THE CHANGING CONTOURS OF INTERGROUP DISPARITIES AND THE ROLE OF PREFERENTIAL POLICIES IN A GLOBALIZING WORLD: EVIDENCE FROM INDIA

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Working Paper No. 267

CENTRE FOR DEVELOPMENT ECONOMICS
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The Changing Contours of Intergroup Disparities and the Role of Preferential Policies in a Globalizing World: Evidence from India

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December 2016

Abstract

How persistent are traditional socioeconomic hierarchies in the face of marketization, significant structural shifts in the economy, and increased political representation of lower-ranked groups, and do preferential policies have a role in addressing these inequities among social groups? We answer these questions in the context of India by comparing successive age cohorts of three broad social groups - Scheduled Castes and Tribes (SC-STs), Other Backward Classes (OBCs) and "Others" (proxy for upper castes) - and provide the first disaggregated picture of the evolution of inter-caste disparities since Indian independence in 1947. Based on data from the National Sample Survey (NSS), our results show convergence in terms of literacy and primary education. However, in terms of access to higher education, white-collar jobs, average household expenditure and daily wages, we find evidence of divergence over time. As the NSS does not directly contain data on beneficiaries of affirmative action, we implement an identification strategy that exploits the fact that access to preferential policies are jointly determined by both the age and the social group of the individual. The first- and second-order effects of affirmative action show that extending job quotas to OBCs in 1993 had direct positive effects on access to government jobs, as well as indirect effects on secondary school attainment.

JEL: I24, O15; J45; J78
Keywords: affirmative action, quotas, caste, India, education, occupation

1 Introduction

Traditional hierarchies or stratification based on social markers - such as caste in India, race in the United States or ethnicity in Nigeria - has been a characteristic of many of today's societies. As economies grow, transform and become globally integrated, do these traditional social cleavages get modified or remain unaffected? If they transform, as indeed seems likely, do groups converge on key socio-economic indicators and reduce gaps between them, or do the gaps widen? In this context, what role, if any, would preferential policies have in closing gaps between groups?

The paper tries to address these questions in the context of the second most populous country and the largest democracy in the world - India. These questions take special relevance as the Indian growth and reforms story enters its 25th year with the Indian economy becoming increasingly market-oriented and globally integrated. The process of marketization has also been accompanied by an important political phenomenon, viz., that of the rise of the socially disadvantaged lower-castes in the political sphere since the 1990s – India's so-called "silent revolution" (Jaffrelot, 2003). The taste based theories of discrimination suggest that competitive markets should result in eliminating discrimination, and theories of political representation also point towards a possible decline in inter-group disparities.

Deep-rooted caste inequalities, particularly the stigmatising practice of untouchability towards the lowest ranked castes, led to the reservation of seats in educational institutions (quotas) in some select areas as far back as the second decade of the 20th century during British rule. After Indian independence in 1947, this policy was incorporated into the new constitution of the country, making it one of the most far reaching preferential treatment policies in the world. Affirmative action (AA) was mandated for the socially most disadvantaged sections of society - the former untouchables or the Scheduled Castes (SCs) and to several indigenous groups, the 'Adivasis' or Scheduled

Tribes (STs).[1] These quotas were further extended by another 27 percent [2] at the central (federal) government level to another group of castes and communities called the "Other Backward Classes" (OBCs). OBCs who comprise around 44 percent of the population, were given preferential treatment for accessing government jobs in 1993 and later higher education in 2006.[3]

To shed light on the first question of evolution of caste disparities, we use data from two rounds of Employment-Unemployment Surveys (EUS) of the National Sample Survey (NSS) for 1999-2000 and 2011-12, and provide the *first* nationally representative disaggregated evidence on the evolution of gaps on key indicators - such as occupation, wages, household expenditure, educational attainment and learning outcomes - over time by comparing SC-STs, OBCs and "Others", a category that includes the Hindu upper castes and could be considered a loose approximation for the latter. Our assessment of changing contours of caste disparities is based both on documenting changes over the decade, as well as on a comparison of five age cohorts across the three social groups.[4] The results show convergence between the three groups in educational attainment till secondary level (8th grade), whether measured by relative or absolute gaps, over successive cohorts confirming the earlier result in the literature. However, for higher secondary education (10th grade) and graduates and above, we find that the absolute gap between "Others" on the one hand, and OBCs and SC-STs on the other has increased, despite convergence in terms of relative gaps. We then explore the dif-

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[1]AA for the SC-STs takes the form of constitutionally mandated quotas, with 22.5 percent of all government jobs and higher educational institutions seats reserved for these two groups. This 22.5 percent share roughly corresponds to the population share of the two groups. Additionally, there are 33 percent quotas for women in rural and urban local bodies.

[2]The figure of 27 percent was arrived at in the following fashion: a Supreme Court ruling mandates that reservation cannot extend to the majority. Given the already existing quota of 22.5 percent for SC-STs, only a maximum of 27 percent of the seats could be reserved for the OBCs, as that would take quotas to 49.5 percent, just short of 50 percent

[3]The appendix provides a brief overview about who the OBCs are and how the category of OBCs was constructed.

[4]We are cognizant of the difference between SCs and STs, and in other contexts, of the need to study them separately. The only reason to club the two categories is that their economic outcomes are very similar; also, this paper is concerned with tracing changes vis-à-vis the OBC category, thus clubbing them into a composite category is not unreasonable.

ferences among the caste groups on learning outcomes, namely, the proportion of children aged 8 to 11 who can (i) read an entire paragraph or story; (ii) divide or subtract, using the two latest rounds of the Indian Human Development Survey (IHDS). The results show that caste gaps in learning outcomes are large with about 62 and 55 percent of the children from the "Others" groups being able to read an entire paragraph or story and divide or subtract, respectively. Comparable proportions for OBCs and SC-STs are 52 and 47 and 43 and 37 percent, respectively, and that these gaps have not narrowed over time. This shows that accounting for differences in learning outcomes would imply much larger gaps between the social groups, compared to when we look only at quantity based measures of education.

In terms of occupation gaps, for the most prestigious occupational category, viz., white collar jobs, we find that both relative and absolute gaps have remained static. Comparing average real wages of the three groups between the two years, we find that the gaps have widened between Others and SC-STs (as well as between OBCs and SC-STs), mainly on account of the gap having increased for the top 25 percent of wage earners. Decomposing the wage gap into an explained and unexplained component reveals that the latter has risen over the period, implying an increase in the earnings differential that cannot be accounted for by the available observable characteristics.

The second part of the paper addresses the question of the first-order effects of AA by examining the extension of quotas in government employment to OBCs in 1993.[5] In the absence of direct data on the use of AA, our identification of the effects of AA on OBCs exploits the fact that access to quotas is jointly determined by the interaction of year of birth and the social group dummy, and implements a difference-in-differences (D-I-D) estimator. We provide a test of our identifying assumption, that is, the cohorts unaffected by the policy change from the three groups display parallel trends, and hence can be considered to be appropriate counterfactual to employ in a D-I-D exercise.

