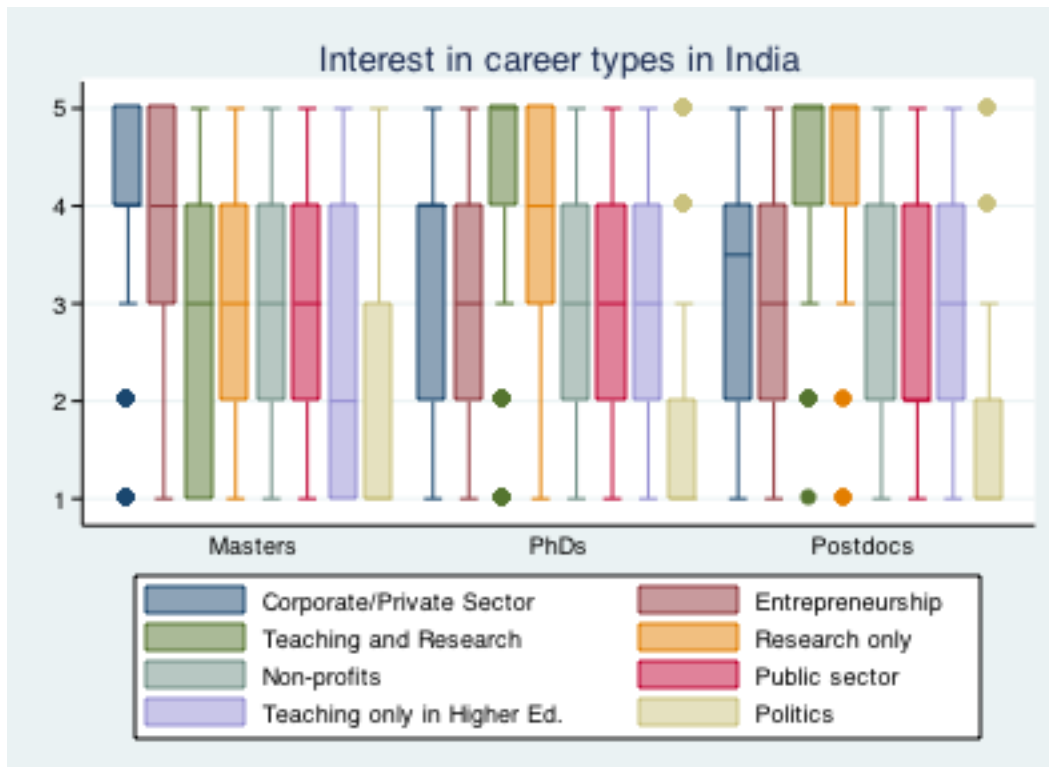


Figure IV.5 Career Interests by Educational Stage



Scale: 1-5 (1=not at all to 5=most interested)

The other encouraging finding for Indian policymakers is that 84% of those who have decided to return to India are potentially interested in HE careers. When asked which specific types of institutions they would find most attractive, not surprisingly the IIT/IIMs/and NITs topped the list, along with the National Institutes (Table IV.3). Centrally funded universities were attractive to about half of all those interested in HE careers, while under one-quarter were interested in careers in state universities, deemed universities, or private colleges.

Table IV.3

The most attractive institutions in India for those interested in an academic career	
Institutions	Attractive/Top Choice %
IITs/IIMs/NITs	73%
National Institutes (e.g IISERs/IISc ,TIFR etc)	72%
Centrally funded Universities	51%
State funded Universities	24%
Deemed Universities	20%
Private Colleges	15%
Number of respondents: 730 to 755 depending on institution type	

