Grey University Degrees:
Experimental Evidence from India

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Abstract – This paper studies the impact of grey degrees, or bought academical credentials from real universities, on callback rates to job applications using a CV experiment in India. The experiment varied the type of degree (no, grey and authentic) in online applications to entry level jobs. Our findings suggest that grey degrees increase callback rates by 42% or 8%-points relative to having no degree, and such effects are concentrated among female applicants. However, grey degrees fare worse or at least not better than authentic degrees. Overall, our results suggest that bought degrees can partially compensate for the lack of university degrees. This in turn raises worries that an expanding grey degree market may dilute the value of authentic degrees. We discuss our findings with respect to the costs of a grey degree and the Indian context.

Keywords: grey degrees, bought academic degrees, CV experiment, India

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1 INTRODUCTION

It is an open secret that academic degrees can be bought in India. Local media have widely reported on this phenomon with headlines ranging from “Degrees on sale: Jaipur study centres offer bachelor degree to PhD for money” (Kumar et al. 2011) to “Fake degree scam: No sweat, you can get a university degree in 10 days” (Ullas and Prasher 2013), as well as “PhDs, Bachelor’s degrees on sale in Punjab” (Chowdhary 2011).

How are degrees bought? To answer this question we collected qualitative data through a local market review, as well as through interviews with agents and potential buyers. Agents and intermediaries handle parts of or the entire process. They advertise their services in local newspapers, flyers and railway coaches, often using ambigious language due the illegality of such services. Most of the advertised degrees originate from privately funded universities and often by the means of distance education. Students can obtain degrees within as little as two months without even sitting in exams. However the market and the offered service packages are very diverse. For instance, one interviewed agent summarized the job as follows:

> *“We manage her [the student’s] signature much before the exam on the answer sheet […]. During exam days she can send anybody to sit in the exam. The only requirement is that the person taking the exam needs to be female if the original student is female. She may wish to write something or not. We manage a certificate.” [translated from Bengali, interview dated 27 July 2016]*

Why are degrees bought? To provide a (partial) answer to this question this paper focuses on one aspect of bought degrees; namely how they fare in job applications. Boosting callback rates may be a rationale for buying such degrees. The underlying assumption is that employers cannot easily differentiate between bought and authentic or more credible credentials. To the best of our knowledge, there has been little quantitative work on bought degrees in India and other developing countries. There is also no reliable data on the functioning, size and extent of the market other than anecdotal evidence.

We focus on degrees bought from institutions that also issue valid and completely legal degrees. In what follows, we therefore refer to these as *grey* degrees. We examined the value of grey degrees in applications to low skilled, entry level jobs advertised on online platforms by designing a simple CV

experiment. India is an interesting case study to investigate the value of diplomas for job market entry. While the country's higher education system is quite affordable (Agarwal 2007), it has been characterized as unrobust or unready for future challenges (Jayaram 2004).

Preparatory qualitative work infomed the design of the experiment. We first identified universities from which what we call grey degrees could easily be bought. We then designed a CV experiment, similar to those used in the literature on labour market discrimination (Bertrand and Mullainathan 2004, Carlsson and Rooth 2007, Correll et al. 2007, Kaas and Manger 2012, Pager et al. 2009). The experiment allowed us to investigate the value of grey degrees in a natural setting with actual employers. We picked job advertisements in sectors that required neither specific skill training, work experience nor academic degrees. We sent three CVs to each of the 132 identified job openings, varying the type of degree. When then recorded callback rates for interviews. This set-up allowed us to test the impact of grey degrees on callback rates compared to both having no degree and authentic/credible degrees.

Our results are perhaps not surprising, but they are alarming: CVs featuring a grey degree receive 8%-points more callbacks than those with no degree. This amounts to a 42% increase in the number of callbacks. This difference is driven by female applicants and is concentrated in female-dominated sectors. Conversely, authentic degrees always fare better than grey degrees. The difference in means amounts to 22%-points. However, in a heterogeneity analysis we also classified grey degrees into low, medium and high ranked degrees based on the perceptions of agents in qualitative interviews. Statistically there are no differences in callback rates between authentic and high ranked grey degrees. In sum, grey degrees have a moderate and positive effect on callback chances, however they cannot fully compete with authentic degrees.

