kusuma trust

LSE International Development

Evaluation of Kusuma Excellence Fellowships: Year 2

EXECUTIVE SUMMARY

February 2018

Background

- This report summarizes the second year results of the longitudinal evaluation of the Kusuma Excellence Fellowships (KEF) in Hardoi and in Sambalpur. The KEF supports high-achieving students from poor backgrounds to progress into higher education by providing a stipend and a wide range of non-financial support schemes, such as workshops and career counselling. A cohort analysis was launched for the 2015 intake, following students from their initial application to their grade 11 and subsequently grade 12 outcomes in the second year.

- This evaluation assesses the impact of the fellowship on student attainment, educational trajectories, and on aspirations for their future employment. To estimate the causal effect of the fellowship award, we compare outcomes of applicants around the selection cut-off: on average, a student who just made it above the selection cut-off and therefore received the fellowship is likely to be comparable to a student who just fell short of passing the cut-off and hence did not receive the fellowship.

Impacts on schooling outcomes

- Both program areas are characterized by high rates of grade 12 completion and progression into higher education. 98% of the N=399 applicants surveyed in the latest round completed grade 12. Among those who completed grade 12, 93% applied to continue their education beyond grade 12. While completion and progression rates are slightly higher for fellows, the difference is small and not statistically significant.

- Fellows achieved on average 3.5% points higher overall marks in the grade 12 exam than comparable non-recipients. These gains in academic performance are larger for female recipients (5%) than for male recipients (2.6%). Fellows are 12% points more likely to obtain a distinction (75%+) in the grade 12 Board exam than non-recipients.

- While we find that, following completion of secondary education, fellows are not more likely to apply to more colleges, the survey results suggest that fellowship recipients were more likely to apply to higher fee colleges than non-recipients. On average, fellows applied to colleges that required 23% higher fees relative to the colleges non-recipients applied to. To the extent that higher fees reflect better post-secondary educational institutions, this may reflect a shift towards applying to higher quality institutions. Fellowship recipients also possess more knowledge about alternative funding opportunities and they are more likely to seek out these funding opportunities to cover the higher college fees.

Impacts on values and attitudes

- Overall, and consistent with the evaluation of previous fellowship programmes and cohorts (the Kusuma Shalini Fellowship and the Kusuma Ratna Fellowship Programmes), we find a trend towards changes suggestive of a higher valuation of education on the part of fellows.

- We find that fellows are more likely to positively revise their beliefs about their own ability and perceive higher returns to completing higher education vis-à-vis secondary schooling. The recognition for schooling success also induces students to perceive higher social mobility and exhibit greater life satisfaction and optimism. These effects increase over time, consistent with persistent changes in the students' values and attitudes.

- We also find that female fellows are less likely to perceive marriage as a barrier to higher education. However, the fellowship does not seem to affect the beliefs of male fellows on their female's counterparts ability to continue their education, post-marriage. Female fellows are also more likely to believe that women should delay marriage until they are older.

Conclusions

- Overall, the results suggest that the KEF has had positive impacts on academic performance and it has led to persistent and positive changes in the students' perceptions about their own ability and about the overall value of education. The positive impacts on academic performance are particularly strong for female fellows. Given the high rates of grade 12 completion among fellows and non-fellows, there is little scope for assessing the impact of the KEF on dropout rates from secondary education and progression rates into higher education.

- In face of a 93% progression rate into higher education, the sample sizes are too low to statistically assess the impacts of the fellowship on the entry into the labor market at this stage. Only 14 respondents (3.7%) have entered the labor market; another 14 respondents were looking for employment at the time of the survey. Given the small sample sizes, the major challenge for future rounds of this evaluation is to limit attrition in any potential follow-up survey.

1. Background

In 2015, Kusuma Trust commissioned a longitudinal evaluation of the Kusuma Excellence Fellowship (KEF) in Hardoi and Sambalpur. The fellowship supports high-achieving students from disadvantaged backgrounds to progress into higher education by providing a stipend and a wide range of non-financial support schemes including workshops and career counselling. The cohort analysis is aimed at following the students from their initial application through their education until their graduation into the labour market.

The ongoing evaluation has currently collected data at four points in time: at time of application to the fellowship, post-notification, after grade 11 and the conclusion of grade 12. To streamline the data collection process, the grade 12 survey round focused solely on the students around the admissions cut-off (i.e. those who nearly/just made it into the KEF program in 2015). Table 1 summarizes the timeline of the data collection process. The grey fields show the planned future rounds that will track the progression either into higher education or into the labour market.

Table 1. Timeline of data collection

Programme area	Application	Post notification	Grade 11	Grade 12	Pre-graduation	Graduation
Hardoi	May 2015	Oct/Nov 2015	May 2016 (end of term)	Aug/Sep 2017		
- in absolute no.	407	393	389	236		
Sambalpur	June 2015	Oct/Nov 2015	May 2016 (end of term)	Aug/Sep 2017		
- in absolute no.	413	367	352	163		
Total	820	760	741	399		

As part of the evaluation, we collected comprehensive data on the students' socio-economic background, student attainment, educational trajectories, time-use, and aspirations for their future and employment. We also collected attitudinal data to examine if the fellowship also affected the students' attitudes and values over gender equality and social mobility.

1.1 Methodology

The main challenge in estimating the causal effect of a fellowship is the absence of a control group. Since the KEF is awarded to exceptionally meritorious students, those who receive the fellowship will already differ in substantive ways from those who did not receive the fellowship *at the time of the award.* Table 2 shows the pre-existing differences when the fellowship is awarded between those who were selected and those who were not selected. Fellowship recipients have higher grade 10 marks, reflecting the merit selection rule of KEF. Interestingly, selected students in Hardoi are somewhat wealthier than non-recipients (3548 Rs. in annual salary on average).[1] In Sambalpur, selected students come from poorer households than non-recipients.

Table 2. Grade 10 marks and household income by recipient status (baseline, May-June 2015)

		Grade 10	Income	N
Hardoi	Selected	80.65	37430.77	80
	Rejected	76.14	33882.43	327
	Difference	4.510***	3548.33*	407
Sambalpur	Selected	81.93	46186.05	86
	Rejected	75.53	54000.69	327
	Difference	6.399***	-7814.64*	413
Both areas	Selected	81.31	42021.95	166
	Rejected	75.84	44050.73	654
	Difference	5.47***		820

A simple comparison of outcomes between fellowship recipients and non-recipients will not allow us to disentangle the contribution of the fellowship program to student performance from the initial differences they already had even before the fellowship was awarded. Since selected students were already high performing to start with, they may have performed equally well in the absence of the fellowship. In order to estimate the causal effect of the fellowship, we therefore need to compare the outcomes of students with comparable background characteristics.

[1] This may be driven by the lack of available candidates to implement the merit-cum-need based rule: on average, applicants from households with higher income tend to have higher grade 10 marks.

We do so by using a *regression discontinuity design.* Intuitively, this research design compares outcomes of applicants around the selection cut-off for the fellowship. While a high performing student ranked at the top of the selection list for admission to the fellowship is likely to be very different from a low performing student ranked at the bottom of the selection list, students around the cut-off ought to be very comparable. The only difference is that one student just made it above the (arbitrary) cut-off set by the programme and therefore received the fellowship, while the other student just fell short of passing the cut-off and hence did not receive the fellowship.