V. Key Factors Affecting the Decision to Return

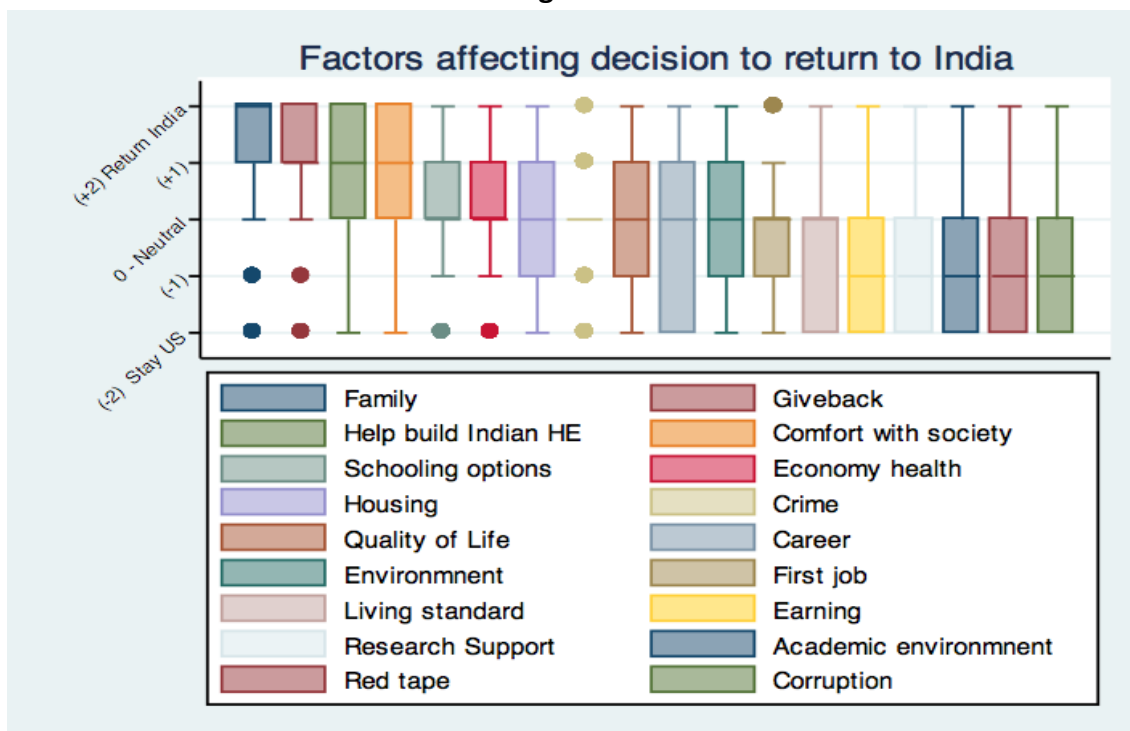
Given the very high percentage of Indian nationals open to potentially returning to work in India, the next key question for policymakers and researchers is: what are the key factors affecting individuals' decisions on whether or not to return to India? Our survey included a wide range of both work-related and other factors that could impact this decision, and asked respondents to rate each on a 5-point scale, from strong reason to remain in the US to strong reason to return to India (see Table V.1). The most significant reasons individuals cited for wanting to return to India are family and a desire to give back to the motherland, while corruption, red tape, and the academic work environment were the strongest deterrents to returning, and instead remaining in the US.

Table V.1
Factors Influencing Decision to Locate in the US vs. India

Factor	(-2): Strong reason to remain in the US		0 - Neutral		(+2): Strong reason to return to India		Mean	Variance
		(-1)		(+1)		India		
Family reasons	35	32	145	176	475		4.19	1.2
Giving back to the motherland	20	8	166	262	406		4.19	0.87
Help build Indian higher education system	15	28	257	328	228		3.85	0.83
Comfort with society/culture	112	82	199	220	238		3.46	1.79
Schooling options for my children	77	82	338	191	161		3.33	1.34
Overall health of the economy	54	91	347	250	113		3.32	1.08
Housing	142	115	348	164	85		2.92	1.39
Crime/threats of terrorism	85	94	590	64	19		2.81	0.64
Quality of life	199	180	222	146	115		2.77	1.78
Career growth opportunities	251	141	181	137	138		2.73	2.09
Environment/physical surroundings	181	227	220	147	79		2.67	1.55
Chance to secure a good first job	189	142	351	105	60		2.65	1.35
Standard of living	249	178	259	115	54		2.47	1.48
Earning potential	251	239	217	92	53		2.36	1.41
Support for research/Opportunities to publish	252	212	277	72	42		2.35	1.28
Academic work environment	293	245	212	70	28		2.17	1.2
Amount of Red Tape	300	187	292	42	18		2.15	1.08
Corruption	396	235	188	15	20		1.86	0.95

The box diagram (Figure V.1) provides additional detail on the distribution of responses. Four items (family, giving back, helping to build India's HE system, and comfort with the society and culture) are clear reasons for most to return to India. In contrast, five items (earning, research support, academic environment, red tape, and corruption) are clear reasons to remain in the US. For all the other items, the median is a neutral response, but the spread is different.

Figure V.1



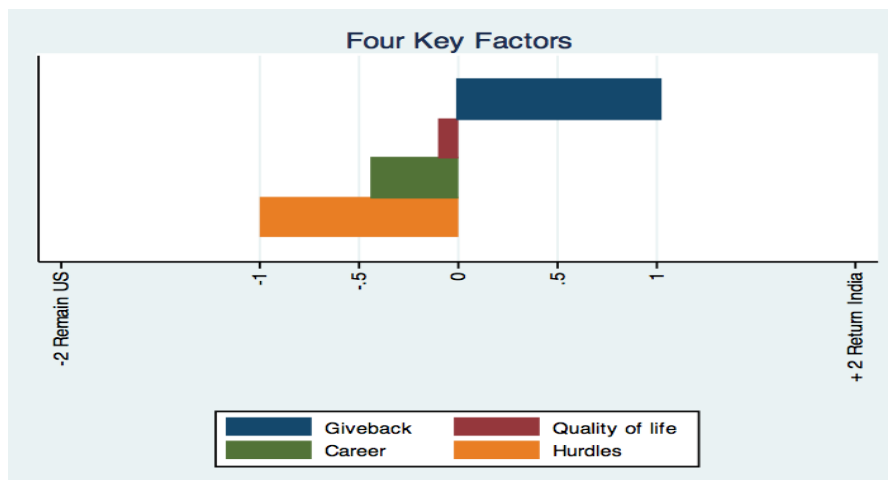
There are clear commonalities among the responses to many of these specific questions. We conducted a factor analysis to determine the underlying structure of individuals' preferences on what is most or least important to them when deciding where to live and work (see Appendix for full results). This analysis yielded natural grouping of 11 of the 18 items into four factors, eliminating the other seven that overlapped among 2 or more of the factors. These factors are shown in Table V.2.