We rationalize these results in two ways: First, our findings can be interpreted in the light of education degrees as a signal to overcome information asymmetries about skills of workers (Altonji and Pierret 1998, Harmon and Oosterbeek 2003; see also Akerlof 1970). Our findings suggest that grey degrees send a positive signal to employers when compared to no degrees. Clearly, authentic degrees send a significantly stronger signal compared to no or grey degrees, as indicated by the greater rate of callbacks. Second, we can understand our findings against the background of the literature on fake degrees (Attewell and Domina 2011, Brown 2006, Grolleau et al. 2008). In particular, Attewell and Domina (2011) argue that "those who are blocked from attaining degrees through normal means are

those most likely to employ false credentials" (p.59). This is backed by what one potential buyer of a grey degree stated during our qualitative interviews:

> "*I need to take care of my baby, cook, collect water and take care of my parents-in-law... I simply do not have time to study. The duty of a married woman is to take care of her household. If I start studying, who will take care of the household?" [translated from Bengali, interview dated 18 July 2016]*

In sum, our results underline that policymakers need to raise awarness among employers about the presence of grey degrees and take measure to limit the expansion of this market. While there is no data on the size of the grey degree market, anectdotal and our qualitative evidence suggest that the market is active. Ultimately, such grey degrees may put honest applicants (with authentic or no degrees on their CVs) at a disadvantage. And employers may hire unqualified and dishonest applicants.

The remainder of this study is structured as follows: Section 2 details some qualitative insights and describes the experiment. Section 3 presents the results. Section 4 discusses the findings and concludes.

2 EMPIRIAL STRATEGY

Our aim was to test the impact of grey degrees on callback rates to job applications relative to authentic degrees and having no degree at all. Based on insights from qualitative data collection efforts, we ran a CV experiment from July to September 2016. We sent 396 applications to 132 job postings. We applied to each of the job postings (or firms) using three generic male or female applicant profiles. For each job posting, the three profiles were arbitrarily distributed to the following three groups: (1) no university degree; (2) grey university degree; (3) authentic university degree.

Qualitative Insights

The empirical strategy was informed by preceeding, qualitative interviews. There is little information on the functioning of the grey degree market. So this was a necessary first step for our quantitative analysis. The qualitative data was collected in two steps by the first author of the study: First, we reviewed the local grey degree market and looked for flyers to identify universities from which degrees could be bought. Second, we did qualitative interviews using snowball sampling with sellers and agents in the grey degree market, as well as with prospective buyers (for details on the ethnographic

methodology and results, see Majilla, 2016). More specifically, we gathered advertisments for suspect degrees and approached agents pretending to be prospective buyers. We also interviewed actual and potential buyers and accompanied them to the agents. In total, 5 interviews were done with agents and 23 with potential and actual buyers.

We found that in most cases students contact local agents and these forward applications and requests to their contacts at a higher level within the state. Most students do not actually sit in exams. In fact, the degrees are often acquired through the distance education system. If students do need to sit in exams (as in the case of bachelor of law degrees), they just sign the answer sheet and somebody fills in responses for them. Sometimes answers are also provided to them and they copy them onto the exam sheet. We found that students can get grey degrees within as little as two months and up to 3 years. However it also important to note that many different business models and service packages exist in this market and one can naturally only get a small glimpse of these during qualitative research.