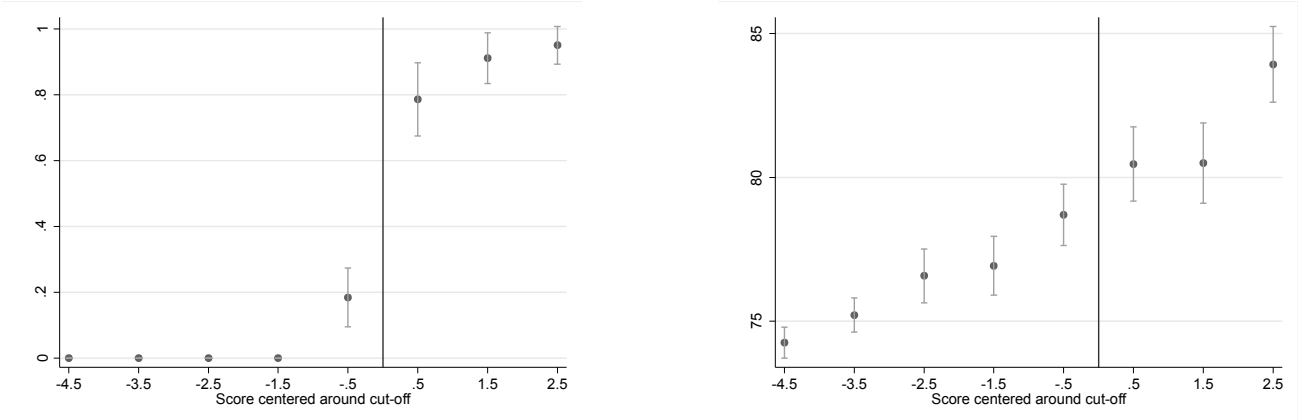
How the regression discontinuity design works – some intuition

Figure 1 illustrates the intuition behind the regression discontinuity design for the combined sample of Hardoi and Sambalpur. The separate graphs for Hardoi and Sambalpur can be found in the interim report that focused on evaluating the identification assumptions of the research design in this context.

The fellowship programme selects students based on merit and need, ranking applicants using an entry score. The entry score is calculated based on the student's grade 10 (SSC) marks, as well as scores from a written test and interview. Figure 1 (a) shows the share of applicants who are selected to receive the fellowship (y-axis) as a function of their entry score (x-axis). The applicants are grouped into bins of scores and their averages are plotted as dots. The solid line at 0 marks the cut-off based on the selection rule. If the selection rule was perfectly enforced, all applicants to the right of the line would receive the fellowship, while all those to the left of the line would not receive it. As the figure shows, there was almost full compliance with the selection rule. Almost no applicants to the left (and hence below) the cut-off received the scholarships. Although few students do not receive the fellowship despite being above the cut-off, the share of applicants who received the fellowship jumps discontinuously at the cut-off.[2]

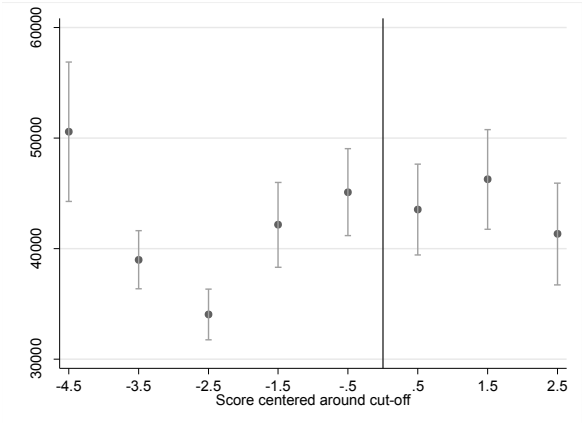
Panels (b), (c) and (d) plot the average grade 10 marks, income and household sizes. Again, the solid line marks the cut-off: those to the left and hence below the line did not make the cut-off, while those above the line, did. Clearly, students with stellar grade 10 marks (e.g. those above 85 to the very right) who received the fellowship will be very different from students who just made the minimum eligibility score (e.g. those at the very left) and did not receive the fellowship. The key to the *regression discontinuity design*, however, is to compare students *just* around the cut-off demarcated using the vertical line. As Panel (b) shows, the relationship between marks and the entry scores is smooth around the cut-off. The confidence intervals are overlapping, suggesting that there is statistically no discontinuity as observed in Panel (a). This implies that students very close to the cut-off are likely to be comparable to each other. Indeed, as Panels (c) and (d) confirm, students around the cut-off have, on average, not only similar grade 10 marks but also similar levels of household income and household sizes. This, in turn, implies that any discontinuous change in outcome variables at the cut-off mirroring the discontinuity in Figure 1 (a) can be causally attributed to the fellowship.

Figure 1. Probability of selection and entry score (a), grade 10 marks (b), income (c) and household size (d)

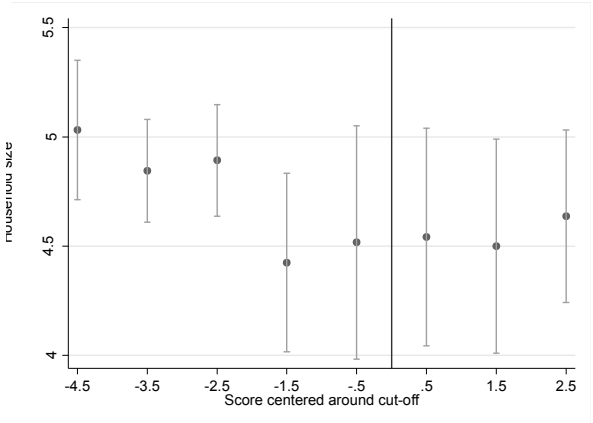


(a) Probability of selection **(b) Grade 10 marks**

[2] Non-compliance can arise if the selection committee based the final decision on other criteria and characteristics that are not captured in the quantitative selection scores. This slight non-compliance poses no threat to our research design. We find no evidence for strategic manipulation around the cut-off and use a fuzzy regression discontinuity design to correct for the imperfect compliance.



(c) Annual household income



(d) Household size

Limitations

Given the small programme sizes (N=80 fellows in Hardoi, N=86 in Sambalpur), a major challenge has been to maintain a sufficient sample size in order to obtain precise estimates of the program effects. This is a particularly important issue in the RDD setting, which relies on observations close to the cut-off in order to estimate the causal effect of the program. Although substantial effort was made to limit attrition by tracking down applicants and incentivizing responses, Table 1 shows that sample sizes have been nonetheless declining over time.

In order to estimate program effects for the latest round (N=399), we thus rely on a more restrictive methodology that trades off potential bias with power. Since the latest round is based on covering all observations around the cut-off, we estimate the program effects without the linear forcing function but instead controlling for baseline (grade 10) marks, household income and gender (See Appendix for the detailed specification).

