

India's Occupational Transformation: A Tale of Two Escalators

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INDIA'S OCCUPATIONAL TRANSFORMATION: A TALE OF TWO ESCALATORS

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Abstract

India's rapid expansion in higher education has coincided with stagnant growth in skilled, white-collar jobs, leading to hyper-competition and underemployment among graduates. Using panel data from the India Human Development Survey (IHDS), this chapter tracks 12,084 young men between 2004–05 and 2011–12 to assess whether college degrees facilitate access to white-collar employment beyond background advantages. Applying a propensity-score stratification framework, the study examines heterogeneous returns to higher education across social origins. In sharp contrast to US patterns where marginalized individuals gain the most from higher education, the occupational benefits of a college degree in India are heavily concentrated among the already privileged. Interestingly, non-graduates from the highest-propensity backgrounds secure white-collar jobs at higher rates than college-educated men from disadvantaged backgrounds. Thus, while education offers an occupational escalator out of casual work, it moves faster for the privileged, reinforcing existing socioeconomic inequalities.

Keywords: Occupational mobility, higher education returns, heterogeneous treatment effects, labor market duality, social stratification, India.

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1. Introduction

In his ethnography of young men in Meerut (Jeffrey, 2010), Craig Jeffrey documents interviewing young men at crossroads, both literally and figuratively. Young men with college degrees pass their time waiting at the crossroads with other young men in similar circumstances, waiting for a job, a referral, or a tip about where jobs might be open.

This account of apparently interminable waiting to find a job commensurate with education coupled with rising enrollment in college creates a challenge that is not unique to India (Assaad, 2014), but with Gross Enrollment Ratio in higher education for young people ages 18-23 rising to 28 per cent (Ministry of Education, 2024), the issue of jobs for the newly minted graduates is likely to be at the forefront of political discourse. The employment challenge becomes more complex due to the heterogeneity in how different groups experience it. Jeffrey found that social class and caste played an important role in young men's experiences, with sons of local land-owners also having financial resources to extend the waiting time and/or invest in getting a second degree. This issue is even more vexing as access to good jobs becomes politicized in an environment where diverse groups are jockeying to legitimate their claims to affirmative action (Jafferlot, 2003).

While the narrative of upper and middle caste/class groups adopting strategies to appropriate scarce jobs is highly plausible, this narrative does not consider ambition and talent that propel students from disadvantaged backgrounds into pursuing education as a route to escape poverty. These unlikely college graduates may have developed grit and determination that allowed them to overcome initial disadvantages to complete college degrees. Hence, while lower parental income, social disadvantages, and lack of educational opportunities may keep them from obtaining higher education, once they complete college, they may have better opportunities than their privileged counterparts. Job reservations in government and academic jobs may help support them. The empirical literature provides some support that affirmative action may have improved opportunities for lower caste individuals while it may have declined for Muslims (Asher, 2024; Desai and Kulkarni, 2008).

In this paper, we explore the extent to which a college degree leads to access to white-collar jobs for students after considering their formative experiences. We use data from the India Human Development Survey of 12,084 young men ages 14-20 in 2004-05 and follow them into their future careers in 2011-12 to study their initial labour market trajectories. We ask two questions: (1) Does a college degree offer any benefits in obtaining a white-collar job above and beyond the socio-economic privileges that enable individuals to get a college education in the first place? (2) Are these benefits greater for individuals who are already privileged, or do they disproportionately benefit people from a more marginalized background?

In Section 2, we examine the changing nexus between education, occupation, and income in India using data from National Sample Surveys (NSS) and Periodic Labour Force Surveys (PLFS) and compare the Indian experience with that of the United States. This rich description is followed in Section 3 by an overview of our analytical strategy and statistical model. Section 4 describes data from the India Human Development Survey. Section 5 presents results, and conclusions are discussed in Section 6.

2. The Nexus Between Education, Income and Occupation

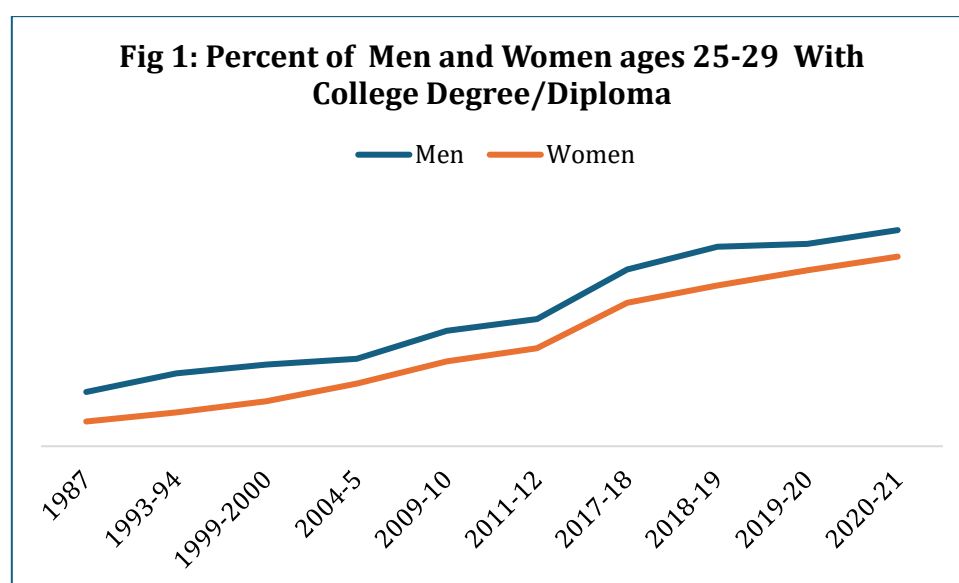
The United States Experience:

Research on the changing nexus between education, occupation, and earnings in the United States provides an interesting illustration of the changes experienced by high-income countries. Beginning in the 1980s, wages for American college graduates rose while those for the least educated stagnated and fell realistically (Levy, 1998; Goldin and Katz, 2008). This growing divergence is attributed to what has come to be known as skill-biased technological change that causes the productivity of and demand for college graduates. However, while the technological change occurred, the Census Bureau documents that the proportion of Americans completing college degrees also increased from 16 per cent in 1980 to 38 per cent in 2020. What allowed these new college graduates to attain high wages was both an expansion in jobs that needed greater education as well as an increase in wages for these occupations (Autor, 2019).

In contrast, as we show in this chapter, India has rapidly increased education and income in skilled occupations. However, jobs in these occupations have not grown, making college education a necessary but insufficient condition for high incomes.

Growth in College Education and Incomes in White Collar Jobs in India:

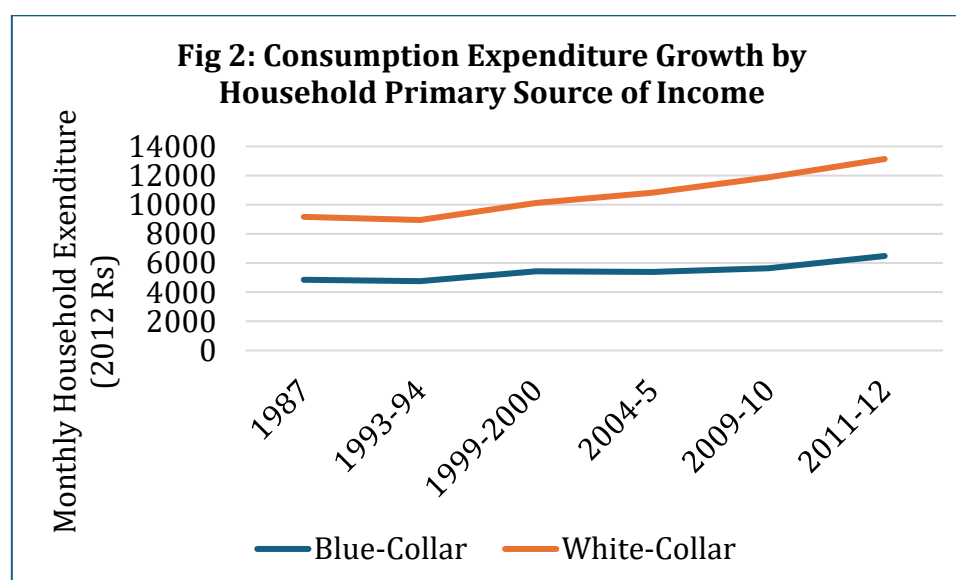
Education in India has vastly expanded over the past thirty years, with practically every child entering school (ASER Centre, 2025). The educational expansion has not stopped at elementary education, however. College graduation rates have also risen sharply for both men and women. Figure 1 presents our calculations from different rounds of National Sample Survey and Periodic Labour Force Surveys between 1987 and 2022 for men and women ages 25-29. The results show a sharp increase in individuals attaining higher levels of education. In 2020-21, 27 per cent of men and 24 per cent of women had completed a college degree or diploma.



Source: Authors' computation based on various rounds of National Sample Survey and Periodic Labour Force Surveys.

Over the same period, poverty has declined (Desai, et al., forthcoming) , and incomes have grown. While it is challenging to examine occupation/income linkages due

to a vast majority of households engaging in self-employment on family farms or family businesses (Balcázar, Desai, Murgai, and Narayan, 2016) where income data are difficult to obtain, National Sample Surveys over the period 1987-2012 offer somewhat comparable data linking household primary source of income to their consumption expenditure.¹ Figure 2 shows that the growth in monthly household expenditure (in constant terms) for households supported by white-collar workers – professionals, teachers, technicians, and clerical workers – outpaced the growth for blue-collar workers, farmers, and petty entrepreneurs.



Source: Authors' computation based on various rounds of National Sample Survey.