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[5]Evaluating the first-order effects for SC-ST quotas is difficult as localized quotas were instituted in the second decade of the 20th century, and continued post-independence. Thus, given the absence of a control group, or a before-and-after scenario, estimating first-order effects of quotas for SC-STs is harder.

The D-I-D estimates show that the institution of quotas increases the share of OBCs in government jobs by around 4 percentage points. We also find additional positive effects, presumably due to the incentives presented by job quotas. Government jobs require eligible candidates to have at least completed secondary school education (Class X) in order to be eligible for even the low-paying jobs (also known as Class IV or group D jobs). In line with this, we find that AA resulted in an increase in the probability of completing secondary education by 5 percentage points for the youngest cohort of OBCs.

Our first key contribution to the existing literature on inter-caste disparities is to be able to account for the OBCs - who account for more than 40 percent of the population - as a separate group. The other major comparable study, Hnatkovska et al. (2012), undertakes a two-way comparison between SC-STs and "non-SC-ST". They find evidence of convergence across a range of indicators between 1983 and 2005 based on a comparison of sequential rounds. However, their evidence is not able to isolate the trajectory of SC-STs relative to OBCs and upper-castes separately. Given that the bulk of the flux in caste hierarchies lies in the middle, i.e. is due to the relative position of the OBCs, we believe that in order to gauge the contours of change, we need to examine the three categories separately, at the very least, if not at an even more disaggregated level, as we do in a companion paper[6]. Second, whereas Hnatkovska et al. (2012) concentrate on relative gaps, we present the evolution on both absolute as well as relative gaps. The results on the evolution of inter-caste disparities, especially on higher categories of education, highlight the importance of separating the OBCs from the upper castes, as well as accounting for absolute gaps. This results in a more nuanced picture regarding convergence/divergence among the caste groups in the country, as compared to the message of Hnatkovska et al. (2012), who find " that this period has been characterized by a significant convergence of education, occupation distribution, wages and consumption levels of SC/STs toward non-SC/ST levels." Moreover, though Hnatkovska et al. (2012) highlight the centrality of education in explaining this convergence, their analysis is restricted to "quantity" based measures of

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[6]Refer to Deshpande and Ramachandran (2016).

schooling. Since the publication of the first Public Report on Basic Education (PROBE), the inability of the education system to produce even basic skills has come to light with estimates suggesting that it is essential to look at not only gaps in quantity based measures of educational attainment but also take into account gaps in actual state of learning.[7]. We thus further add to the analysis of Hnatkovska et al. (2012) by providing estimates on evolution of absolute and relative caste gaps on student learning outcomes.

The analysis underscores the continued relevance of caste in understanding contemporary inequalities in Indian society, and sheds light on how traditional social hierarchies not only tend to persist but in fact can become reinforced, even in the face of marketization and access to political power by lower-ranked groups. The widening of disparities in some key indicators such as higher education and white-collar jobs despite the positive effects of quotas, suggest that these already large gaps would have been even larger in the absence of affirmative action. Finally, the multi-dimensional nature of disparities suggests that multi-faceted policy interventions that include, but go beyond, affirmative action might be required for the elimination of deep rooted social hierarchies.

2 A brief review of the literature

Our paper speaks to two bodies of literature. One is the large body of work on caste disparities and more broadly, on the salience of caste hierarchies in contemporary India. The hierarchical nature of the caste system is simultaneously its most commonly known characteristic and its most disputed one. While some degree of hierarchy among castes, implicitly conveyed in the terms "upper" and "lower" castes, seems to be conventional wisdom, a large volume of scholarly work is devoted to questioning whether the old hierarchies are valid any more, as castes that were previously low in the

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[7]For, instance less than 60 percent of the children enrolled in Classes 3 to 5 can read a Class I text; similarly, only half the students enrolled in classes 5 to 8 can use a calendar. More for a succinct review of the state of education in India refer to Drèze and Sen (2013, Ch. 5)

hierarchy are now dominant castes, replacing the older elite that were mainly upper-castes.[8] This questioning of hierarchy is different from the earlier critique of Dumont (1970) seminal work "Homo Hierarchicus" that demonstrated how Dumont's suggestion of a universally valid, linear hierarchy along the scale of ritual purity/pollution, in which Brahmins are at the top and untouchables at the bottom, is not a correct representation of the contemporary caste system. (See, for instance, Gupta (1984) excellent critique of Dumont's argument).

The nature and degree of change in the economic ranking between castes, or broad caste groups, is a matter of empirical verification. While there is a large and growing body of work documenting changes in the standard of living indicators of SCs and STs, as well as the economic discrimination faced by these groups, (see Deshpande (2011), for a review of the recent research), the discussion about the material conditions or the economic dominance of OBCs in India is prompted more by beliefs, or localized case studies, rather than by an empirical analysis of the macro evidence. Part of the reason for this lacuna is the lack of hard data: even in the 2011 census, OBCs were not counted as a separate category, despite affirmative action targeted towards OBCs at the national level since 1991, and at the state level since much earlier. This would be the only instance of an affirmative action anywhere in the world where the targeted beneficiaries of a national program are not counted as a separate category in the country's census.

Researchers have, therefore, had to rely on data from large sample surveys for a broader analysis of various caste groups, for instance, Deshpande (2007); Iyer et al. (2013); Madheswaran and Attewell (2007); Zacharias and Vakulabharanam (2011), among others. Existing evidence suggests that OBCs lie somewhere in between the SC-STs and the Others, but first, very little is known about the relative distance between the three broad caste categories and second, in order to make a meaningful intervention about the flux in caste hierarchies, it is important to trace how their relative economic position has changed vis-à-vis each other over time. Here again, the economic researcher is stymied by the lack of good longitudinal data. It is clear that seen at the national level, the OBC category

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[8]See, for instance, the various essays in Gupta (2004).

is an omnibus one, which includes a diverse set of communities. In some states, groups classified as OBCs are dominant landowning castes, such as Kammas and Reddys in Andhra Pradesh, or Vokkaligas and Lingayats in Karnataka. These groups are not necessarily backward in terms of their socio-economic status, but are included in the legal OBC category. (See Appendix A on a brief history of the making of the OBC category). The OBC count with NSS data includes all the legal OBCs, thus cannot distinguish between dominant OBC castes and those that are truly backward. We should note that in states where (legal) OBCs are also dominant (in terms of status), the aggregate outcomes of OBCs would be pulled up, as the dominant OBCs are also the landowning castes. This heterogeneity also characterizes the comparison social category of "Others" (and to a smaller extent, SCs and STs), such that the inclusion of poorer "Others" pulls the averages for the "Others" category down. As a result, a comparison between these omnibus categories would understate the actual gap between the top end of the "Others" – the highest-ranked groups, and those who are at the bottom of the caste hierarchy. While the use of these broad categories limits a nuanced understanding of inter-community differences within the category, the advantage is that it enables us to identify the "macro" picture, which smaller, case-study-based comparisons do not allow, especially given that the number of communities runs into thousands.