2. Program effects

2.1. Impact on schooling outcomes

Progression and drop-out

A central objective of KEF is to enable students to progress into higher education. Completing higher secondary school (grade 11-12) is a critical step towards achieving this goal. We therefore first examine the completion rates for grade 12. This set of results is based on the latest September 2017 survey. Given the small sample sizes, the analysis is based on the cut-off specification which compares students just above and below the cut-off while holding constant baseline grade 10 marks, (log) income at time of application and gender.

Table 3 (Column 1) reports the completion rates by programme area and fellowship status. Nearly all applicants successfully completed the higher secondary certificate (HSC). Among the N=399 surveyed after the end of grade 12 instruction, only 9 students reported not having obtained an HSC, thus yielding a grade 12 completion rate of 97.7% in the sample. The main reason for not completing the HSC (7 out of 9) is illness, followed by the preference to work (1 out of 9). The completion rate is slightly higher in Hardoi than Sambalpur (97.8% vs. 97.5%). It is also higher for girls than boys (98.9% vs. 96.6%), but given the small numbers of unsuccessful candidates it is not possible to ascertain whether these differences are systematic or due to chance.

Similarly, while the completion rates are on average 3.6% points higher for fellows, the number of unsuccessful candidates is too low to allow for a reliable statistical assessment of whether the fellowship has helped reduce the dropout rate from secondary education. The high overall grade 12 completion rates, however, suggest that any potential impacts of the fellowship program do not primarily fall on student retention in higher secondary school.

Table 3. Grade 12: Completion rates by programme area (Hardoi/Sambalpur) and recipient status

		Conditional on completion		
	(1)	(2)	(3)	(4)
	Grade 12 completion	Grade 12 marks	Planning to continue education	Planned further years of education
Mean:	0.977	66.907	0.933	5.239
-Hardoi	0.975	69.89	0.965	5.331
-Sambalpur	0.978	64.04	0.886	5.092
Overall effect	0.036*	3.515***	0.072**	0.227
	(0.020)	(1.103)	(0.033)	(0.259)
Effect for boys	0.041	2.582**	0.063	0.539*
	(0.031)	(1.300)	(0.045)	(0.326)
Effect for girls	0.030	4.972***	0.084*	-0.152
	(0.020)	(1.380)	(0.048)	(0.399)
Sample	September 2017 – Hardoi & Sambalpur			
N	399	513	390	364

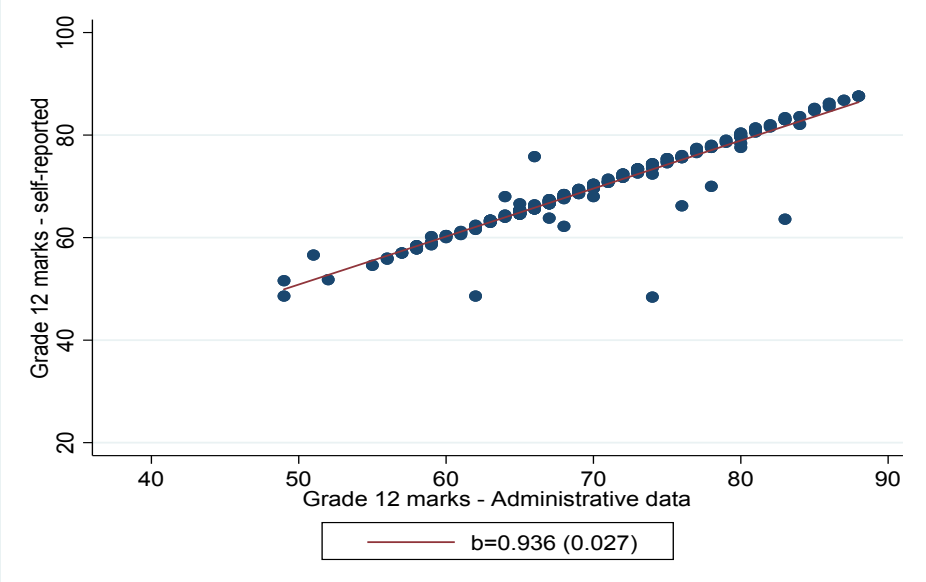
Robust standard errors. *<0.1, **<0.05, ***<0.01

Academic performance

One limitation to studying the academic performance so far has been the reliance on self-reported marks. We therefore collected grade 12 exam scores from administrative sources in Hardoi and linked those to students in our sample. The use of administrative data also allows us to obtain a more complete picture, thus increasing the coverage rate for the grade 12 exam scores to 87% in Hardoi and the overall sample size to N=513.

As Figure 2 shows by comparing the official grade 12 exam scores with the self-reported scores, there is little misreporting. Most observations lie on the 45 degree line (i.e. self-reported marks equal marks from administrative data), with very few cases where the reported marks deviate from the marks recorded in the administrative data. We find no evidence that the extent of misreporting differs by fellows and non-recipients. Moreover, the majority of the instances of misreporting corresponded to an under-reporting of marks. This validation exercise is reassuring as it suggests that the data quality of the self-reported marks is high.

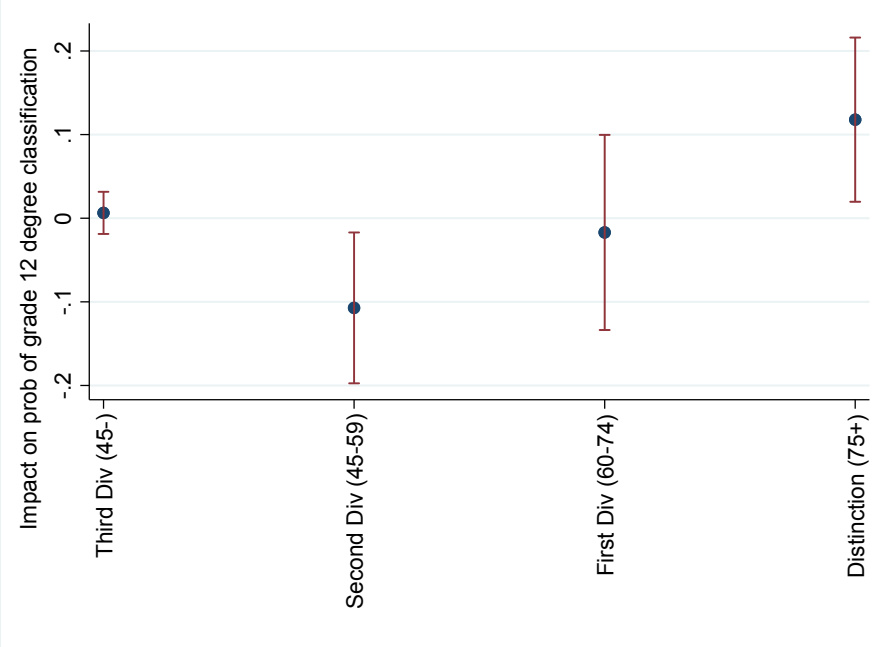
Figure 2. Comparing self-reported marks (y-axis) vs. marks based on administrative data (x-axis)



Among the students who successfully completed grade 12, we find a positive impact of the fellowship program on grade 12 overall marks (Table 3, Column 2). While the average grade 12 marks is 67% for the full sample, students who were just above the cut-off and thus received the fellowship, performed on average 3.5% points higher. Breaking up the sample, the gains are larger for girls than boys (5% vs. 2.6%). Compared to the average grade 12 marks, this represents a sizeable increase by 5.2%. This positive and statistically significant impact on grade 12 marks contrasts with the modest increase of 1.4% points previously found in Hardoi for grade 11 exams. One explanation for the difference is that grade 12 exams are centralized and higher stakes than the grade 11 exams, where progression is often automatic.