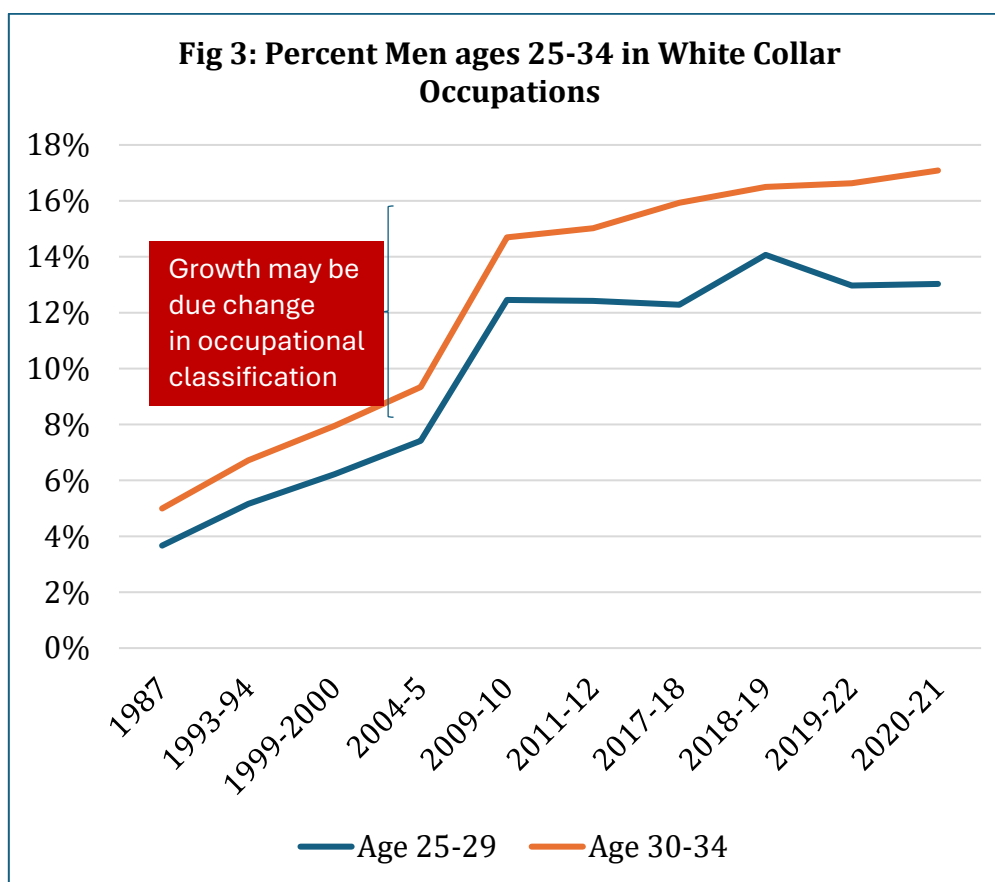
Expansion in white collar incomes came from three primary sources: (1) Beginning with the 5th Central Pay Commission, whose report was submitted in 1997, salaries of government workers increased substantially (Government of India, 1997). Salaries of state employees followed suit with some lag. Since government workers form a large proportion of formal sector workers, this led to substantial growth in the wages of formal sector workers. (2) Growth in the Indian information technology sector combined with an increase in employment in multi-national companies following liberalization offered greater opportunities for higher-paying private sector jobs (McKinsey & Company, 2001). (3) Beginning in the mid-1980s, effective personal income tax rates declined substantially from the top marginal tax rate of 97.75 per cent in the 1970s, with major restructuring taking place in the 1990s (Singh, 2019). Since white-collar workers with formal jobs found it most difficult to evade taxes during the high-tax regime, the decline in personal income tax led to greater purchasing power for these workers, increasing their consumption.

Slow Expansion of White-Collar Jobs:

In expanding education and increasing the incomes of skilled workers, the Indian experience parallels what was documented by Autor (2019) for the United States. However, it differs significantly from the US experience in a very slow increase in white-

¹ The new series of NSS Household Consumption Expenditure Surveys are not strictly comparable and hence, not presented here.

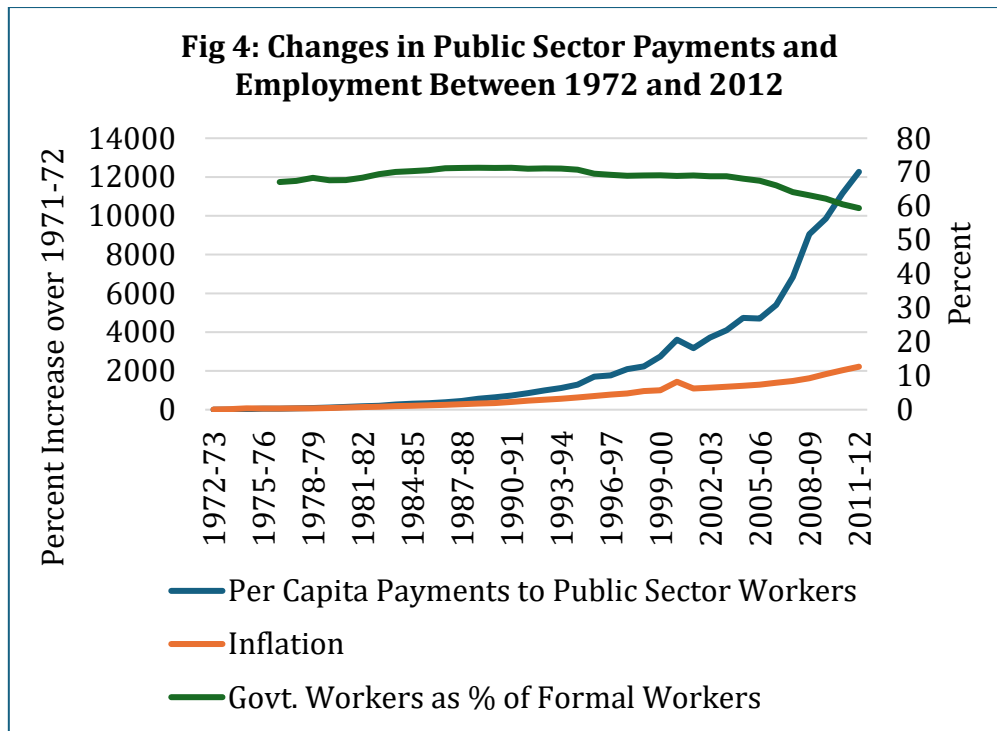
collar jobs. Our calculations from various rounds of the National Sample Survey and Periodic Labour Force Survey in Figure 3 suggest that between 2009-10 and 2020-21, the proportion of men ages 25-29 in white-collar employment barely budged, and there was only a three percentage point increase for men ages 30-34. The large jump between 2004-05 and 2009-10 should be discounted as the National Sample Survey switched from using the National Classification of Occupations (NCO) 1968 to NCO 2004 with non-comparable categories.²