The second branch of literature that our paper contributes to is related to the impact of AA - both first-order as well as second-order impacts on occupational and educational outcomes. Evaluating the former for SC-ST is difficult as localized quotas were instituted in the second decade of the 20th century. Thus, given the absence of a control group, or a before-and-after scenario, estimating first-order effects of quotas for SC-ST is hard. Second-order impacts are not really the focus of this paper; suffice it to note that on all those dimensions, there is a debate, but the evidence does not suggest that AA necessarily has adverse effects on productivity or efficiency. Research from India, where caste quotas predate the country's independence in 1947, shows that AA need not lower workplace productivity (Deshpande and Weisskopf 2014), or create a mismatch (Bertrand et al. 2010; Bagde et al. 2016), or cause beneficiaries to internalize the stigmatizing attitudes of their peers (Deshpande

2016). This resonates with a large body of evidence in the US context that not only questions the adverse effects of AA, but suggests that there might be instead be positive externalities that boost workplace efficiency (Holzer and Neumark, 2000), generate strong positive outcomes for beneficiaries of AA in education (Bowen and Bok 1999), or have no adverse effects on performance of beneficiaries (more references are cited in the meta-analysis by Leslie et al. (2014)). In addition to AA in jobs and education, India's AA program extends to electoral quotas as well; recent research also finds substantial positive redistributive effects of these quotas (Besley et al. 2012; Beaman et al. 2012 etc).

3 Changing Contours of Caste Disadvantage

3.1 Data and methodology

We use the 1999-2000 (55th round) and 2011-12 (68th round) data from the EUS of the NSS. For the latter, we focus on individuals between 16 and 65 and construct the following cohorts using age relative to 2012: For the 68th round, this gives us a sample of 456,991 individuals, of which 299,455

Table I: Sample of Cohorts used from NSS-55 and NSS-66 for the Analysis

	Age in 2012	Birth year
Cohort 1	65-56	1947-1956
Cohort 2	55-46	1957-1966
Cohort 3	45-36	1967-1976
Cohort 4	35-26	1977-1986
Cohort 5	25-16	1987-1996

individuals are between 15 and 65 years.[9] For the 55th round, our sample consists of 510,894 individuals.

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[9]We use appropriate weights provided by the NSS to report estimates for the population, not just for the sample.

To analyze convergence or divergence, we use the concept of absolute and relative gaps. The relative and absolute gap for any cohort between any two caste groups j and k, for the for the ith indicator, and n^{th} cohort are defined as:

$$RelativeGap_{jk} = \frac{Indicator_{ijn}}{Indicator_{ikn}}, (1)$$

and

$$AbsoluteGap_{jk} = Indicator_{ijn} - Indicator_{ikn} (2)$$

The D-I-D based on relative and absolute gaps between any two caste groups j and k, for the for the ith indicator, and between the $n+1^{th}$ and n^{th} cohort in turn are defined as:

$$D-I-D-RelativeGap_{jk} = [\frac{Indicator_{ij(n+1)}}{Indicator_{ik(n+1)}}] - [\frac{Indicator_{ijn}}{Indicator_{ikn}}], (3)$$

and

$$D-I-D-AbsoluteGap_{jk} = [Indicator_{ij(n+1)} - Indicator_{ik(n+1)}] - [Indicator_{ijn} - Indicator_{ikn}] (4)$$

To see the relationship between absolute and relative gaps, let $y(t)$ and $x(t)$ represent the achievement of group 1 and 2 at time t, respectively. Now the relative gap is represented as $\frac{y(t)}{x(t)}$. The change in relative gap in turn is given by:

$$\frac{d(\frac{y(t)}{x(t)})}{dt} = \frac{x(t)y'(t) - y(t)x'(t)}{(x(t))^2} = \frac{x(t)(y'(t) - x'(t)) - \Delta y(t)x'(t)}{(x(t))^2}, \quad (5)$$

where $\Delta y(t) = y(t) - x(t)$. It is easy to see that if $(y'(t) - x'(t)) < 0 \Rightarrow \frac{d(\frac{y(t)}{x(t)})}{dt} < 0$; or if absolute gaps decline, so do relative gaps. However, a decline in relative gaps does not necessarily imply a decline in absolute gaps.

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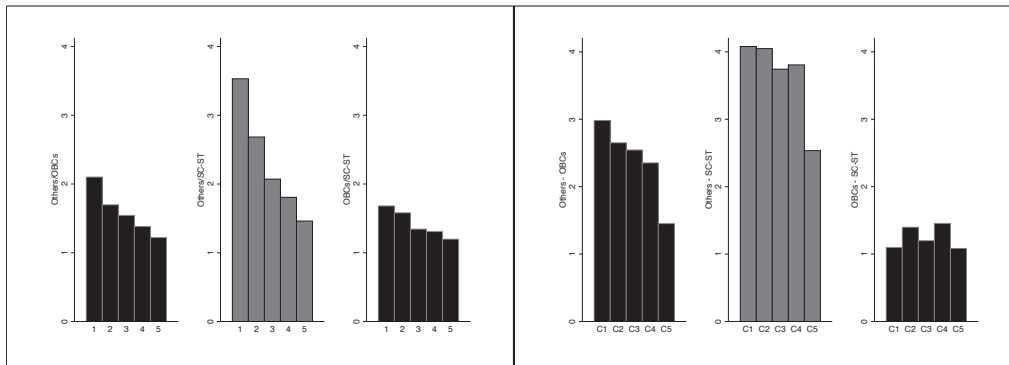
(a) Evolution of relative gaps
Years of education

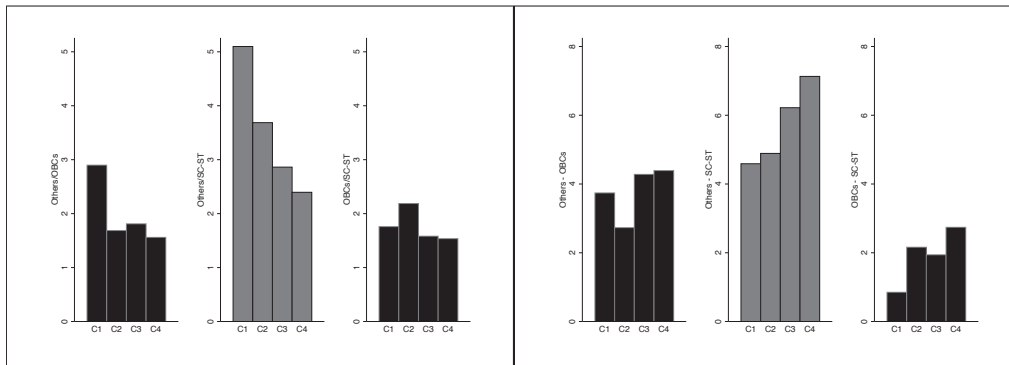(b) Evolution of absolute gaps
Years of education