Table V.2
Four Key Factors Affecting Decision to Return

Factor 1: Quality of life
Standard of living
Housing
Quality of life
Comfort with society/culture
Factor 2: Career
Career growth opportunities
Support for research/Opportunities to publish
Chance to secure a good first job
Factor 3: Hurdles
Amount of Red Tape
Corruption
Factor 4: Giveback
Giving back to the motherland
Help build Indian higher education system

Just one of these four factors – the desire to give back – is strongly associated with a desire to return to India (see Figure V.2). Quality of life and career factors are more mixed, but tend to be seen as more positive in the US, while “red tape” and “corruption” are what we label the major “hurdles” that need to be removed or at least addressed if institutions are to succeed in attracting the most able academics back to India. All four of these factors are significant predictors of whether an individual wishes to return to India: quality of life, career, and hurdles are associated with less willingness to return, while giving back, not surprisingly, is positively related to desire to return to India.

Figure V.2



There are significant variations in how individuals at different educational and career stages view these four factors (see Figure V.3). Hurdles in India are a stronger reason to remain in the US for PhDs (31%), post-docs (36%), and those currently working in the US (35%), while post-docs (52%) are the ones most eager to give back to the motherland. The comparison of different age groups suggests that older graduates see the opportunity to give back as a greater reason to go to India, but also view the hurdles of corruption and red tape as bigger deterrents for returning (see Figure V.4). Nearly twice as many women as men (22% vs. 12%) indicated career variables were a strong reason to remain in the US. The hurdles – red tape and corruption – are a greater deterrent for those with children -- four-fifths of those who had children saw this as a strong reason to stay in the US compared to two-thirds of those who didn't or may have children in the future.

We also asked respondents to write in the most important factors that would lead them to go back to India. Confirming the results of the items on the -2 to +2 scale, nearly three-quarters indicated that family and giving back to the motherland were the key reasons they would return to India, while nearly half were keen to help build India's HE system.