Source: Authors' computation based on various rounds of National Sample Survey and Periodic Labour Force Surveys.

With rising education and increasing rewards to formal sector jobs, it is unsurprising that many individuals compete for these jobs, creating hyper-competition. Figure 4, drawn from Union Public Service Commission data, plots the number of applications against the success rate. The number of applicants trying to attain the holy grail of *Sarkari Naukri* has risen sharply while the success rate has plummeted to minuscule levels.

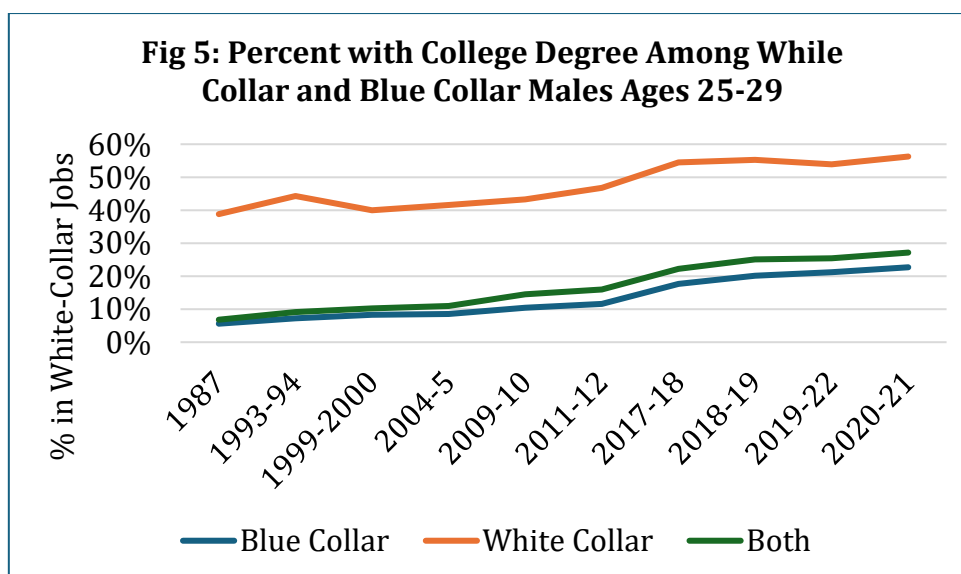
² In 2022-23, the PLFS switched to NCO2015 classification. Hence, we have not included more recent data here.



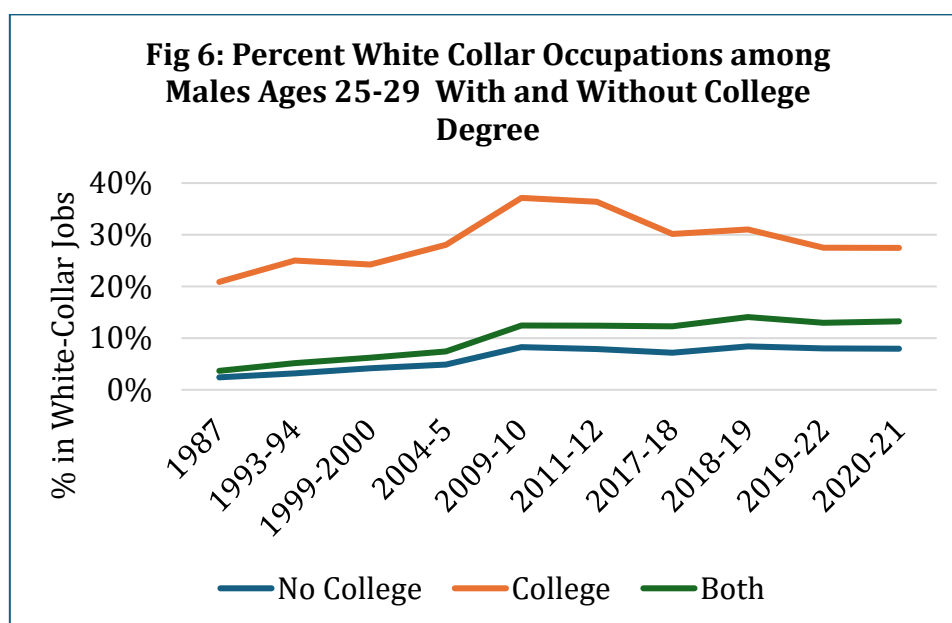
Source: Authors' computation based on Union Public Service Commission data.