Figure I: Evolution of relative and absolute gaps - average years of education

3.2 Educational indicators

3.2.1 Years of education

Overall, all groups have increased their human capital over the time period, as measured by average years of education[10] - from Cohort 1 (born 1947-56) to 5 (born 1987-96) the SC-ST, the OBCs and the Others increased their average years of schooling from 1.61 to 5.50, 2.70 to 6.58 and 3.38 to 7.99, respectively. Figure I shows the evolution of relative and absolute gaps in average years of education across cohorts. Figure A2a shows that the relative gaps between any two caste groups declines over the five cohorts, and suggests convergence in years of education. Figure A2b shows the evolution of the absolute gaps in years of education between the caste groups. We note that the absolute gaps between the "Others" on the one hand, and the SC-ST and OBCs on the other hand have declined, though the extent of reduction in gaps is much more muted compared to relative

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[10]The NSS does not have information on years of education. We use the method followed in Hnatkovska et al. (2012) for converting information on educational attainment to years of education. Thus, those with formal schooling were assigned 0 years of education; those with schooling below primary were assigned 2 years; those with primary completed 5 years; those with middle school completed 7 years; those with secondary completed 10 years; those with higher secondary 12 years; those with graduate degrees in technology, engineering, medicine and agriculture 16 years and those with graduate degrees in all other subjects were assigned 15 years.

(a) Evolution of relative gaps
Proportion of cohort with higher
secondary and above

(b) Evolution of absolute gaps
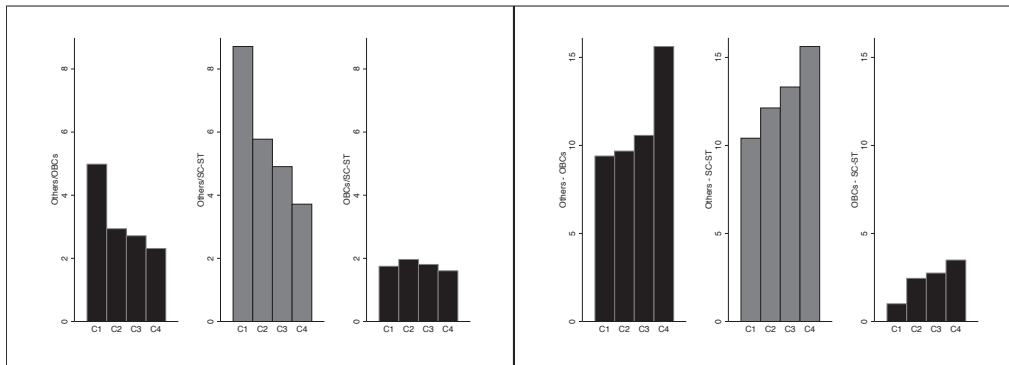Proportion of cohort with higher
secondary and above

Figure II: Evolution of relative and absolute gaps - Proportion of cohort with higher secondary and above

gaps. Thus, we find convergence in in this indicator between the three caste groups, measured both by relative and absolute gaps. However, the figure also indicates that the gaps (absolute or relative) are larger between the "Others" and the SC-ST, as compared to the "Others" and the OBCs, implying that treating OBCs as part of the "Others" category will overstate the extent of decline in caste disparities in India.

3.2.2 Higher educational categories

The same convergence holds true for lower categories of education up to the secondary level (Class 8 in India).[11] However, comparing proportions of cohorts across castes that have finished higher secondary education or are (under)-graduates and above (Figures II and III), the distinction between absolute and relative gaps starts to reveal itself. Whereas, the evolution of relative gaps (Figures IIa and IIIa) show narrowing of caste gaps in the country between the "Others" and the two socially disadvantaged groups, the picture reverses when absolute gaps are considered (Figures IIb and IIIb). Given that we are comparing social groups within the same country, we believe absolute rather than

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[11]The results for the other lower categories of education are not shown here but are available from the authors upon request.

(a) Evolution of relative gaps
Proportion of cohort with graduate
degree and above

(b) Evolution of absolute gaps
Proportion of cohort with graduate
degree and above

Figure III: Evolution of relative and absolute gaps - Proportion of cohort with graduate degree and above

relative gaps are a better representation of the evolution of between-group inequalities. These results show that not only have traditional hierarchies not reversed, as "Others" are still on top, OBCs in the middle and SC-STs at the bottom, but if anything, these rankings have been further reinforced.

3.2.3 Comparison of learning outcomes of children

The increase in enrolment and years of schooling has been accompanied by a worrisome trend of stagnating, or worse, deteriorating outcomes in terms of actual skills being imparted in schools. For instance, the Annual Status of Education Report (ASER) of 2011 found that only 58 percent of children enrolled in Classes 3 to 5 can read a Class-I text, and less than half (47 percent) can do a simple two-digit subtraction. Given the lack of strong correlation between years of schooling and the actual state of knowledge, we now explore caste gaps and their evolution on basic learning outcomes using the 2004-05 and 2011-12 rounds of the Indian Human Development Survey (IHDS).

Table II shows that the absolute levels of learning are very similar to the one reported by the ASER, 2011 survey. Moreover, over the two rounds there is little improvement in the two learning outcomes for children aged 8 to 11 - (i) the ability to read an entire paragraph or story; (ii) the ability

to subtract or divide. Intergroup differences shows that caste hierarchies remain relevant for the formation of these basic skills: the absolute gap in the proportion of children who are able to divide or subtract (read an entire paragraph or story) is a whole 20 (18) and 10 (9) percentage points more for the "Others" compared to the SC-ST and OBCs, respectively. Given that on an average only 50 percent of the children are able to perform both tasks, this amounts to an advantage of "Others" over the SC-STs and the OBCs of roughly 40 and 20 percent, respectively. Figures A1 and A2 in the Appendix show that in terms of learning outcomes both absolute and relative gaps remain largely constant over the time period. This suggests that the gaps measured by quantitative measures of educational attainment tend to understate the true extent of gaps between the social groups.