While these gains in average marks appear small in terms of magnitude, Figure 3 shows that these changes translate into differences in the final classification. Fellowship recipients are 11% more likely to finish grade 12 with a distinction (75%+). This improvement is driven by the lower probability of obtaining a second division score (45-59%) and the slightly (though statistically insignificant) decline in the probability of obtaining a first division score (60-74%).

Figure 3. Impact of the fellowship on grade 12 classification



Progression into higher education

While the fellowship does not appear to have a substantial impact on the (already high) grade 12 completion rate, we find a larger impact on the recipients' decision to progress into higher education after finishing grade 12.

Although nearly all students – 93.3% in the sample – plan to study beyond grade 12, fellowship recipients are 7.2% points more likely to express this intention relative to comparable non-recipients (Table 3, Column 3). This impact is slightly larger for girls vs. boys (8.4% vs. 6.3%). For those who decide to continue to pursue higher education, however, we do not find any treatment effects on the total duration of the intended post-grade 12 study (Table 3, Column 4). The fellowship's impact on human capital accumulation thus appears to be concentrated on the extensive margin.

Impacts on time use

We also collected information about the time use on a typical day. (Table 4). We find no marked differences of the fellowship programme on time-use. In contrast to our previous evaluations which detected increases in hours studied and decreases in household chores, we find now find no systematic differences in time-use. This could be attributed to the timing of the surveys: in contrast to previous rounds, students surveyed in the latest round have already completed grade 12. The only dimension where we detect a statistically significant effect is on the sources of information used. We find that fellowship recipients are less likely to rely on TV and radio to seek out information (Column 6), but instead spend more time on the internet (Column 7). The magnitude of the difference corresponds to about 20 minutes per day.

Table 4. Time-use by recipient status August/September 2017

	(1) Going to and attending school	(2) Work at home (chores)	(3) Work outside the house	(4) Home work / study outside school	(5) Reading book / newspaper / magazine
Mean:	5	2.06	0.74	4.55	0.93
Overall effect	-0.051 (0.309)	-0.150 (0.164)	-0.162 (0.126)	0.117 (0.261)	0.095 (0.079)
Sample	September 2017 – Hardoi & Sambalpur				
N	368	368	368	368	368
	(6) Watching TV / listening to radio	(7) Internet use	(8) Playing with friends	(9) Attending religious gatherings	(10) Sleep / rest
Mean:	1.081	0.769	0.907	0.247	7.108
Overall effect	-0.322*** (0.121)	0.358*** (0.110)	-0.032 (0.119)	0.002 (0.065)	0.052 (0.143)
Sample	September 2017 – Hardoi & Sambalpur				
N	368	368	368	368	368

Standard errors are clustered at the individual-level. *<0.1, **<0.05, ***<0.01

Impacts on further schooling choices

How does the greater intention to continue into higher education translate into college choices? To explore this, the latest September survey collected detailed information about the application patterns of fellowship recipients and non-recipients (Table 5). Overall, we do not find strong evidence that the fellowship program has significantly shifted the college choices of recipients: while we find that female fellowship recipients are more likely to apply to a larger number of post-grade 12 colleges, the impact does not extend to boys where it is close to zero (Column 1).

We also find no statistically significant impact that students are applying to a larger share of colleges that are outside of their district (Hardoi and Sambalpur, respectively; Table 5, Column 2). Fellowship recipients, however, were more likely to apply to higher fee colleges than non-recipients (Column 3). On average, fellows applied to colleges that required 23% higher fees than schools non-recipients applied to. To the extent that higher fees reflect better colleges, this may reflect a shift towards higher quality institutions. Finally, there is no marked impact on the acceptance rate – this might be due to the overall high acceptance rate: 87.5% of the applications were successful (Column 4).

Table 5. Fellowship award and college choices

	(1) Colleges applied to	(2) Share out district	(3) College Fees	(4) Acceptance rate
Mean:	1.379	0.160	8.487	0.875
verall effect	0.162 (0.105)	0.075 (0.044)	0.226** (0.109)	0.056 (0.040)
Effect for boys	0.021 (0.133)	0.068 (0.067)	0.188 (0.148)	0.068 (0.052)
Effect for girls	0.334** (0.165)	0.082 (0.058)	0.272 (0.171)	0.041 (0.061)
Sample	September 2017 – Hardoi & Sambalpur			
N	390	390	390	390

Standard errors are clustered at the individual-level. *<0.1, **<0.05, ***<0.01

If fellowship recipients are willing to choose colleges with higher fees, a question that arises is how the students are planning to cover the higher costs. The fellowship award appears to have induced students to seek out more scholarship opportunities to fund their future studies (Table 6): when asked about how students were planning to cover the fees, fellowship recipients were less likely to mention savings as the primary means of financing (Column 1). This effect is particularly pronounced for male fellowship recipients. Both male and female recipients are instead more likely to mention fellowships as a means to fund their studies (Column 2). There is no marked difference in the reliance on family networks – fellowship recipients and non-recipients are as likely to name family as a source of financial aid (Column 3).

Table 6. Fellowship award and schooling choices

	(1)	(2)	(3)
	Savings	Fellowship	Family
Mean:	1.379	0.160	8.487
Overall effect	-0.083**	0.162***	0.022
	(0.034)	(0.052)	(0.050)
Effect for boys	-0.114***	0.125*	0.066
	(0.042)	(0.068)	(0.065)
Effect for girls	*-0.037*	*0.209****	*0.036*
	(0.044)	*(0.075)*	*(0.079)*
Sample	September 2017 – Hardoi & Sambalpur		
N	399	399	399

Robust standard errors. *<0.1, **<0.05, ***<0.01

Consistent with the greater declared intention to fund their studies with fellowships, we find evidence that fellowship recipients are, on average, able to name more funding sources than non-recipients (Table 7, Column 1). Conditional on knowing about the funding source, however, both fellows and non-recipients apply at the same rate to fellowships (Column 2). This may suggest that the differential awareness about funding opportunities is likely to be a more important constraint than high application costs. For completeness, the Appendix Table A1 provides the full list of funding opportunities the students have mentioned. Perhaps not unexpected given the exposure of both recipients and non-recipients to the KEF, Kusuma is by far the most frequently mentioned funding source in both Hardoi and Sambalpur (219 mentions in Hardoi, 141 mentions in Sambalpur), followed by the Atul Maheshwari Scholarship (21) and the Amar Ujala Foundation (13) in Hardoi, and Prerna (45) and Medha Bruti (39) in Sambalpur.