High competition for scarce jobs is not limited to higher-level jobs; it is also seen for low-level government positions. In 2015, Prabhat Mittal, Secretary of the Government of Uttar Pradesh, was quoted as saying, "We have been left astounded with the response not just because the number of applicants is as high as 2.3 million. We are stunned also to find candidates with PhD, BTech, MBA and other masters and bachelor degrees applying for these jobs of peons." (Rahman, 2015). Apparently, of the 2.3 million applicants for 368 office jobs, 255 held PhD, 25,000 had a master's degree, and 150,000 had college degrees.

Data from NSS and PLFS presented in Figures 5 and 6 show that while a college degree is important (and increasingly necessary) for getting a white-collar job, it is not sufficient. With the rising number of college graduates looking for jobs, this competition is intensifying. What is surprising is the rising proportion of blue-collar workers (farmers, craftspeople, and manual workers) who have a college degree.



Source: Authors' computation based on various rounds of National Sample Survey and Periodic Labour Force Surveys.



Source: Authors' computation based on various rounds of National Sample Survey and Periodic Labour Force Surveys.

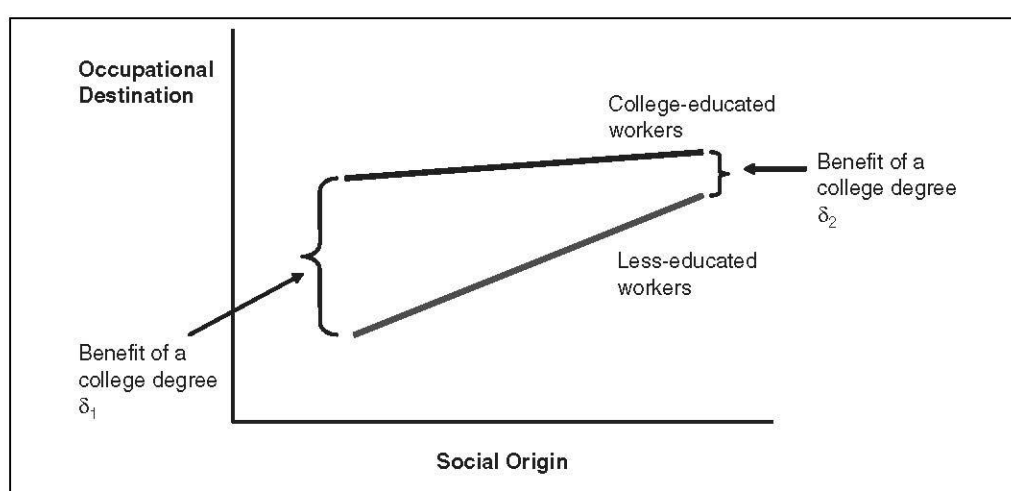
This mismatch between slow growth in office jobs and rapid increase in education has created a conundrum that shapes the modern Indian political and cultural discourse (Baviskar and Ray, 2016). At the same time, faith in the power of education to enhance the social mobility of their children remains boundless, as evidenced by declining family size coupled with increasing parental investment in children's education (Basu and Desai, 2016) and rapidly rising enrolment in private education (Desai, Dubey, Vanneman, and Banerji, 2009). This paradox highlights the importance of addressing our central questions: Is college education the magic bullet for gaining a white-collar job? If yes, for

whom? These are the questions we explore using data from the India Human Development Survey below.

3. Analytical Framework and Statistical Model

As we examine the path to occupational achievement and whether it favours the privileged or the underprivileged, it is useful to implement the framework proposed by Brand and Xie (2010). They propose a framework for studying the heterogeneous impact of college education on the earnings of American young people. This framework is described in Figure 7, which is replicated from Figure 1 in their article “Who Benefits Most from College? Evidence for Negative Selection in Heterogeneous Economic Returns to Higher Education” (Brand and Xie, 2010). Using data from the National Longitudinal Survey of Youth, they find that individuals who are least likely to attain higher education are the ones most likely to benefit from it. This approach is explained more fully in a subsequent paper (Xie, Brand, and Jann, 2012).

Fig 7: Hypothetical model for studying heterogenous returns to college education proposed by Brand and Xie (2010)



Source: Figure 1 reproduced from Brand and Xie (2010)

Both a college education and the ability to obtain a good job are a function of individual, household, and contextual characteristics. For example, it has been shown that social networks play an important role in getting a child through secondary school and into college (Myroniuk, Vanneman, and Desai, 2017), and caste, ethnicity, and religion are associated with school and college dropout (Govinda, 2002). Many of the same factors are related to occupational attainment (Vaid, 2018). Thus, it is important to look at the impact of college degree net of selection bias and, more importantly, examine whether this impact is heterogeneous across different markers of privilege.