Table II: Evolution of learning outcomes over the two round of IHDS

	Proportion of children aged 8 to 11 who can read an entire paragraph or story		Proportion of children aged 8 to 11 who can divide or subtract	
	(1)	(2)	(3)	(4)
	2012 Round	2005 Round	2012 Round	2005 Round
SC-ST	0.43	0.43	0.35	0.37
OBCs	0.52	0.53	0.45	0.47
Others	0.62	0.62	0.55	0.56

3.2.4 Intergenerational transmission of education

Education, especially higher education, is seen as a key to achieve socio-economic mobility, and the degree to which offsprings' achievements do not depend upon their parents if they have 'what it takes' (i.e. education, skills, talent backed by hard work) can be seen as a gauge of how fair and meritocratic societies are. This section examines to what extent is access and success in education correlated with parental or family background by caste groups in order to assess the role of education in social mobility: is it enabling intergenerational mobility or is it an instrument of intergenerational persistence?

In order to assess this, we match the years of education of every male household head to the years

of education of the male child.[12] We then estimate the measure of intergenerational persistence in education, for the three social groups and two survey rounds, by estimating the following equation:

$$E_i^s = \alpha + \beta_1 Others * E_i^f + \beta_2 SCST * E_i^f + \beta_3 E_i^f + SC - ST_i + OBC_i + R_i + S_j + A_i + \varepsilon_i, (6)$$

where E_i^s and E_i^f refers to the years of education of son labeled i and father of i, respectively, R_i are the dummies for the religious group of individual i, S_j refer to state fixed effects, A_i the age of son i, ε_i is the error term.

The OBCs are the omitted category and the coefficient β_3 is the parameter of intergenerational persistence for the OBCs; β_3 measures how strongly the son's education depends on his father's education for the OBC group. A value of 0 would imply that there is no independent effect of father's education on the son's education and there is complete intergenerational mobility. The coefficients β_1 and β_2, in turn, capture whether the effect of father's education is different for the "Others" and the SC-ST group as compared to the OBCs. The results are shown in Table III for the two rounds.

The results show a decline of 17 percentage points in the relative intergenerational persistence of education over the two rounds; this result is very similar to Azam and Bhatt (2015). Comparing the social groups, we see that β_1 is negative and significant at the 1% level across the two rounds indicating, relative to the OBCs, the effect of father's education on son's education is lower for the "Others" group, which implies that intergenerational persistence for the social group "Others" is lower.

In case of the comparison between OBCs and SC-STs, we see greater intergenerational persistence for the SC-ST in the 55th round but the two groups are not statistically distinguishable in

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[12]We identify father-son pairs based on the household identifier and "relationship to head of household" variable. Thus, we can only identify father-son pairs residing in the same household. Since daughters typically marry early and move to the marital home, NSS data does not have a mechanism to match daughters with either fathers or mothers, unless they are resident in the same household. Most resident daughters are minors, and many are still studying, so their ultimate educational category is not known at the point the survey is conducted.

Table III: **Differences in intergenerational persistence in education between socially backward and non-backward groups**

	NSS -55	NSS -68
Intergenerational Coeff * Others (β_1)	-0.0370***	-0.0352***
	(0.009)	(0.008)
Intergenerational Coeff * SC-ST (β_2)	0.0299**	0.00296
	(0.011)	(0.010)
Integenerational Coefficient (β_3)	0.523***	0.432***
	(0.007)	(0.006)
SC-ST dummy	Yes	Yes
Others dummy	Yes	Yes
State Dummies	Yes	Yes
Religion Dummies	Yes	Yes
Age	Yes	Yes
Observations	51,121	41,281
R-squared	0.34	0.31

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

2011-12. An alternative way of analyzing generational shifts would be to construct a matrix which depicts the transitional probabilities of the son's education belonging to a particular education category given the fathers level of education. A detailed analysis of the transition matrix is available from the authors upon request.

3.3 Occupation and wages

3.3.1 Occupation

Table IV shows the percentage of individuals from each social group and cohort employed in three broad occupational categories following a subjective classification based on Hnatkovska et al.

Table IV: Percentage share in different occupational categories by cohort and social group

Social Group	Agricultural jobs	Blue collar jobs	White collar jobs	
Cohort 1				
SC-ST	63.84	30.17	5.99	100
OBC	59.28	29.06	11.66	100
Others	47.04	27.82	25.14	100
Total	57.13	29.02	13.85	100
Cohort 2				
SC-ST	56.66	34.88	8.46	100
OBC	50.96	34.76	14.28	100
Others	38.04	35.28	26.69	100
Total	48.72	34.95	16.33	100
Cohort 3				
SC-ST	53.41	38.18	8.41	100
OBC	47.76	38.35	13.9	100
Others	35.73	36.7	27.56	100
Total	45.98	37.84	16.18	100
Cohort 4				
SC-ST	50.08	41.17	8.75	100
OBC	43.99	41.73	14.28	100
Others	31.5	41.4	27.1	100
Total	42.38	41.47	16.14	100

(2012): agricultural jobs, blue collar jobs and white collar jobs. We restrict the analysis to individuals in the working ages of 26 to 65 and thus do not consider Cohort 5 aged 16 to 25 in 2012. The category of agricultural jobs collects workers such as farmers, fishermen, loggers, hunters etc.; blue collar jobs collects workers such as sales workers, service workers and production workers; and finally, white collar jobs collects people employed as administrators, executives, managers, professionals, technical and clerical workers. The percentage of people employed in agricultural, blue-collar and white collar jobs changes from 57.13 to 42.38, 29.02 to 41.47 and 13.85 to 16.14, respectively, from cohort 1 to 5.

Overall, group differences in occupational distribution across the three categories have remained largely static. Here, for brevity, we concentrate on the most prestigious occupational category: white collar jobs. Figure IVa and IVb shows the evolution of relative and absolute gaps between the social

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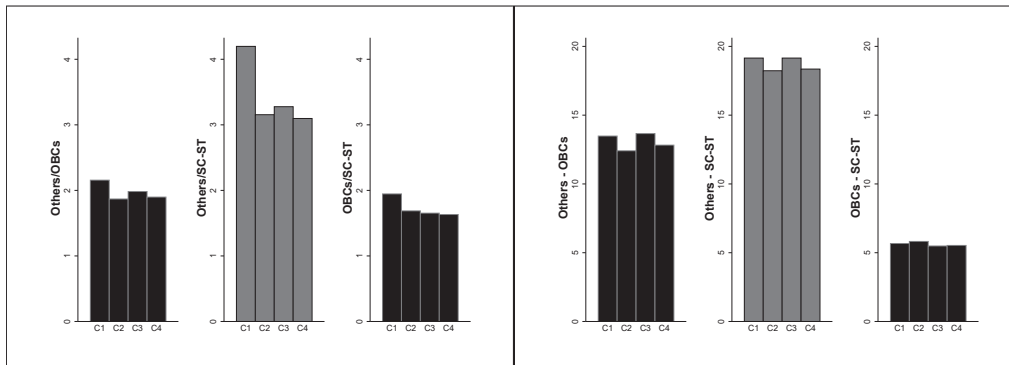
(a) Evolution of relative gaps
Proportion of cohort with white collar jobs