Table 7. Fellowship award and funding sources

	(1)	(2)
	Funding sources known	Applied to
Mean:	1.549	0.873
Overall effect	0.196*	0.020
	(0.104)	(0.087)
Effect for boys	0.242*	-0.034
	(0.133)	(0.041)
Effect for girls	*0.139*	*0.006*
	(0.155)	*(0.049)*
Sample	September 2017 – Hardoi & Sambalpur	
N	364	364

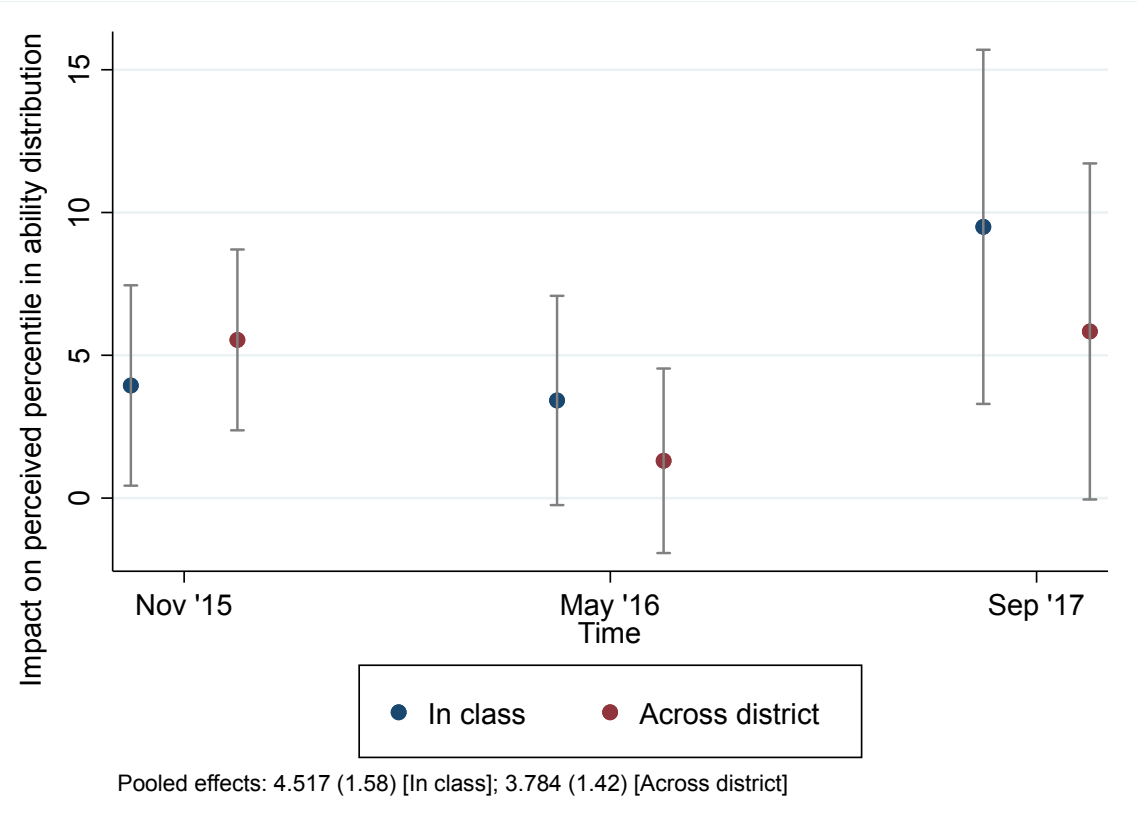
Robust standard errors. *<0.1, **<0.05, ***<0.01

2.2. Impact on beliefs about own ability and the value of education

The higher academic performance of the students also translates into higher beliefs about one's own ability. To measure beliefs about their own ability, we asked students to rank themselves in terms of percentiles compared to peers in their class and across the entire district. A higher percentile thus indicates a higher ranking relative to other students at a given point in time.

Figure 4 traces the impact of the fellowship award on the beliefs of students since November 2015, shortly after being notified about the fellowship application outcome. The figure reports the average difference in the reported percentile between fellowship recipients and non-recipients. As the figure shows, the fellowship award translates into greater beliefs about one's own ability, both relative to students in the own class (blue) and relative to students across the entire district (red). On average, fellowship recipients perceive themselves to rank 4.5 (3.7) percentiles higher compared to students in the own class (district). This positive perceived ability gap appears immediately after the fellowship award and is increasing over time, with a slight dip in May 2016.

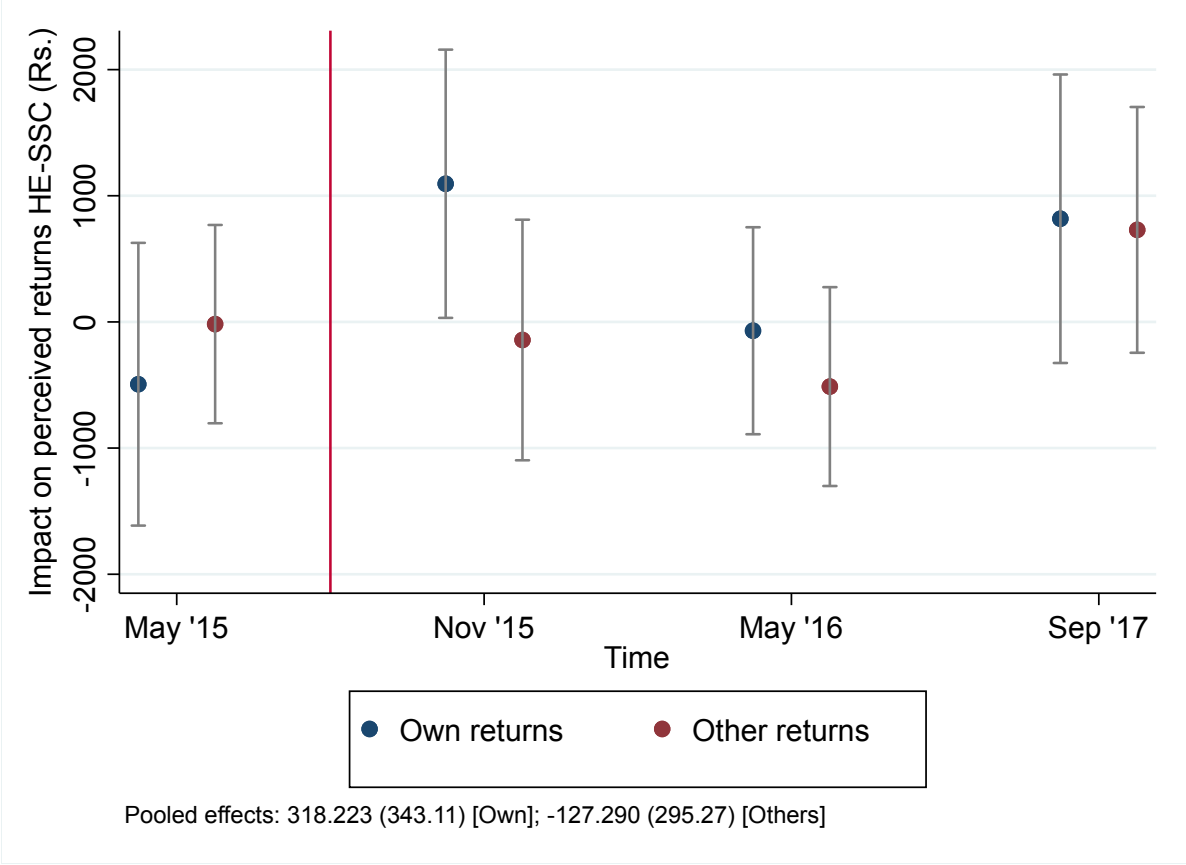
Figure 4. Fellowship award and perceived ability ranking



Consistent with the evaluation of previous Kusuma funded programs (KUSF and KRFP), we find a trend towards changes suggestive of a higher valuation of education. In Figure 5, we report the difference in the estimated perceived returns from completing higher education vis-à-vis lower secondary school for fellowship recipients and non-recipients. The perceived pecuniary returns from completing higher education vis-à-vis lower secondary school are measured in gains in the monthly entry salary in the first 5 years of entering the job market.