We approach this task following a slightly modified form of the strategy proposed by Xie, et al. (2012) and use the following model:

1. We estimate a logistic regression assessing the probability of attaining college education by Wave 2 for men ages 14-20 who had not yet completed college by their characteristics at Wave 1.

$$C_{i2} = \beta_0 + \beta_1 X_{i1} + \beta_2 H_{i1} + \beta_3 S_{i1} + \epsilon_i \quad (1)$$

Where:

C_{i2} represents the log odds of completing college for person i at Wave 2

X_{i1} represents characteristics of person i at Wave 1 including age, completed education, English fluency, whether they had ever failed or repeated any grades, and years of education completed when Wave 1 interview took place.

H_{i1} represents the characteristics of the household for person i at Wave 1 and includes log of per capita household income, number of assets owned, whether household owned a farm, highest education attained by adults in the household, and a count of social networks spanning three formal institutions (school, medical system, government bureaucracy).

S_{i1} represents spatial characteristics where person i resides at Wave 1, such as living in the metropolitan area, other urban areas, developed village and less developed village as well as state of residence.

2. Using this model, we predict the probability of obtaining a college degree by Wave 2 interview.
3. This propensity to obtain a college degree is divided into twenty equal strata and then we compare the balancing property of predicted probability for men with and without college degrees by Wave 2, also looking at the number of individuals in each strata.
4. Since those in strata 1-8 have virtually no likelihood of completing college and contain less than twenty individuals who completed college by Wave 2, we exclude them and focus on the remaining 11 strata.
5. We estimate the probability of obtaining a white-collar job by estimating the following equation using a logistic regression.

$$W_{i2} = \alpha_0 + \alpha_1 C_{i2} + \alpha_2 \Gamma_i + \alpha_3 C_{i2} * \Gamma_{i1} + \epsilon_i \quad (2)$$

Where,

W_{i2} represents likelihood of gaining a white-collar job for person i at Wave 2

C_{i2} represents actual college degree for person i at Wave 2

Γ_{i1} represents the stratum of the predicted propensity for obtaining a college degree based on equation 1 using characteristics from Wave 1

4. India Human Development Survey

For the descriptive analyses presented above, we have relied on data from the National Sample Surveys (NSS) conducted between 1987 and 2011-12 and the Periodic Labour Force Surveys (PLFS) from 2017-19 to 2020-21.³ For a deeper substantive analysis, we rely on two waves of the India Human Development Survey (IHDS),

³ While more recent PLFS surveys are available, we do not utilize them because the coding structure for our key variable of interest, occupation, changed from NCO2004 codes to NCO2015 codes, making it difficult to develop comparable coding for white-collar occupations due to definitional changes.

conducted in 2004-05 and 2011-12 (for a description of the IHDS; see Desai, et al., 2010) in which the same households were studied at two points time with detailed information on household members' education, employment, and household income and consumption. While attrition over time creates a challenge for all panel studies, with 83 per cent of the Wave 1 households being recontacted in Wave 2 (Choudhuri, Desai, and Dubey, 2024), IHDS provides a reasonably good approximation of life-course changes in the lives of men. Unfortunately, the sample for women is not representative since the IHDS panel focused on interviewing root and split households in the same locality. It is limited to following men, given the difficulties of interviewing women marrying outside their root villages.

While the graphs based on the NSS and the PLFS look at various age ranges, for the IHDS analysis, we focus on 12,084 young men aged fourteen to twenty in Wave 1 who had not yet completed college. By Wave 2, about seven years later, they would be mainly past college completion age and approaching their first jobs, allowing us to focus on their entry into the labour force as a function of obtaining a college degree or diploma in the intervening period.

Table 1: Summary Statistics

	All	College Degree / Diploma		White Collar Occupation	
		No	Yes	No	Yes
Wave 2 Characteristics					
• White Collar Occupation in Wave 2	0.1	0.0	0.2	0.0	1.0
• College degree/diploma in Wave 2	0.2	0.0	1.0	0.1	0.5
Wave 1 characteristics					
• Age	16.8	16.8	17.1	16.8	17.4
• Grade completed	8.0	7.6	10.5	7.9	10.1
English Fluency					
• None	0.7	0.8	0.4	0.7	0.5
• A Little English	0.3	0.2	0.5	0.3	0.4
• Fluent	0.0	0.0	0.1	0.0	0.1
Ever Repeated/Failed a class					
• No	0.8	0.7	0.8	0.8	0.8
• Yes	0.2	0.3	0.2	0.2	0.2
Social background					
• Forward caste/general	0.2	0.2	0.3	0.2	0.3
• Other Backward Classes	0.4	0.4	0.4	0.4	0.3
• Dalit	0.2	0.2	0.2	0.2	0.2
• Adivasi	0.1	0.1	0.0	0.1	0.0
• Muslim	0.1	0.1	0.1	0.1	0.1
• Christian, Sikh, Jain, etc.	0.0	0.0	0.0	0.0	0.0
• Log of per capita expenditure	9.5	9.5	9.9	9.5	9.9
• No. of consumer assets owned	11.4	10.6	15.4	11.1	15.4
• Highest class completed by household members	6.9	6.3	10.0	6.7	9.7
Owns or cultivates land					

	All	College Degree / Diploma		White Collar Occupation	
		No	Yes	No	Yes
• No	0.5	0.5	0.5	0.5	0.6
• Yes	0.5	0.5	0.5	0.5	0.4
No. of Social Networks					
• 0	0.4	0.5	0.3	0.5	0.3
• 1	0.2	0.2	0.2	0.2	0.3
• 2	0.2	0.2	0.2	0.2	0.2
• 3	0.2	0.1	0.3	0.2	0.2
Place of Residence					
• Metropolitan Area	0.1	0.0	0.1	0.1	0.1
• Other Urban Area	0.2	0.2	0.3	0.2	0.3
• Developed village	0.4	0.4	0.3	0.4	0.3
• Less developed village	0.4	0.4	0.3	0.4	0.2
Sample Size	12084	10,143	1941	11273	766

Source: Authors' computation based on two waves of the IHDS, conducted in 2004-05 and 2011-12.