(b) Evolution of absolute gaps
Proportion of cohort with white collar jobs

Figure IV: Evolution of relative and absolute gaps - Proportion of cohort with white collar jobs

groups by cohort. The picture shows that OBCs have narrowed the gap, relative and absolute, from a ratio of 2.15 to 1.89 and a percentage point difference of 13.48 to 12.82, respectively. However, comparing cohorts 2 and 4 suggests the opposite, that is, a widening of both absolute and relative gaps. Thus, the overall picture is one of traditional hierarchies in occupational structures remaining largely unchanged since independence. In the appendix we present the presents D-I-D estimates of four indicators of standard of living - monthly per capita expenditure (MPCE) expressed in 1982 prices, proportion of the group that is urban, household size and land owned in hectares - for the three major caste groups for the two survey rounds for the years 1999-2000 and 2011-12 respectively. In terms of MPCE, OBCs and SC-ST fall behind by INR 10 and 23, respectively, as compared to the "Others" in terms of the real MPCE over the two rounds. As the average real MPCE of the OBCs and SC-ST in 1999-2000 was INR 105 and 121, respectively, the absolute divergence is economically important and around 10 and 20 percent of their real MPCE in the 55th round.

3.4   Wages

We analyze how the real daily wage gaps between the groups - OBCs vs "Others" and SC-ST vs "Others" - evolve over the two rounds. We analyze not only how the mean wage gap changes

over the two rounds, but also the wage gaps between the groups at each quantile of the earnings distribution.

We include wages for all workers who reported a positive wage. Thus, our data includes regular wage/salaried workers as well as those casual workers who reported a positive wage. The nominal average daily wage for men in the 25-65 age group in 2011-12 was INR 421.79 for Others, INR 248.07 for OBCs and INR 207.85 for SC-ST. In 1999-2000, these amounts were 143.47, 85.16 and 68.67 respectively. In order to analyse the change in the wage distribution over time, the nominal daily wages were converted to real daily wages at 1982 prices using the All India Consumer Price Index.[13] Figure V shows the log real daily wage gaps along the entire distribution of wage earners
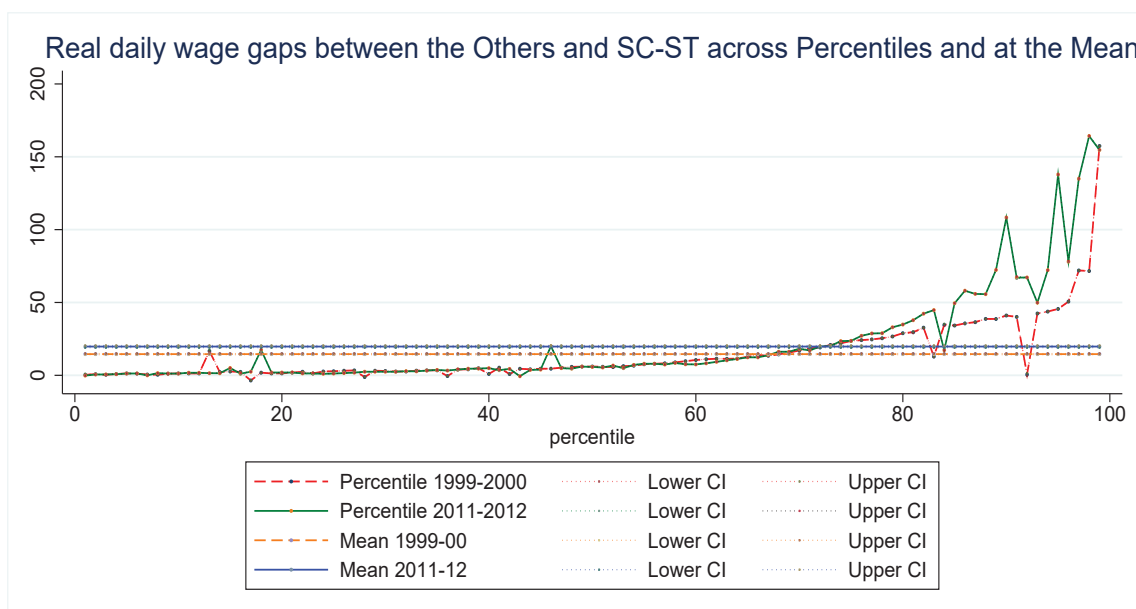

Figure V

between "Others" and SC-STs, along with the mean wage gap for both years, 1999-2000 and 2011-12. We see that over the two rounds, the mean wage gap has increased; column (3) of Table V,

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[13]The deflators have been accessed at the following link https://data.gov.in/catalog/all-india-consumer-price-index-ruralurban. More precisely, the exact all India deflators used are 4.41 and 3.803 to convert wages in 1999-00 to 1982 prices for urban and rural workers, respectively. The deflators used to convert wages in 2011-12 to 1982 prices for urban and rural workers is 9.587 and 8.082, respectively.

which presents the regression D-I-D estimates of the evolution of the absolute gaps in of real daily wages expressed in 1982 prices confirms the result, and shows the SC-ST real daily wage gap has increased by a further INR 5.33 as compared to the "Others" over the two rounds considered. In terms of the real daily wage across the quintiles, we see that the gap remains unchanged over the two rounds until the 80th percentiles. For the top two deciles of wage earners, the gap has actually increased over the period.

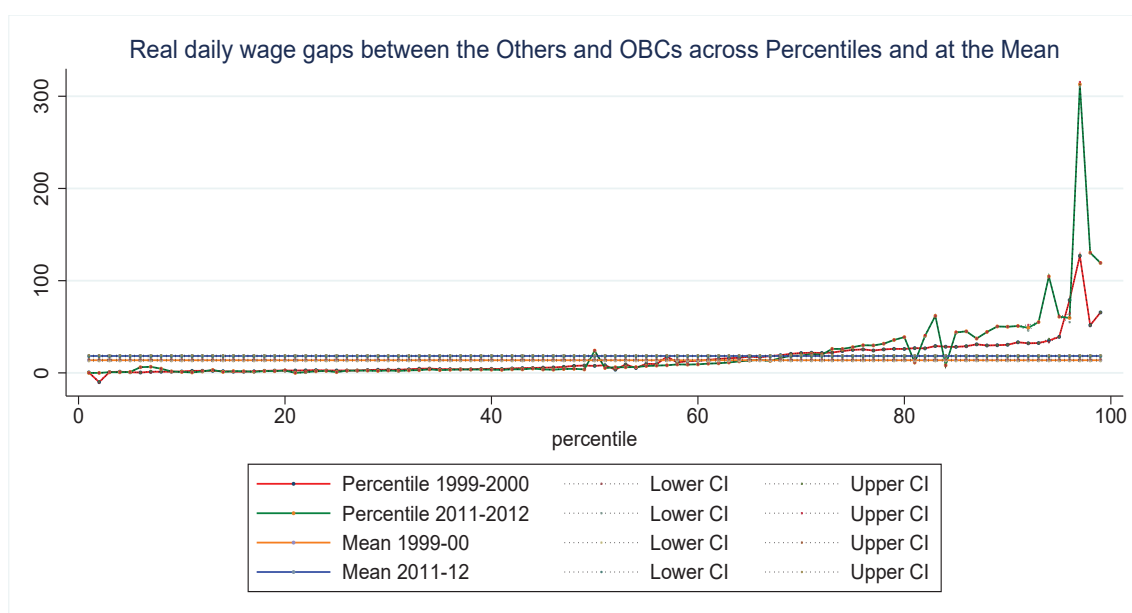Figure VI shows that the picture for the Others-OBC log real daily wage gap is similar in