Figure V.3

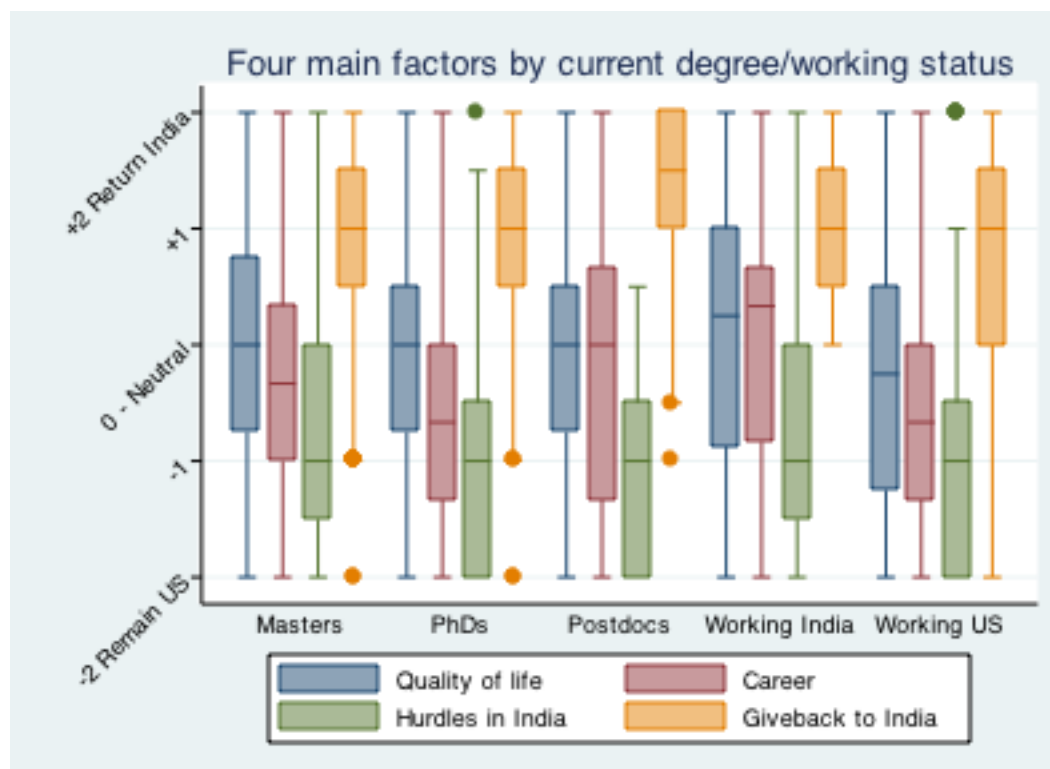


Figure V.4

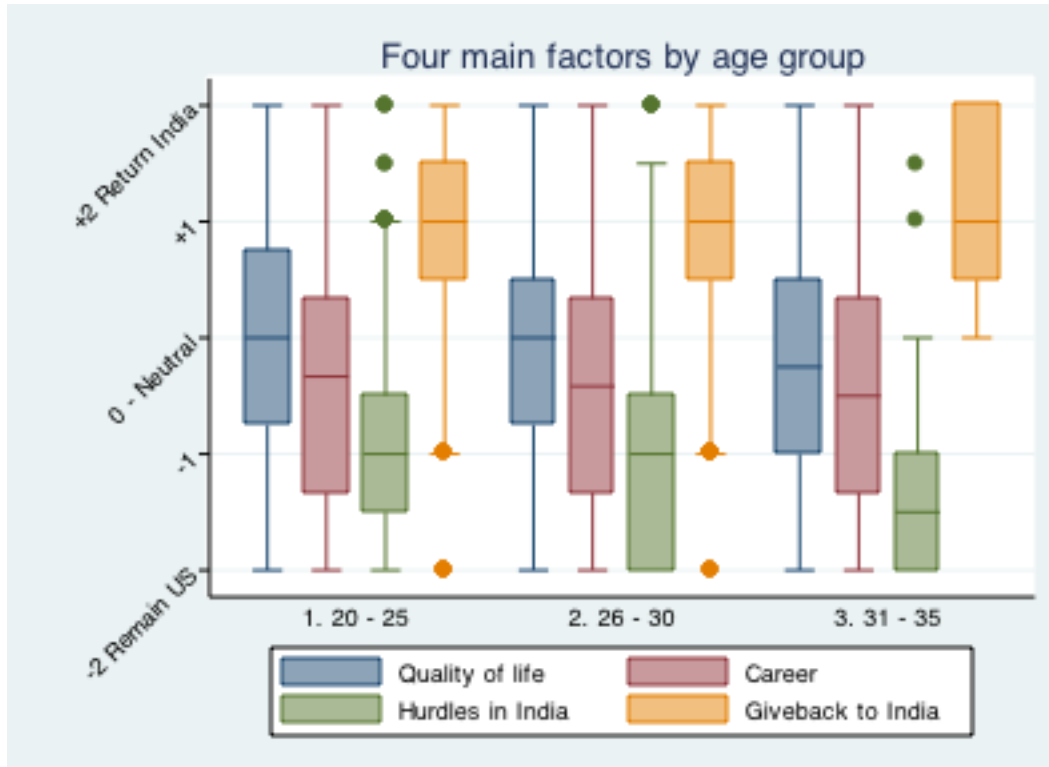
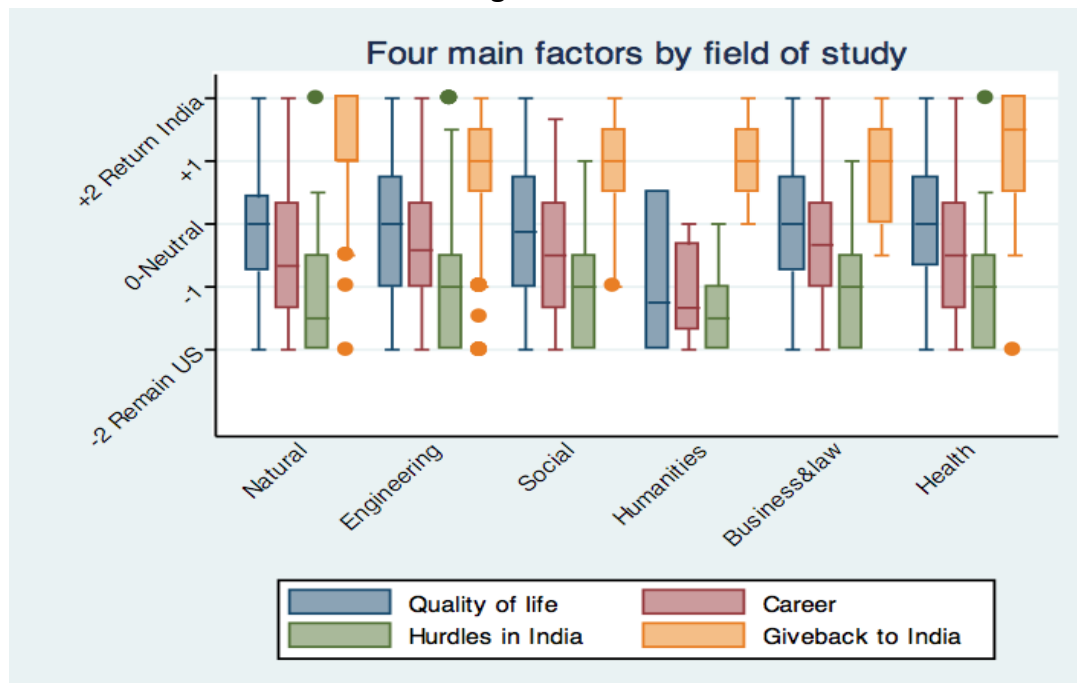


Figure V.5 shows the desire to give back appears to be stronger for those in natural sciences and in health/medicine fields.

Figure V.5



The survey reveals that “Support for research/Opportunities to publish” is a strong reason to remain in the US for 39% and 34% of the PhDs and post-docs respectively, compared to 26% of master’s students (see Table V.3). However post-docs are also more willing to return to India for research opportunities (26% compared to only 13% for master’s, 12% for PhDs), suggesting that they will go wherever it takes to find a good research position, in contrast with those already working, who are more neutral on this factor.