During the qualitative work we identified several universities from which it was possible to (indirectly) buy grey degrees and out of these we selected three universities that were popular among local agents. It is important to underline that all three universities also offer authentic degrees, earned through actual academic work. These are not fake degrees *per se*. However it is possible to easily access and buy these grey degrees with the help of agents. In these cases student do not write exams and agents take care of the entire process. More specifically, all grey degrees used in our experiment can be accessed through "distance learning." However the distance learning part is not mentioned on the CVs in the experiment. The chosen degrees cost around INR 18,000-20,000 (~USD 275-300). We would also like to note that the three universities are away from the applicant's residence and the job market. This is important since the qualitative data indicates that agents tend to collaborate with far way universities. Degrees from such universities should make employers suspicious. It is unlikely that a local applicant obtained a degree from such an *odd* university, given that nearby universities offer similar and (authentic) degrees.

We also ranked these three universities to examine the different shades of grey degrees in the CV experiment. We did this based on the perceptions of agents. The lowest ranked grey degree comes from a university that easily cooperates with agents. It is important to note that costs are roughly similar across the three ranks. All three universities are far away from the study site. For instance, the lowest

ranked grey degree comes from an university that is roughly 1500 km away from the home address of our job applicants.

Finally, our aim is not to "name and shame" these particular three universities, so we do not disclose their idenities here. However, details are of course available on request from the authors for replication and research purposes.

Selection of Authentic Degrees

Recall that we compare CVs featuring grey degrees to both CVs with authentic university degrees and only high school degrees. To this end, we identified some local colleges offering authentic degrees and we arbitrarily picked three colleges for the experiment. Further, we had to make a choice on the academic discpline itself. Based on insights from the qualitative interviews, we opted for two comparable and relatively less prestigious academic disciplines in the Indian context, namely history and political science. Finally, all CVs featured comparable secondary and high school degrees located near the applicants' residential address.

Selection of Job Postings

We sent applications to entry level and relatively low-skilled jobs. These jobs do not require a university degree *per se*, and thus provide the ideal setting to test if grey degrees provide a competitive advantage over having no degree at all. More specifically, we picked job postings ranging from sales, in particular insurance or personal loan sales to administrative support, clerical support, call centres as well as medical representatives. We did not design the experiment to be able to detect impacts by specific sectors. Rather, we simply selected and classified jobs into female (N=99), male (N=99) and mixed sector jobs (N=198). We gendered the CV of applicants according to this threefold classification. This allows us to test the differential impact of grey degrees by the gender of the applicant and the gender of the sector. For instance, administrative jobs are typically held by females, while medical sales representatives are mainly male. Conversely, call centres are known to have a mixed work force.

We used three popular online portals in India to search for those jobs. These portals allow applicants to create a profile, upload a resume and apply to job postings. We made sure not to apply to the same job twice across portals. We also minimized the influence of regional and geographic heterogeneity. We mainly applied to jobs based in Kolkata, and in some cases to jobs in district towns within the state

of West Bengal. Related, we excluded job postings from the experiment that required applicants to relocate. Finally, we only selected job postings that were open to both inexperienced and experienced applicants.

Design of Applicant Profiles

We designed the resumes with three considerations on mind: First, we wanted to create realistic applicants for the chosen jobs and sectors. We obtained typical and real resumes from a human resource consultancy. These CVs had Pan-India coverage, had been used in actual applications and were aimed at jobs where no work experience was necessary. Second, we needed to pick names for applicants that suited the Indian context. Discrimination by caste, gender and ethnicities is well researched and documented in the literature (Carlsson and Rooth 2007, Pager et al. 2009). For instance, there is evidence that employers discriminate using the names of job applicants (Banerjee and Knight 1985, Deshpande 2011). To minimize these kinds of sources of statistical noise and competing drivers of callback rates, we selected upper caste Hindu names. Furthermore, in India there is also predjudice and discrimination based on the state of origin. So we used only Bengali names. Finally, in mixed-sex sectors we randomly used male and female names. In the case of female (male) dominated sectors, we only applied with female (male) CVs.