Since we also collected information about the students' perceived returns at time of application (May '15), we can trace out the impacts of the fellowship program over time. While we find no statistically significant difference in the value of education students perceive for both themselves (blue) and others (red), the positive gap in perceived returns begins to open up after students are notified of the fellowship award (right of the red vertical line). The increase in the perceived value of education for others occurs at a slower pace, but after two years (Sep' 17) fellowship recipients value the returns to completing higher education vs. grade 12 at about 900 Rs. per month, both for themselves and for others.

Figure 5. Fellowship award and the perceived returns to education



2.3. Impact on values and attitudes

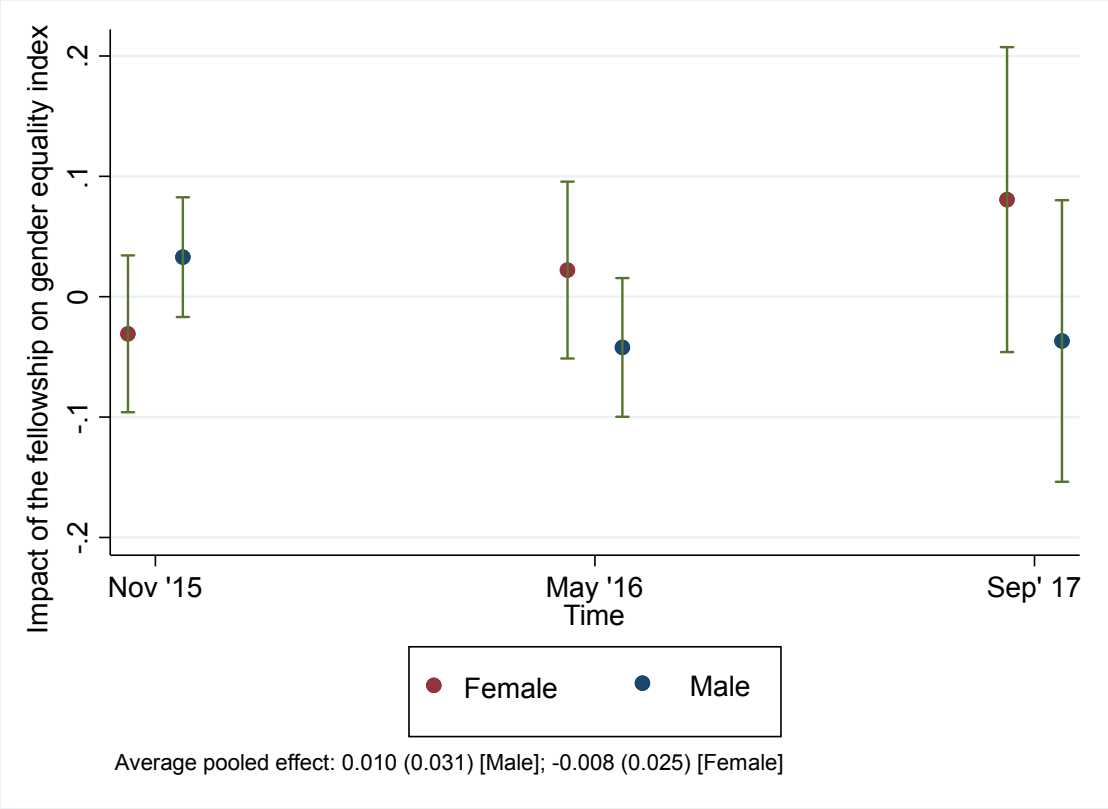
As part of the survey, we asked students a range of questions relating to traditional gender roles. Questions covered the role of women within the household and in the labour market. To illustrate, a question would ask the student to say whether men, women or both should be responsible for earning money. We cover a wide range of areas (e.g. who should bring up children, do household chores etc.) to compute an index of gender equality based on 7 sub-items. This survey module has been adapted from the literature and tailored to the KEF context.

We also adapted a module from the British Social Attitudes Survey to elicit beliefs about social mobility. For example, we ask students to state their level of agreement to statements such as "my parent's level of education will influence where I get in life" or the "family background significantly influences an individual's chances of doing well". We use these measures to compute an index of beliefs about social mobility.

Fellowship award and gender attitudes

Figure 6 shows the impact of the fellowship award on attitudes towards gender equality, broken down by the gender of the respondent. Gender equality is measured as an index, with large values indicating a greater declared level of equality. As the figure shows, there is no statistically significant impact on the degree to which respondents agree with statements pertaining to gender equality. If anything, however, the fellowship award appears to shift the attitudes of female recipients towards higher levels of gender equality, while the impact on males is flat or even slightly negative. As the large confidence intervals indicate, however, the small sample size prevents us from drawing definite conclusions. These weak impacts are perhaps expected as the fellowship's mentoring and workshop programmes did not explicitly focus on issues of gender equality.

Figure 6. Fellowship award and attitudes towards gender equality



The fellowship, however, does appear to have affected the female recipients' beliefs about how difficult it is for married women to study. As part of the survey, we asked respondents "how difficult is it for a married woman to continue her schooling" (relative to an unmarried woman). Compared to non-recipients, female recipients are less likely to perceive women's continued involvement in education post-marriage as difficult. This effect only shows up in the latest round, which coincides with the time these respondents have already completed grade 12. In contrast, for boys the relationship is flat throughout the different points of measurement.