Table V.3

Importance of “Support for research/Opportunities to publish” by current degree/working status

Status	-2 Strong reason to remain in the US	0 - Neutral			+2 Strong reason to return to India	Total
Master's	26%	26%	34%	9%	5%	344
PhDs	39%	28%	21%	8%	4%	228
Post-docs	34%	21%	19%	15%	12%	68
Working India	11%	18%	46%	14%	11%	28
Working US	23%	21%	51%	3%	3%	146
Other	34%	24%	29%	7%	5%	41
Total	29%	25%	32%	8%	5%	855

Regression results

As a final step to determining which of these many different elements are most salient in understanding the decision graduates make on whether to return to India, we conducted a four-step regression, looking first at demographic variables, degree field, educational stage or working status, and finally at the impact of the four main environmental factors on individuals’ perspective on the US and India. Taken together, our model can explain one-third (34%) of the differences among individuals in their willingness to return to India (see the Appendix for the full results).

Once all variables are entered into the model, we find that current degree status has the most explanatory power (18%), with PhDs and post-docs significantly more likely to plan to return than master’s students. The field of study was a significant but modest predictor of the desire to return (2%). Career opportunities, quality of life, and giving back all strongly impacted the desire to return, accounting for 12% of the predictive value of returning to India, while the hurdles were not significant. Women were also found to be more likely than men to wish to return to India when controlling for all other factors.

VI. Communicating with Indian Graduates Abroad

If the Indian government, colleges, and universities wish to recruit Indians who have studied abroad to return for faculty posts in India, it is vital that they understand the most effective ways to communicate with this group. The good news is that most Indians based in the US are fairly well informed about developments in India's education system, with close to 75% indicating that they follow changes underway in India "very closely" to "somewhat closely." Their two primary means of obtaining information are personal networks (50%) and newspapers (45%), with less reliance on list-serves and blogs (see Table VI.1). This suggests that, in addition to newspaper ads, using a snowball approach that leverages faculty and alumni connections through social networking sites like Facebook and Linked In may yield the best results.

Table VI.1

Frequency of use of sources of information on opportunities and developments in Indian HE

#	Question	Never	Rarely	Sometimes	Frequently	Most frequent	Responses	Mean
1	Newspapers	111	153	277	280	162	983	3.23
2	List-serves	365	286	178	62	8	899	1.96
3	Blogs	260	236	303	101	25	925	2.35
4	Personal networks	101	98	283	322	163	967	3.36
5	Specific websites	159	210	267	194	112	942	2.88

VII. Input for Reform of Indian HE

The core finding from this research is that Indian policymakers and HE leaders have a huge opportunity to meet their pressing need for high-quality faculty: the vast majority of Indians who have studied abroad are interested in the idea of returning to India, either right after they graduate, or after gaining a few years of valuable work experience. Our results also suggest a number of steps the Indian colleges and universities and the leaders who oversee them can take if they wish to attract this talent back to India:

- **Teach for India HE** – There is ample evidence that individuals who have the misfortune to enter the job market during deep recessions suffer negative consequences for the rest of their careers. This is magnified today in US HE, where individuals who have invested five or more years of their lives to complete PhDs and post-docs are finding themselves competing with many graduates from the prior two years who weren't able

to locate jobs. And the supply of openings, while improved this year, is still limited by the budget cuts occurring in public universities across the US. This presents an opportunity to create a new Teach for India HE fellowship program to provide two- to three-year teaching post-docs or assistant professor positions for recent US PhD graduates. This could be branded like the successful Teach for America program for school teachers that has been successfully replicated in India, and is now as prestigious and competitive to get into as top jobs on Wall Street. The hope would be that many young faculty would stay on after the fellowships in Indian academic posts. It could be open to all new graduates in subjects where Indian universities have faculty shortages. While it could be open to all nationalities, it might be particularly appealing to the Indian natives we surveyed who may have been planning to return at some point in their lives. Our survey results suggest that to make the program attractive, marketing of it should stress several key messages: giving back to India, helping to build its HE capacity, and having the opportunity to do research. The latter can be achieved by keeping teaching and administrative loads fairly low, allowing the fellows to publish their research in leading journals, which would in turn help raise the status of Indian universities.

- **Develop Leaders for Indian HE** – The combination of tenure and eliminating the mandatory retirement age has left US universities with an excess supply of senior faculty who have served as academic leaders. A select group of these individuals might be enticed by an early-retirement program that provides a one-time bonus to serve as deans and department chairs in Indian universities. Ideally, US academic leaders would be paired initially with their Indian peers to help adapt to the very different institutional context. This could provide the rapidly expanding Indian universities with a badly needed influx of leadership talent and help diffuse new approaches to HE governance, since the existing model is greatly in need of reform. As with the Teach for India program, it might be particularly attractive to the older Indian academics we surveyed who have already had successful careers in the US and are now ready to give back to their homeland. This program would have the knock-on benefit of freeing up more openings for new graduates in the US.
- **Improve India's Academic Talent Pipeline** – While attracting new and more senior US professors to India could help meet the short-term needs of institution building, the long-term solution entails building India's own pool of doctoral students and academic leaders. This could be bolstered by expanding the already successful Humphrey and Fulbright fellowship programs to foster a two-way flow of academics at different stages in their careers between the US and other countries, including India. These could be supplemented with shorter programs for HE leadership that would develop cohorts of

change agents by exposing high-potential Indian faculty or newly appointed administrators to leading practices in the governance of HE.