Table 1 presents descriptive statistics for the variables used in this analysis for the entire sample as well as the subsamples of college graduates and non-graduates and those with and without a white-collar job. College education and white-collar job data are collected in Wave 2; the rest of the variables come from Wave 1 to avoid endogeneity. Table 1 suggests that individuals who complete college and those with white-collar jobs are likely to come from more privileged strata of society.

5. Results

Table 2 presents the results from the logistic regression predicting college enrollment. Not surprisingly, all three sets of predictors – individual ability and effort, household financial and social resources, and characteristics of the area of residence – play an important role in college completion. Young men who had some English fluency, had never failed, and had higher grade completion (holding age constant) at the time of the Wave 1 interview had a greater likelihood of college completion. Similarly, household income and asset ownership, education of adults, ownership of land, and rudimentary social networks also increase the likelihood of college completion, although all variables are not statistically significant. Holding other factors constant, young men living in metropolitan cities are more likely to complete college.

**Table 2: Coefficients from Logistic Regression
Predicting College Completion at Wave 2**

Wave 1 predictors	<i>Coefficient</i>	<i>Std. Error</i>
Age	-0.243	0.025
Grade completed	0.658 ***	0.033
English Fluency (None omitted)		
A little	0.297 ***	0.090
Fluent	0.406 *	0.183
Ever Repeated or failed a class (No omitted)		
Yes	-0.377 ***	0.112
Social Background (Forward caste omitted)		
Other Backward Classes	-0.111	0.103
Dalit	-0.048	0.121
Adivasi	0.128	0.194
Muslim	-0.244	0.140
Christian, Jain, Sikh	-0.316	0.204
Place of Residence (Metro city omitted)		
Other urban areas	-0.609 ***	0.164
More developed villages	-0.639 ***	0.182
Less developed villages	-0.641 ***	0.193
Log of per capita expenditure	0.343 ***	0.075
No. of consumer assets owned	0.054 ***	0.011
Highest class completed by household members	0.049 ***	0.011
Owns or cultivates land (No omitted)		
Yes	0.206 *	0.101
No. of social networks (None omitted)		
1	0.195	0.103
2	0.110	0.119
3	0.163	0.118
State controls	Yes	
Constant	-7.823	0.822
Wald Chi-Square (41 df)	1284.37	
Sample Size	12084	

Source: Authors' computation based on two waves of the IHDS, conducted in 2004-05 and 2011-12.

The predicted probability – the propensity for completing college – from this regression is divided into twenty equal categories and presented in Table 3. As column 4 of the table shows, very few students in strata 1-8 complete college. Suggesting a strong correlation between personal characteristics, household background, and college completion. However, for the strata 9-13, we have sufficient students who have managed

to overcome the disadvantages imposed by their background to complete college. Hence limit our subsequent analyses to individuals in strata 9-20.

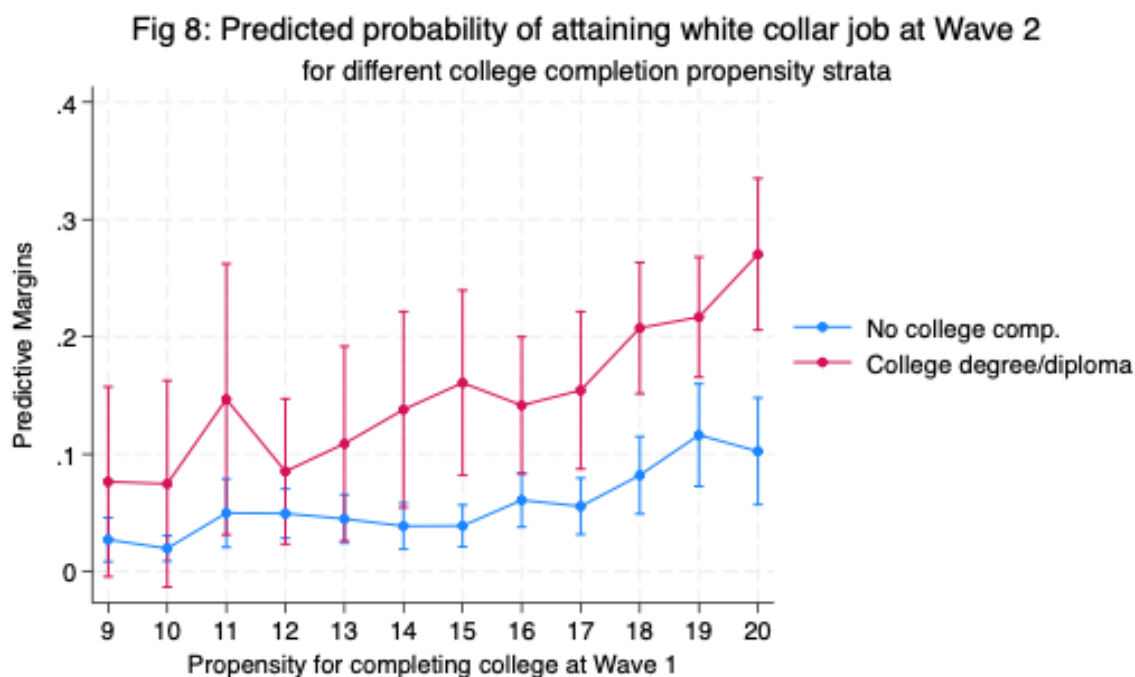
Table 3: Sample distribution by predicted propensity score for college completion