Experimental Procedure and Data Collection

In total we used eighteen CVs: nine male and nine females CVs with three different names and each with three different types of education levels: grey, authentic and no university degree (high-school only). For each job, we sent three resumes. Across jobs we varied the following features in a balanced way: (i) high school name and residential address, (ii) name and gender of applicants (for mixed gender sector jobs).

We recorded callback rates through emails and phone calls. Every CV had a unique e-mail and mobile phone number. We did not apply to jobs requiring applicants to directly call or visit the company. Further we used authentic residential addresses for all resumes; however for practical reasons and due to the fictiousness of the applicants we could not record responses by post.[1] An applicant's home address may come with labour market discrimination. Bertrand and Mullainathan (2004) found that

[1] In any case, it is unusual for employers to use regular postal services for jobs advertised on online platforms.

applicants from dominantly black neighbourhoods in the US receive relatively less callbacks than those from white neighbourhoods. To minimize such effects, we used residential addresses located in semi-urban areas in West Bengal that are mainly inhabitated by Hindus. Sample sizes by degree and gender are summarized in Table 1.

3 RESULTS

Grey degrees significantly increase callback rates compared to having no degree. The impact is moderate in size and concentrated among female sector jobs and applicants. In addition, authentic degrees have a much larger, relative impact on callback rates. However, we can document important heterogenous impacts of grey degrees according to their ranking. In particular, the positive impact of high ranked grey degrees is not statistically different from the one associated with authentic degrees. In what follows, we first present the main findings, and then investigate the robustness and heterogeneity of the effects in a regression model.

Main Results

Overall, 30% of our applications received a callback. Figure 1 breaks down callback rates by the type of degree. Panel A show a clear hierarchy: CVs with no degree received callbacks in 19.70% of all applications, while those with a grey and authentic degree averaged 28.03% and 41.67%, respectively. The impact of a grey degree on callback rates compared to no degree amounts to 8.33%-points (p-value=0.07, t-statistic=1.82, N=264).[2] This amounts to a 42% increase. In comparison, the impact of authentic degrees over no degrees is 21.97%-points (p-value=0.00, t-statistic=4.90, N=264). Finally, the difference between grey and authentic degrees amounts to -13.64%-points (p-value=0.00, t-statistic=-3.29, N=264).

We can also differentiate callback rates by degree *and* gender of the applicant (see Panel B, Figure 1). A similar ranking of degrees emerges: CVs with authentic degrees receive more callbacks than those with grey or no degrees. However the differences are stronger among female applicants. Overall, female receive more callbacks than males (36.36% vs. 23.23%). And the difference in callback rates between female CVs with grey and no degrees amounts to 12.12%-points (p-value=0.09, t-

[2] Throughout we present simple differences in means t-tests adjusted for clustering at the job posting level.

statistic=1.72, N=132). The corresponding difference for male CVs is small in magnitude (4.55%-points) and insignificant (p-value=0.45, t-statistic=0.77, N=132).

Regressions results and heterogeneity

Table 2 summarizes estimates stemming from a linear probability model[3] where the dependent variable takes on one in the case of a callback and zero otherwise. Standard errors are clustered at the job posting level. Column 1 presents a stripped down model with no covariates. No degree is the excluded category. The impact associated with grey degrees relative to no degree amounts to 8%-points. The corresponding impact of authentic degrees is 22%-points. Column 2 gauges the sensitivity of these marginal effects to the inclusion of a gender dummy, as well as sector and applicant profile/CV[4] dummies. Point estimates associated with the main variables of interest are extremely stable, confirming that randomization and a balanced sample was achieved in practice. The point estimates associated with gender and the type of sector are insignificant. Columns 3 and 4 show separate results for female and male applicants. Consistent with the previous section and Figure 1, we find that the effect of grey degrees is statistically significant (at the 10% level) and larger among female applicants (12%-points compared to 5%-points). It is also interesting to see that authentic degrees fare consistently better than grey degrees. At the bottom of the table, we report tests of the equality of coefficients between grey and authentic degrees. Differences are statistically significant at conventional levels.