- **Enhance the quality and transparency of HE governance** – The most significant hurdles that need to be removed, or at least lowered, to make returning to India more appealing to graduates in the US are “red tape” and “corruption.” The key to doing this are reforms that would give universities greater autonomy and independence, either from the government or private corporations that have funded much of the recent growth in Indian HE. What is needed are strong institutions – public and private, non-profit – like the leading US or UK research universities, with independent boards and charters that ensure strong governance. In return for this freedom to operate, the institutions should be held accountable for producing high-quality education and research.
- **Provide research opportunities for as many faculty as possible** – Our results clearly indicate that potential candidates find academic positions that offer research opportunities far more attractive than those at teaching-only institutions. This is particularly true for the most qualified candidates – PhDs and post-docs. The new innovation-focused universities that the government is building should be magnets to attract top academic talent from abroad. It isn’t economically feasible for most Indian universities and colleges to be research-intensive institutions, but even small moves in this direction could go a long way in enhancing faculty recruitment – i.e. providing small grants for faculty research with students, offering sabbaticals and lower teaching loads for the most productive research faculty, increasing competitive, peer-reviewed government research grants, and fostering the partnerships that are already growing between government research labs and universities.
- **Raise the quality of state universities and private colleges** – Most Indian faculty and students are found in state universities and private colleges. State universities account for over 55% of the public HE sector, and private colleges now outnumber public institutions. Employment in these institutions is seen as far less appealing than in national universities and institutes. This is likely related to the two factors mentioned above: less academic freedom and support for research. While creating new institutions with more transparent governance and independence is vital, India will not be able to meet the demand for high-quality education places without also reforming state universities and private colleges to ensure that they deliver better conditions for both faculty and students.
- **Provide government-sponsored graduate fellowships** – A number of governments, like Singapore’s, fund some of their brightest students to study abroad with the

commitment to return to their home country after graduation. We asked respondents whether they would find such a program attractive if they were required to return to a faculty position in India: one third said “yes” and another 32% said “maybe”.

- **Improve the staffing process in Indian universities** – if the Indian HE system is going to recruit new faculty on the scale required and fill the large number of positions that are currently unfilled, it is vital that they modernize and streamline the staffing and selection process. Currently, of the public universities, only the IITs, IIMs and the newly established national institutes are able to run their own search process in a way that resembles the leading research universities around the world. For most federal and state universities, the inclusion of government nominees and outside visitors in the search process slows recruiting significantly and may introduce political criteria into the selection decision. While it is important to include legal safeguards and monitoring of the composition of faculty that ensures a fair and open search process, India’s universities need to be given greater autonomy to conduct more efficient searches that focus on academic merit as the key hiring criterion.

In addition to these policy options that we developed based on the survey results, we thought it would be instructive to share a representative selection of the write-in comments from survey respondents when asked to suggest “any changes that the Indian Government could make that would make it more attractive for you to return to India.”

Respondents’ Policy Suggestions

- *Stop brain drain, ease out the tough competition and adopt the universal GMAT or GRE structure for higher studies. This helps in competing with global aspiring professionals. Also, it will open the gates to partner Indian Universities with top world universities to establish true global leadership programs. Students don't care about political agendas. They all need a pay back from their education.*
- *Practical education and more transparency. Adding more space for innovation and motivation. More spending on research and cutting corruption.*
- *This is a general one- India needs to get its basics right first, by which I mean provide easy and better access to basic amenities that would make a place livable. This extends to academia where one shouldn't feel like getting some basic requirement met is like scaling Mt. Everest! No walls! No excessive hierarchical structures! Each individual really needs to feel the responsibility of wanting to improve. This can be achieved only by listening to ideas. Most importantly create an academic culture where even elementary school children have open access to high profile scientific labs, free libraries etc.*

- *Try to invest more in infrastructure of every single college. I have seen many colleges in Maharashtra, who do not even have computers in college and offering engineering curriculum.*
- *Suppress the hierarchy system from the scientific institutions, and allow young people to lead new projects, with the support from the senior and experienced people*
- *Improve the leadership at the higher education institutions. Cut the red tape and corruption. Increase funding in infrastructure development, like building labs, getting hi-tech equipment. Increase collaboration.*
- *More independence at work places, less corruption, less bossism, appreciation of one's achievement, etc. If the government wants the Indians in higher education in US would return to India, the Govt. has to make these changes for which the Indians are in the US. If they get a good environment at the workplace and could take their own decisions with less interference, then most of the Indians would love to go back to India.*
- *1)Encourage much more interaction between industry and academia, 2)Nurture conditions to encourage students to pursue projects in national/private labs instead of seeking to do them abroad, and 3)Encourage start-ups not just from IIT/IIM but from state universities as well.*
- *Stop focusing on just the IITs and IIMs ... Try getting corporate funding into other universities as well.*
- *Less Red tape, nepotism and political interference in the running of Universities and Institutes. Also, Indian Universities should move from being "Ivory Towers" to "Land Grant Universities" like the US. What I mean by that is the posh IIT campus should let some knowledge and money flow to the slums around the campus boundary.*
- *I believe it could take some pointers from the system in the US where there is emphasis on research/tenure track (which helps the system). There should be well-defined structure in the system. Provide more job opportunities for graduates will also help in retaining bright students which in turn helps research to grow in India. Bottom-line is that measures should be taken to improve conditions to do quality research in India.*
- *Government should start more fundamental research institutes like IISc. Also, government should make sure that there is industry and academia interaction at various levels. This would help prepare students better in terms of career options. The concept of standard pay for institutions associated should be removed and performance based pay should be introduced which will definitely attract Indians working outside.*
- *Reward innovation-oriented research faculty*