Figure 7. Fellowship award and perceived difficulty for married women to study

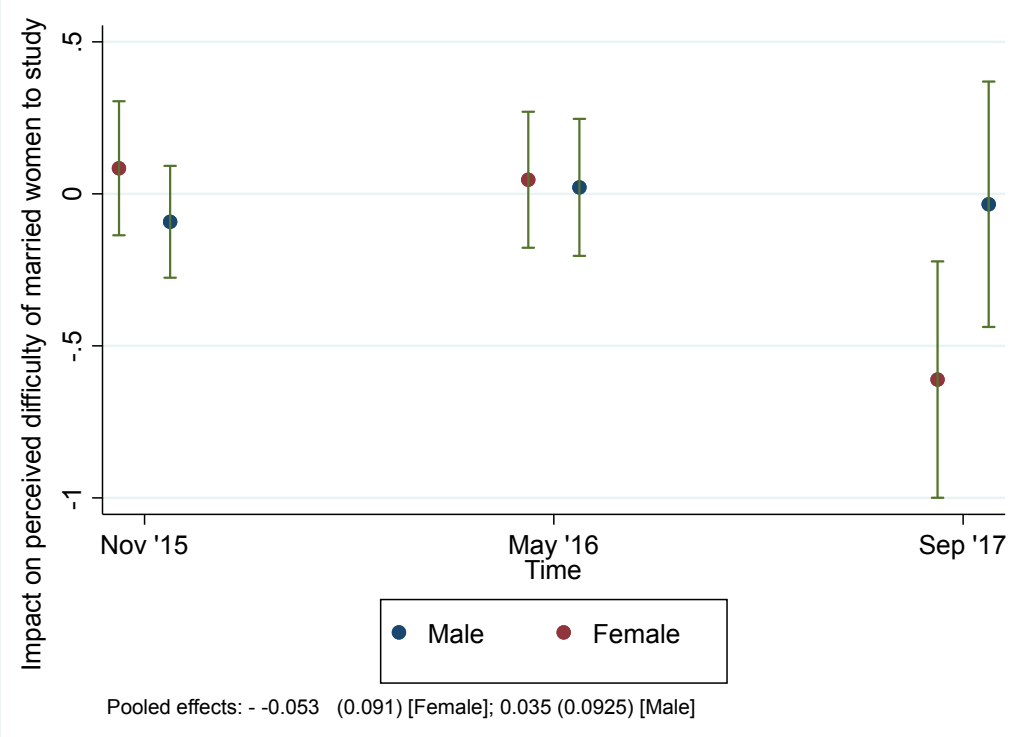
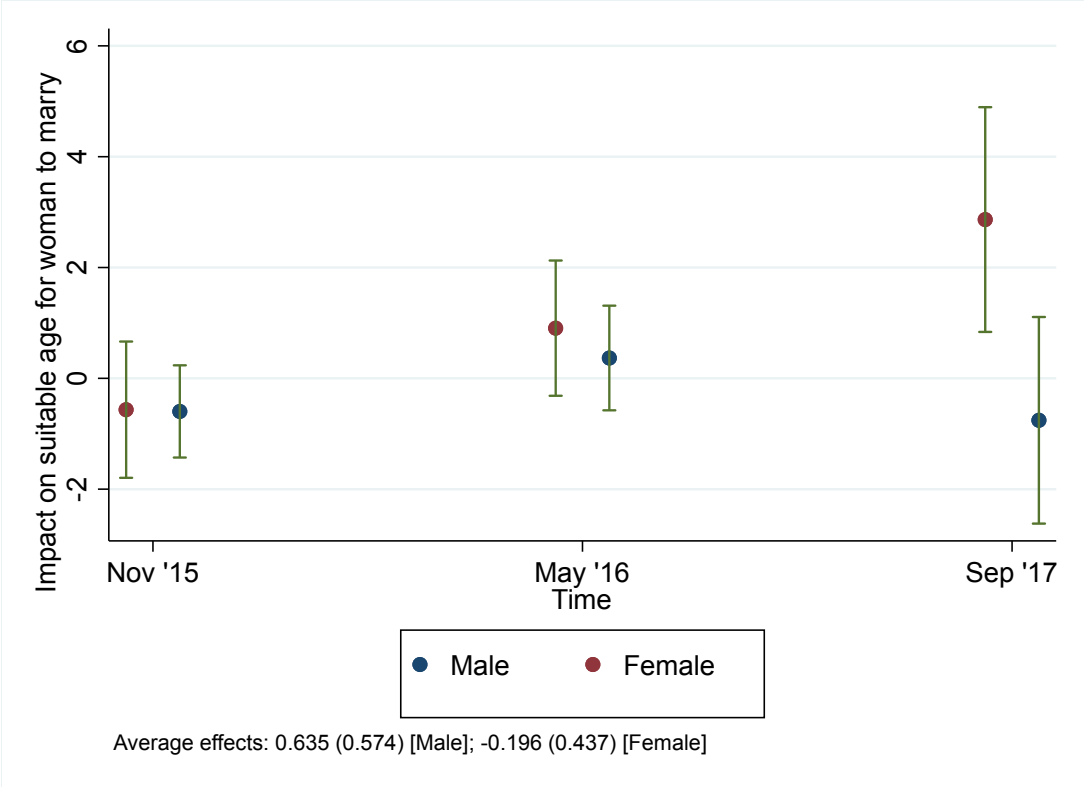


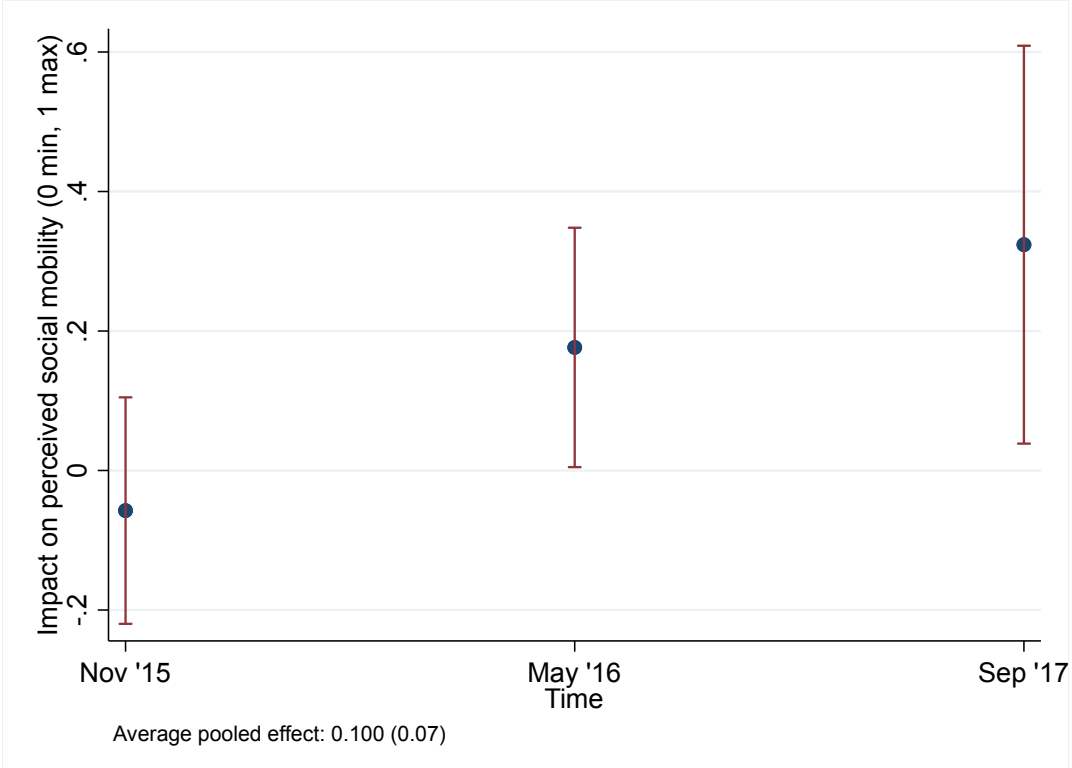
Figure 8. Fellowship award and the ideal age for women to marry



Beliefs about social mobility

The results are reported in Figure 9. We find that the fellowship increases the recipients' perceptions about social mobility over time. Fellowship recipients are substantially more likely to disagree that an individual's family background will influence one's career prospects, instead attributing more influence to talent and hard work. The impact of the fellowship is increasing over time, suggesting long-term changes in the attitudes of the recipients.