Until now we have estimated average effects of grey degrees on callback rates. However in the experiment, we employed three different *shades* of grey degrees. Based on the qualitative interviews and the subjective evaluation of agents, we could rank order grey degrees. Column 5 shows the results of this heterogeneity analysis. The effects associated with these degrees are all positive. The effect of low and medium ranked degrees is however insignificant and small. Only the effect of the high ranked grey degree is large and significant (at the 10% level). What is more, we find that authentic degrees have lost some of their competitive edge over grey degrees. We can no longer statistically differentiate between the effect of authentic vs. high ranked grey degrees (see p-values at the bottom of the table).[5]

[3] Probit or logit models yield nearly identical results and are available on request.

[4] These dummies account for effects of the 6 specific CVs (beyond the effects of gender and degree type).

[5] Also the difference between authentic and medium ranked degrees in terms of callback rates is insignificant. However the *economic* difference is nevertheless sizeable. So we might be lacking power to test this difference.

Table 3 breaks down callback rates by the rank of degrees, again indicating that effects driven by the higher ranked grey degrees.

4 DISCUSSION AND CONCLUSION

We studied the impact of grey degrees (i.e. bought academic degrees from real universities) on callback rates in response to job applications in the entry level sector in India. We designed a CV experiment varying the type of degree (no, grey and authentic) in 396 applications to 132 jobs. We find that grey degrees have a positive impact of 42% or 8%-points on the likelihood of receiving a callback compared to having no degree. Authentic degrees, however, fare significantly better compared to both having no degree and grey degrees. That said, grey degrees can partially compensate the lack of authentic credentials; and this finding is concentrated among female applicants and female sector jobs. These gender differences may be explained in that callback rates are higher for women in the first place and that women tend to have lower education levels than men and also tend to apply to lower skilled jobs. We also documented an interesting pattern by ranking grey degrees based on interviews with agents: higher ranked grey degrees perform (statistically speaking) as well as authentic degrees.

Our results are perhaps alarming rather than surprising. It is clear that employers are at least to some extent misled by grey degrees and receive them as a positive signal. Table 4 breaks down callback rates at the firm level: 13% of firms called back applicants with authentic and grey degrees and ignored applicants with no degree (see column 8). Conversely, a mere 6% of firms called back applicants with authentic and no degrees, ignoring those with grey degrees (see column 7). And this gap is larger for female CVs both in the female and mixed job sector. These figures indicate that few firm can differentiate between grey and authentic degrees.

Overall our results are in line with our qualitative insights. One agent nicely summarized the economics of grey bachelor of law degrees (LLB):

> *"Let's talk about an LLB. You cannot do this on a part time basis. But honestly, tell me, is it worth spending three years doing an LLB unless you go to a good university? We are providing all LLBs at [Rupees] 60,000…If you pay, then you'll find that your answer script is ready and you just need to sign." [translated from Bengali, interview dated 12 July, 2016]*

But do the benefits of grey degrees really exceed the costs? Our experiment suggest that grey degrees can increase callback rates by 8%-points. The grey degrees in our analysis cost about INR 20,000 (~USD 300), which is around 34% of a yearly salary[6] in an entry level job. But the cost vary depending on the degree level, subjects and the extent to which the degree is managed by agents. For example, a LLB degree costs around INR 60,000 (~USD 900) compared to INR 18,000 for a BA in History (~USD 270). That said, the costs of such degrees are actually quite steep compared to the positive impacts on callback rates. Further research should examine the motivations of buyers beyond callback rates, including longer term economic advantages and social motives.

In sum, our results show that policy makers should take measures against bought degrees, as well as inform employers about their existence and identification. An expansion of this grey market could water down the value of authentic degrees. Eventually, grey degrees may negatively affect honest job applicants and lower the overall incentives to obtain authentic degrees.