Future Research

At a time when the Indian government is seeking to enhance both the quality and capacity of its HE system, this study has provided a valuable snapshot of the willingness of Indians who are pursuing advanced degrees in the US to return to faculty positions in India and the key factors affecting their decisions. Our goal going forward is to build on and strengthen this research in a number of ways:

- create an annual survey with a refined set of questions that would allow us to track responses over time;
- identify a specified sample for the survey, so we can have more confidence that our respondents are representative of the broader population of graduates;
- expand the survey to include the growing number of undergraduates studying abroad;
- add comparative dimensions, by looking at Indian students in the US vs. those in other main countries that attract Indian graduates (UK, Canada, and Australia), and by comparing Indian students with those from other large Asian nations (China, South Korea);
- gather data on the experiences of faculty who have come to India with advanced degrees from other nations (comparing native Indians with other countries' citizens);
- analyze the potential impact on the US if a high percentage of Indian PhD students return to India.

References

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<http://education.usibc.com/wp-content/uploads/2010/09/EY-FICCI-report09-Making-Indian-Higher-Education-Future-Ready.pdf> (accessed on 27th February 2011)
- (2) Laura Rumbley, Ivan Pacheco, and Philip G. Altbach. *International Comparison of Academic Salaries: An Exploratory Study*. Chestnut Hill, MA: Boston College Center for International Higher Education, 2008.

Appendix

Respondents by home Indian state/territory

Our respondents came from all over India. In our survey, the states with the greatest concentration of students in the US are: Maharashtra, Andhra Pradesh, and Tamil Nadu.

Map of respondents' origin



Further demographic information on the survey reveals that a vast majority of the respondents are single (79%) and three-quarters don't have children but plan to in the future. A third do not have any relatives in the US and another 46% have between 1-5 relatives in the US. The average time that respondents have lived abroad (either in the US or another country than India) is 4.3 years.

Rotated factor loadings (pattern matrix) and unique variances

We conduct an exploratory factor analysis to find the commonalities among the reasons to return to India or remain in the US. After several iterations, and removing items that loaded below .4 or that cross-loaded across items, we arrived at the following rotated matrix using principal factor analysis, with four factors.

	Quality of Life	Career	Hurdles	Giveback	Uniqueness
Career		.55			.57
Red tape			.60		.64
Help India HE				.56	.67
Research		.48			.66
First Job		.56			.59
Give Back				.64	.60
Quality of Life	.68				.36
Comfort w/ society	.50				.62
Corruption			.57		.59
Living standard	.84				.29
Housing	.75				.44

(blanks represent $\text{abs}(\text{loading}) < .3$)

The reliabilities for the four new scores are acceptable and the following: career (.68), quality of life (.83), hurdles (.63) and giveback (.61).

Regression Results

We conducted a stepwise regression with four blocks of variables: demographic variables, field of study, current degree/working status and the four factors. The dependent variable is the desire to go back to India, which is continuous 0-7 (0 no-way return to 7 already returned).

Results of Four-step Regression on Desire to Return(a)

Variable	Model 1 Demographic	Model 2 Field Study	Model 3 Status	Model 4 Full Model
Male	-0.16 (0.10)	-0.16 (0.10)	-0.2 (0.09) *	-0.26 (0.09) **
26-30	0.12 (0.10)	0.13 (0.11)	-0.03 (0.10)	-0.03 (0.09)
31-35	0.24 (0.18)	0.18 (0.19)	0.07 (0.18)	0.02 (0.17)
>36	0.08 (0.29)	0.01 (0.30)	-0.14 (0.28)	-0.06 (0.26)
Single	-0.05 (0.13)	-0.08 (0.13)	-0.01 (0.12)	0.03 (0.11)
Yrsabroad	0.02 (0.01)	0.01 (0.01)	0 (0.01)	0.02 (0.01)
Relatives	0.07 (0.04)	0.08 (0.04)	0.04 (0.04)	0.03 (0.04)
Natural sc		0.03 (0.15)	-0.02 (0.14)	-0.06 (0.13)
Social sc		-0.06 (0.24)	0 (0.22)	-0.05 (0.21)
Humanities		0.8 (0.46)	0.61 (0.42)	0.71 (0.39)
Business, law		-0.41 (0.19) *	-0.5 (0.17) **	-0.44 (0.16) **
Health/med		0.23 (0.21)	0.16 (0.19)	0.09 (0.18)
Otherfld		-0.26 (0.16)	-0.27 (0.14)	-0.35 (0.13) *
Multifield		0.26 (0.17)	0.13 (0.16)	0.05 (0.15)
Phds			0.18 (0.11)	0.2 (0.10)
Post-docs			0.26 (0.19)	0.18 (0.17)
Working India			2.9 (0.23) ***	2.77 (0.22) ***
Working US			-0.12 (0.13)	0 (0.12)
Other			-0.28 (0.21)	-0.17 (0.20)
Quality Life				0.16 (0.04) ***
Career				0.17 (0.04) ***
Hurdles				-0.01 (0.04)
Giveback				0.31 (0.04) ***
Constant	3 (0.17) ***	3.05 (0.18) ***	3.06 (0.17) ***	0.83 (0.27) **
R Square	0.02	0.04	0.21	0.34
Adjusted R Square	0.01	0.02	0.19	0.32
R Square Change	-	0.02	0.18	0.12
F Change	2.59 *	1.97 *	10.21 ***	16.22 ***

(a) N=803. Unstandardized regression coefficients are shown, with standard errors in parentheses.