Figure VI

that there is a small increase in the mean real daily wage gap over the period. The D-I-D results comparing the OBCs to the "Others" and shown in column (1) of Table V confirms this result and shows the real daily wage gap has increased between the OBCs and "Others" by a further INR 4.59. The evolution of the wage gaps across the various quintiles show a very similar picture to the one seen in Figure V; the gap remains unchanged for the bottom four quintiles over the two rounds, and increases for the top quintile though the increase is lower than that observed for the comparison between the SC-ST and "Others". In the appendix we present the Blinder-Oaxaca decompositions

Table V: D-I-D estimates on evolution of daily real wages

Dependent variable - Daily real wages in 1982 prices			
	(1)	(2)	(3)
OBCs*Dummy for NSS-68 Round	-4.59***	0.74	
	(1.00)	(0.54)	
	[-6.24 - -2.94]	[-0.16 - 1.63]	
SC-STs*Dummy for NSS-68 Round			-5.33***
			(0.93)
			[-6.86 - -3.80]
OBC Dummy	-13.8***	3.56***	
	(0.67)	(0.42)	
	[-14.9 - -12.7]	[2.87 - 4.26]	
SC-ST Dummy			-17.3***
			(0.57)
			[-18.3 - -16.4]
Observations	87,092	89,101	88,025
R-squared	0.038	0.015	0.082

In all the three columns the dependent variable is the log of real wages in 1982 prices. The first column compares the OBCs to the Others, column (2) compares OBCs to the SC-ST and column (3) compares the SC-ST to the Others. 95 percent confidence intervals are presented in square brackets. $*p < .10; **p < .05; ***p < .01.$

of the wage gaps between the three social groups (Blinder, 1973; Oaxaca, 1973). The results show that the unexplained component has risen over the period, implying an increase in the earnings differential that could be due to labor market discrimination or an increase in returns to unobservable characteristics that favor the upper-castes.

4   Impact of OBC reservations

In this section we examine whether the extension of quotas to OBCs since 1993 at the Central government level for public sector jobs, as a result of the acceptance of the Mandal Commission recommendations in 1991, had any effect on the occupational and educational outcomes of the OBCs. Specifically, we estimate the effect of this extension on three outcomes: (i) on access to public sector jobs - which was the direct aim of the policy; (ii) on the share of the group with (under) graduate education or more, which is not a direct aim of the policy, as quotas for OBCs in higher educational

institutions at the Central level were extended in 2006; and (iii) on finishing secondary schooling or more, which again is not a direct target for the AA policy.[14] Given that implementation of quotas has been uneven for the SC-STs and positions are often not filled, there is no reason to believe that implementation of the policy will be drastically different for OBCs. Additionally, OBC quotas are means-tested, which in India is characterized as being subject to a "creamy layer" exclusion, which means that OBC candidates above a certain economic threshold cannot take advantage of quotas. Thus, both due to the uneven implementation of quotas, as well as due to the creamy layer exclusion, the first outcome is not necessarily guaranteed, and therefore, this evaluation is not trivial. The second and third outcomes would be natural but indirect consequences of job quotas, as applicants for government jobs need to have at least completed secondary schooling (Class X) in order to be eligible for low-paying jobs (also known as Class IV or group D jobs), and be graduates or above in order to be eligible for higher-paying jobs (also known as Class I or group A jobs).

4.1 Identification strategy

The strategy to evaluate the effects of AA is based on a difference-in-differences (D-I-D) approach. "Others" did not have access to reservation both before and after 1993. SC-STs had access to reservation at the center both before and after 1993. Thus, these two social groups did not face any change in terms of affirmative action policies and form our control groups. OBCs did not have any access to reservation for central government jobs; however post-1993, 27 percent of all seats in government jobs at the central level were reserved for them. Thus, we believe that OBC individuals who were 16 or younger in 1993 (or 35 or younger in 2012) had the possibility of changing their educational choices in response to the policy change. For public sector jobs, individuals who were 20 or younger in 1993 (or 40 or younger in 2012) could similarly aim for public sector jobs due to the introduction of quotas.

In order to estimate the impact of quotas, we consider cohorts aged 20 to 50 years in 2011/12,

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[14]There are no quotas applicable to school education.

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with the youngest (tc1) between 21 and 25 years old and the oldest (tc6) between 46-50 years, with tc2 to tc5 in between.[15] The treated OBC cohorts for the two educational outcomes, which are the indirect effects of AA, are the cohortsÃćÂĂâĎć tc1-tc3; whereas for the dependent variable of holding a public sector job, the treated cohorts are tc1-tc4. The difference-in-differences estimator is implemented by the following equation:

$$O_{ijk} = \delta_0 + \sum_{k=5}^{k=1} (OBC_j * c_{ik})\delta_{1k} + \sum_{k=5}^{k=1} (SC - ST_j * c_{ik})\beta_{1k} + OBC_j + SC - ST_j$$

$$+ year_i + state_i + Urban\_dummy + \varepsilon_i, \quad (7)$$

where, O_{ijk} is the outcome of interest for individual i from social group j and cohort k. $delta_{1k}$ and β_{1k} captures the effect of the affirmative action policies of 1993 on individuals belonging to cohort k from the OBCs and SC-ST group, respectively.

The use of a D-I-D estimator assumes that the groups being compared have parallel trends in absence of the change in policy. Thus, the test of our identifying assumption implies that, one, the SC-ST exhibit parallel trends, as compared to the "Others" before the extension of affirmative action to the OBCs, and two, as they face no change in policy, that they continue to exhibit parallel trends after 1993, that is, $\beta_{1k} = 0$ for all k and for all O_{ijk}. For the OBCs, the test of our identifying assumption again implies parallel trends for the cohorts not affected by the policy change. For the dependent variable of completing secondary or graduate education, this would imply, $\delta_{1k} = 0$ for $k = 4, 5$. For the category of public sector jobs, the test of our identifying assumption should imply $\delta_{1k} = 0$ for $k = 5$. The impact of AA on the OBCs is in turn captured by δ_{1k} for $k = \{1, 2, 3\}$ for the two educational indicators, and δ_{1k} for $k = \{1, 2, 3, 4\}$ for the occupational indicator.