Finally, we would like to point out some limitations of this study: first, we only studied the impact on callback rates. We cannot document if these callbacks translate into getting an offer and keeping a job. Second, we focused on a small set of universities from which grey degrees can be obtained. The documented heterogeneities relating to the rank of degrees, point to different shades of grey that warrant further investigation. Finally, we focused on jobs advertisements that do not require higher education degrees. We do expect a higher scrutiny of CVs for higher ranked jobs that require academic credentials.

[6] A yearly salary in the low skilled sector would be around INR 60,000 (~USD 900).

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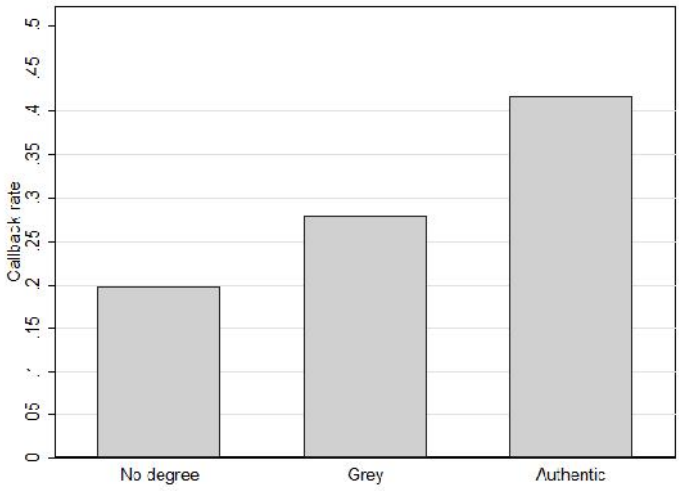
6 FIGURES

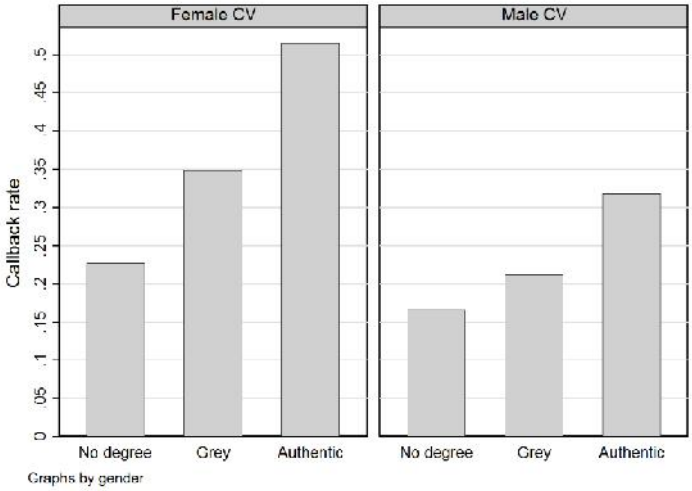
Figure 1: Callback rates by type of degree

Panel A: Overall callback rates



No vs. Grey degree: p-value=0.07
Grey vs. Authentic degree p-value=0.00
No vs. Authentic degree: p-value=0.00

Panel B: Callback rates by gender



No vs. Grey degree: p-value=0.09; p-value=0.45
Grey vs. Authentic degree p-value=0.01; p-value=0.07
No vs. Authentic degree: p-value=0.00; p-value=0.01

Note: N=396 (see Table 1 for a breakdown by degree and gender). P-values stem from pairwise difference-in-means t-tests adjusted for clustering at the job posting level. *In Panel B*, the first p-value refers to differences in the female and the second p-value to differences in the male sample.