Propensity Score Stratum	Predicted Propensity		Sample Size		Total
	No College	College degree/diploma	No College	College degree/diploma	
1	0.001	0.001	601	4	605
2	0.003	0.003	599	5	604
3	0.005	0.006	603	1	604
4	0.009	0.008	602	2	604
5	0.015	0.014	597	7	604
6	0.021	0.022	595	10	605
7	0.030	0.029	585	19	604
8	0.040	0.040	591	13	604
9	0.052	0.052	562	42	604
10	0.067	0.067	571	33	604
11	0.083	0.084	552	53	605
12	0.104	0.105	540	64	604
13	0.131	0.131	533	71	604
14	0.164	0.166	495	109	604
15	0.205	0.207	467	137	604
16	0.260	0.262	447	158	605
17	0.330	0.330	417	187	604
18	0.430	0.433	353	251	604
19	0.555	0.560	255	349	604
20	0.733	0.763	178	426	604
Total	0.115	0.415	10,143	1,941	12,084

Note: * Shaded strata omitted from analysis of white-collar jobs (and Figure 8) due to very low likelihood of college completion and small sample sizes for college graduates.

Source: Authors' computation based on two waves of the IHDS, conducted in 2004-05 and 2011-12.

To examine the benefit of college education in gaining a white-collar job above and beyond the advantages offered by the background characteristics that allow students to complete college, we interact stratum reflecting propensity for completion with actual college completion in predicting white-collar occupation in Wave 2 using equation 2. Predictive margins from this equation are plotted in Figure 8. College graduates are consistently more likely to get white-collar jobs than those without degrees.



Source: Authors' computation based on two waves of the IHDS, conducted in 2004-05 and 2011-12.

Nevertheless, unlike the US data presented by Brand and Xie (2010), this graph shows that the benefits of college education are greater for the individuals who are expected to complete their education than those whose predicted propensity for college completion is low. The role of social background goes beyond college completion. Even when young men from privileged backgrounds fail to meet the expectations of college completion, they have a high rate of getting a white-collar job. Surprisingly, the predicted probability of gaining a white-collar job for non-college graduates in the top three strata is higher than for college graduates in the bottom three strata. This suggests that the benefits of a privileged upbringing are not limited to college graduates. Conversely, college graduation does not allow individuals from underprivileged backgrounds to overcome their initial disadvantage entirely.

6. Discussion

Our results suggest that college graduates are more likely to gain office jobs and professional positions. However, the hyper-competition in the job market means that only 20 per cent of college graduates in their twenties have a white-collar job. Some will find a good job after waiting for a few years, but many will replicate the experiences of Jeffrey's young men from Meerut and, after several years of waiting, will accept a manual job or return to the family farm (Jeffrey, 2010).

The unique contribution of this paper is to examine the heterogeneous benefits of college education. Brand and Xie (2010), found that in the United States, the individuals who overcame initial adversity were the most likely to gain from a college education. Our results show the opposite. We find that the benefits of college education are concentrated among the privileged.

In a labour market where educational expansion has fast-outpaced job growth, a college degree is insufficient to gain the coveted office job. The factors that create initial privilege and lead to a higher probability of college completion also predict higher benefits of college education.

Nonetheless, our findings have something in common with the US data. Brand and Xie (2010) note, “[this] pattern does not emerge because low propensity college goers earn more wages than do high propensity college goers; they do not. Rather the pattern emerges because low propensity non-college goers earn so little.” They argue that this occurs because privilege offers protection via social networks and other resources even in the absence of a college degree for high propensity students which is not the case for underprivileged students.

Our results also show something similar. There is close to zero chance of getting a white-collar job without a college degree for low-propensity young men. However, their chances of getting these jobs with a college degree are not much higher. Social networks, family background, and early school achievement all combine to improve the options for high-propensity students that far exceed the improvement in opportunity for low propensity students. This suggests that while college education offers an escalator for getting out of manual and casual jobs, the escalator for the privileged moves faster than for the less privileged.

It may well be that the factors that lead to a lower propensity for college graduation also place the students from these families into poor-quality colleges or fields of specialization and thereby reduce their opportunities for better jobs. However, the observation that lack of a college degree is not as great an impediment for students from more fortuitous circumstances, allowing them to surpass college graduates from poor backgrounds, suggests a cause for caution in accepting this argument.

To the best of our knowledge, little research has been undertaken in this area in India. We hope that insights from this paper will help us better understand labour market processes, including class biases in employment.

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