* $p < .05$; ** $p < .01$; *** $p < .001$

Descriptive Statistics and Correlations

Variables	Mean	S.D.	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1 Goback_cont	3.07	1.27	0	7																												
2 Goback_gp	.14	.52	-1	1	.89																											
3 Male	.73	.45	0	1	-.06	-.06																										
4 20-25	.52	.50	0	1	-.06	-.07	.06																									
5 26-30	.33	.47	0	1	.02	.01	-.03	-.73																								
6 31-35	.11	.31	0	1	.05	.09	-.02	-.36	-.24																							
7 >36	.05	.21	0	1	.02	.00	-.06	-.23	-.15	-.08																						
8 Single	.79	.41	0	1	-.07	-.06	.10	.46	-.09	-.40	-.28																					
9 Yrsabroad	4.33	5.04	1	76	.04	-.01	-.38	.05	.23	.45	-.38	-.38																				
10 Relatives	1.01	.95	0	3	.07	.04	-.11	.07	-.11	-.02	.11	-.03	.05																			
11 Natural sc	.11	.32	0	1	.03	.09	-.05	.08	.00	.04	.00	-.14	.09	-.05																		
12 Engineering	.56	.50	0	1	-.04	-.08	.30	.32	-.13	-.21	-.18	.22	-.14	.03	-.40																	
13 Social sc	.04	.20	0	1	-.02	.02	-.17	-.12	.04	.04	.12	-.08	.03	-.01	-.07	-.23																
14 Humanities	.01	.10	0	1	.07	.05	-.12	-.08	.00	.04	.14	.00	.06	.02	-.04	-.12	-.02															
15 Business, law	.06	.24	0	1	-.08	-.08	-.08	-.07	.08	-.02	.01	-.05	-.05	-.03	-.09	-.28	-.05	-.03														
16 Health/med	.06	.23	0	1	.07	-.08	-.18	-.13	.03	.11	.07	-.09	.03	.01	-.09	-.27	-.05	-.03	-.06													
17 Otherfld	.09	.28	0	1	-.03	-.04	-.11	-.04	.00	.02	.07	.01	.08	.05	-.11	-.35	-.06	-.03	-.08	-.08												
18 Multifield	.07	.26	0	1	.06	.07	.01	-.08	.01	.08	.07	-.08	.06	-.03	-.10	-.31	-.06	-.03	-.07	-.07	-.09											
19 Master's	.40	.49	0	1	-.10	-.11	.02	.46	-.26	-.25	-.16	.29	-.37	.04	-.25	.22	-.07	-.06	-.12	-.10	.00	-.07										
20 Phds	.26	.44	0	1	.02	.08	.00	-.16	.23	-.08	-.01	.04	.02	-.08	.17	-.14	.11	.02	-.11	.01	-.01	.06	-.49									
21 Postdocs	.08	.27	0	1	.04	.10	-.04	-.29	.02	.35	.14	-.29	.17	-.01	.29	-.23	.00	-.03	-.08	.17	-.03	.06	.00	.00	-.18							
22 Working India	.03	.18	0	1	.38	.22	.01	-.14	.08	.06	.05	-.11	.11	.08	.00	.00	-.05	.06	.06	.00	.01	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	
23 Working US	.17	.37	0	1	-.11	-.12	.05	-.13	.05	.11	.05	-.13	.23	-.01	-.07	.12	-.05	.01	.00	-.06	-.01	-.04	-.37	-.27	-.13	-.08						
24 Other	.05	.23	0	1	-.02	-.03	-.09	.00	-.05	.03	.06	-.04	.12	.03	-.01	-.09	.04	.09	-.01	.07	.07	-.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	
25 Quality Life	3.02	1.08	1	5	.27	.30	.02	.04	.00	-.03	-.05	.02	-.07	.03	.00	.01	.00	-.06	-.02	.02	.01	.00	.07	.02	-.01	.03	-.11	-.02				
26 Career	2.59	1.04	1	5	.26	.27	.08	-.01	.01	.03	-.04	.03	-.06	.00	-.02	-.01	-.01	-.06	.02	-.01	.04	.03	.04	-.05	.05	.10	-.06	-.03	.50			
27 Hurdles	2.16	.94	1	5	.09	.06	.00	.14	-.05	-.11	-.07	.12	-.18	-.06	-.08	.09	-.02	-.04	-.01	-.04	.01	-.02	.14	-.07	-.08	.03	-.04	-.03	.37			.31
28 Giveback	4.21	.83	1	5	.26	.27	.00	.05	-.03	.02	-.10	.00	-.12	-.04	.04	-.02	.00	.00	-.07	.05	.01	.00	.05	.05	.06	-.02	-.13	-.05	.23			.14

N=834 to 998

Correlations are on variables' second line, and shown only for values >.05