7 TABLES

Table 1: Sample sizes by degree and gender

Degree	No	Grey	Authentic	Total
Male applicant	66	66	66	198
Female applicant	66	66	66	198
Total applications/job postings	132	132	132	396

Table 2: Regression estimates of the effects of types of degrees on callback rates

Dep. var. Callback	(1)	(2)	(3)	(4)	(5)
Degree type:					
(no degree excl. category)					
Grey	0.08*	0.08*	0.12*	0.05	
	(0.05)	(0.05)	(0.07)	(0.06)	
Grey (low rank)					0.04
					(0.08)
Grey (medium rank)					0.06
					(0.08)
Grey (high rank)					0.15*
					(0.08)
Authentic	0.22***	0.22***	0.29***	0.15***	0.22***
	(0.04)	(0.04)	(0.07)	(0.05)	(0.05)
Female applicant		-0.10			-0.09
		(0.10)			(0.10)
Female sector		-0.06			-0.06
		(0.08)			(0.08)
Male sector		-0.04			-0.04
		(0.09)			(0.09)
Mixed sector			0.04	0.06	
			(0.09)	(0.08)	
Constant	0.20***	0.28***	0.21***	0.14**	0.28***
	(0.03)	(0.07)	(0.07)	(0.06)	(0.07)
Effect equality (p-value)					
Grey=Authentic	0.00	0.00	0.01	0.07	0.01;0.04;0.41
Profile dummies		x			x
Sample of applicants	Total	Total	Female	Male	Total
N	396	396	198	198	396

Note: Linear probability models. Standard errors in brackets under point estimates are clustered at the job posting level. In column 5, we report tests of the equality between effects associated with the three grey degrees (low, high, medium) and the authentic degree. Significance levels are denoted *p<0.1, **p<0.05, ***p<0.01.

Table 3: Callback rates for CVs with grey degrees by their rank

Grey Degree Rank	(1) Nr. of CVs sent	(2) Callbacks in % within rank	(3) Callbacks in % all three ranks
Low	44	22.73	7.58
Middle	44	27.27	9.09
High	44	34.09	11.36
Total	132	-	28.03

Notes: This table shows callback rates for CVs with grey degrees by their rank. Column (II) reports the number of callbacks divided by 44 (sample within the given rank), whereas column (III) reports the number of callbacks divided by 132 (overall number of applications featuring grey degrees).

Table 4: Callback rates at the job posting/firm level for CVs with grey (G), authentic (A) and no (N) degree

Sample	(1) None	(2) N+G+A	(3) Only G	(4) Only A	(5) Only N	(6) G + N	(7) A + N	(8) G + A
				in % (absolute numbers)				
Full	50.00 (132)	9.85 (132)	4.55 (132)	12.88 (132)	3.03 (132)	0.76 (132)	6.06 (132)	12.88 (132)
Male Sector	63.64 (33)	6.06 (33)	3.03 (33)	15.15 (33)	0.00 (33)	3.03 (33)	3.03 (33)	6.06 (33)
Female Sector	39.39 (33)	9.09 (33)	9.09 (33)	15.15 (33)	3.03 (33)	0.00 (33)	9.09 (33)	15.15 (33)
Mixed Sector Jobs	48.48 (66)	12.12 (66)	3.03 (66)	10.61 (66)	4.55 (66)	0.00 (66)	6.06 (66)	15.15 (66)
Male CVs in Mixed Sector	57.58 (33)	9.09 (33)	6.06 (33)	6.06 (33)	3.03 (33)	0.00 (33)	9.03 (33)	9.09 (33)
Female CVs in Mixed Sector	39.39 (33)	15.15 (33)	0.00 (33)	15.15 (33)	6.06 (33)	0.00 (33)	3.03 (33)	21.21 (33)
Male CVs	60.61 (66)	7.58 (66)	4.55 (66)	10.61 (66)	1.52 (66)	1.52 (66)	6.06 (66)	7.58 (66)
Female CVs	39.39 (66)	12.12 (66)	4.55 (66)	12.12 (66)	4.55 (66)	0.00 (66)	6.06 (66)	18.18 (66)

Notes: This table shows the distribution of callback rates in % *within* job postings for different samples. Absolute number of job postings/firms are given in parenthesis. Column (I) reports the percentage of firms with no callbacks to any of the three CVs, column (II) reports the percentage of firms with callbacks to all three CVs and so forth.