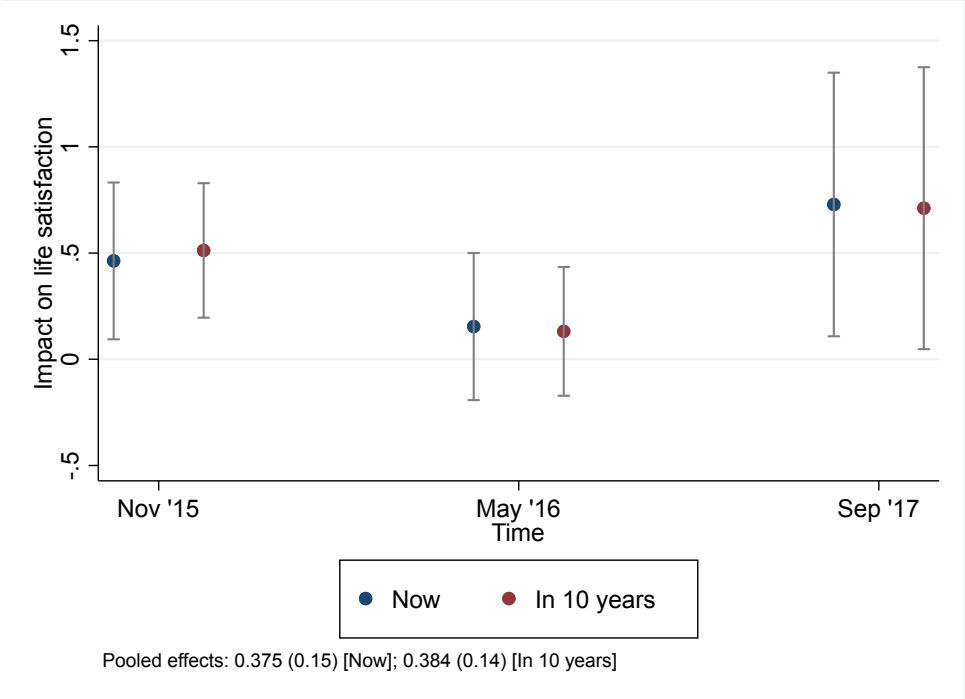
Figure 9. Fellowship award and the perceived returns to education



Fellowship award and life satisfaction

Finally, we find that the fellowship has significantly increased the subjective wellbeing of fellowship recipients, both in the short and in the long-run (Figure 7). When asked "all things considered, how satisfied are you with your life as a whole these days", fellowship recipients provide a rating that is on average 0.38 points higher than those of non-recipients (on a scale of 1 to 10). The impact is of similar magnitude when asking questions about their future. Kusuma recipients therefore appear to be more satisfied and optimistic about their future.

Figure 10. Fellowship award, life satisfaction and Optimism



Appendix Table A1: Sources of funding mentioned by respondents

	Hardoi	Mentions		Sambalpur	Mentions
1	KUSUMA	219	1	KUSUMA	141
2	ATUL MAHESHWARI SCHOLARSHIP	21	2	PRERNA	45
3	AMAR UJALA FOUNDATION	13	3	MEDHA BRUTI	39
4	GOVERNMENT SCHOLARSHIP	12	4	PATHANI SAMANTA	17
5	NATIONAL TALENT SCHOLARSHIP	12	5	OSSTA	2
6	KAUSHAL VIKAS YOJANA	5	6	NRTS	2
7	SAMAJ KALYAN DEPARTMENT	5	7	NAT. MERIT-CUM-MEANS	2
8	ENSPIRE FELLOWSHIP	4	8	DANTA	1
9	AKASH INSTITUTE	2	9	HDFC	1
10	NATIONAL INCOME BASED SCHOLARSHIP	2			
11	SARLA FELLOSHIP	2			
12	AMBEDKAR GYAN PRIKSHA	1			
13	CHILDCARE CENTER	1			
14	FUEL FOUNDATION	1			
15	GOOGLE SCHOLARSHIP	1			
16	KANYA VIDHYADHAN	1			
17	KISHOR VAIGYANIC	1			
18	MAJOR KHALSI KALAKHOJ TALENT SCHOLARSHIP	1			
19	NATIONAL SCIENCE AND TECHNOLOGY	1			
20	RASTIYE AYEGYETA	1			
21	SCIENCE OLYMPIAD	1			
22	SR JINDAL	1			
23	SUNILAM FOUNDATION	1			
24	UATTAR PRADESH SCIENCE TALENT SEARCH EXAM	1			

Appendix Empirical Strategy

We pursue two different empirical strategies.

Cross-sectional cut-off specification.

For the cross-sectional results based on the September 2017, we run the following regression. For individual *i* in program site *s*, we estimate for outcome y,

$$y_i = \beta \times fellow_i(cutoff_i) + \theta_{s(i)} + \delta' x_i + \varepsilon_i$$

where fellow=1 if the respondent received the fellowship and 0 otherwise. cutoff=1 is a dummy that is 1 if the respondent was above the cut-off and 0 otherwise. Similar to a fuzzy regression discontinuity design, *fellow* is thus instrumented using the cut-off dummy. Since the sample is already confined to around the cut-off, we do not directly include the forcing variable. $\theta_{s(i)}$ is a program site fixed effect that partials out site-specific heterogeneity for the pooled estimation. The vector x includes the following controls: baseline grade 10 marks, (log) hh income at time of application and the gender of the respondent. We compute robust standard errors.

Longitudinal full RDD specification.

We implement a full fuzzy regression discontinuity design for the longitudinal analysis, for which the sample size is substantially larger. For individual *i* measured in round *t* at site *s*, we estimate for outcome *y*,

$$y_{it} = \beta \times fellow_i(1[forcing_i > 0]) + f_{st}(forcing_i) + \delta' x_i \times \theta_{s(i)t} + \tau_{s(i)t} + \varepsilon_{it}$$

We instrument the fellowship status *fellow*=1 with the cut-off dummy holding constant the (linear) forcing variable. We implement the pooled regression by flexibly allowing the linear impact of the forcing variable to vary by program site *x* round bins. Similarly, we allow the impact of the controls *x* (grade 10 marks, income, and gender) to vary by program site *x* round. $\tau_{s(i)t}$ is the program site *x* round fixed effects, which confine the identifying variation to within each program site and period. Finally, we cluster the standard errors at the individual level, corresponding to the level of treatment.

This report was written and edited by Sandra Sequeira and Guo Xu from the London School of Economics