Figure VII shows both the validity of our identifying assumption, as well as the impact of AA directed to the OBCs on the probability of holding a public sector job. Panel B shows the impact on

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[15]The precise cohorts are as follows: tc1=21-25 years; tc2=26-30 years; tc3=31-35 years; tc4=36-40 years; tc5=41-45 years; tc6=46-50 years.
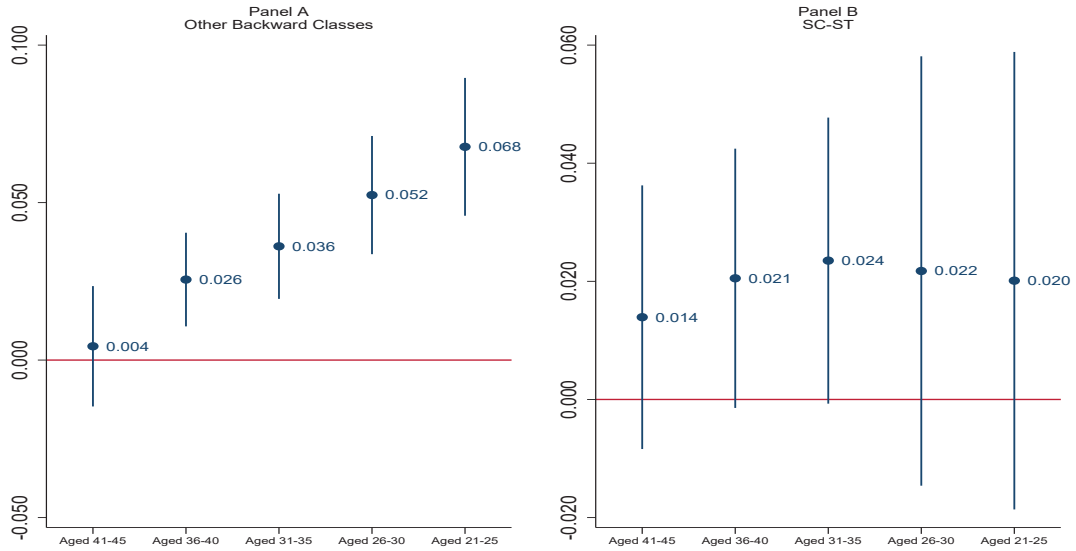
Figure VII: Direct effect of AA for the OBCs on the probability of holding a public sector job

the SC-ST cohorts who are not affected by the AA policy; as assumed by the D-I-D estimator, the effect of AA on SC-ST is seen to be not statistically different from zero for all the five cohorts, that is, $\beta_{1k} = 0$ for all k. Panel A plots the effect of the AA on the OBCs. First, the effect on the cohorts not affected by the policy change (tc5), is not statistically different from zero. However, we see a positive and significant effect of AA on the probability of holding a public sector job for the treated cohorts, tc1-tc4. The effect is around 2.6 percentage points for the oldest cohort who could benefit from it, and we observe an increasing trend, with the youngest cohort having a 6.8 percentage point greater probability of holding a public sector job, as compared to the "Others".

Figure VIII and Figure IX shows the indirect effects of extending AA to the OBCs on the incentive for an under graduate degree, and completing secondary schooling, respectively. For the case of obtaining graduate education or above, for the OBCs we see negative coefficients all along, though these are not statistically significant. Thus, we conclude that job quotas did not indirectly increase the probability of completing an undergraduate degree for the OBCs. However, as noted earlier, direct education quotas for OBCs were introduced in 2006, and those impacts could be
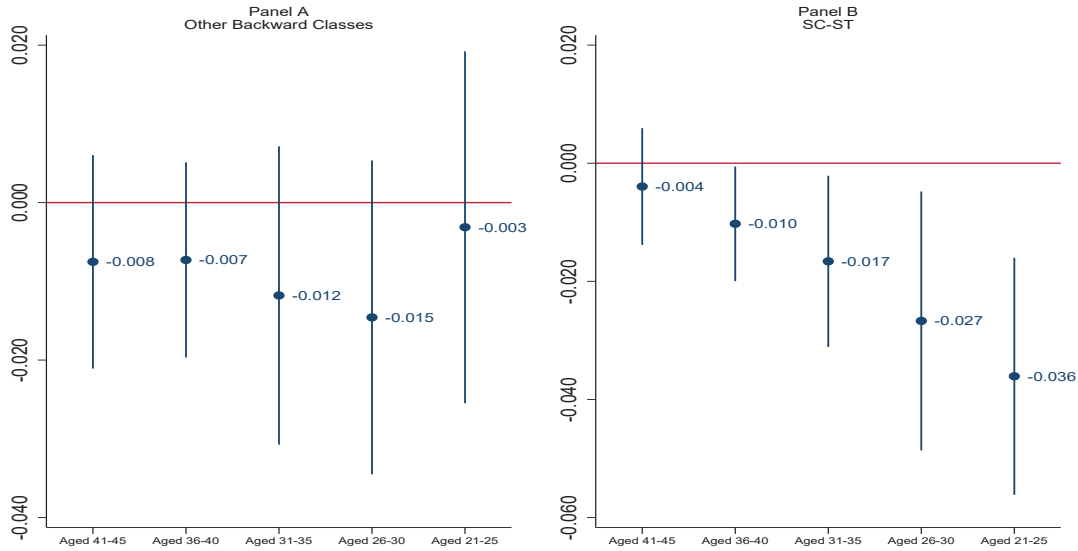
Figure VIII: Indirect effect of AA for the OBCs on the probability of completing an undergraduate degree

significant. On the other hand, for the SC-ST, we see every consequent cohort falling behind the "Others" and this effect being statistically significant for the cohorts tc4 to tc1. Thus, "Others" and the SC-ST do not satisfy the assumption of parallel trends assumed by the D-I-D estimator. In the case of the probability of completing secondary schooling, the effect of AA on SC-ST is seen to be not statistically different from zero for all the five cohorts, that is, $\beta_{1k} = 0$ for all k. Panel A shows the effect of the AA on the OBCs. First, the effect on the cohorts not affected by the policy change (tc5 and tc4), is not statistically different from zero. However, we see that AA increases the incentive to complete secondary schooling for the cohorts tc1-tc3, although it is statistically significant only for the youngest cohort aged 21-25 in 2011-12, and increases their probability of finishing secondary schooling by 5.2 percentage points.

The results presented in this section suggest that AA not only had the directed intended effect of increasing the share of OBCs with public sector jobs, but also had an indirect incentive effect of increasing the probability of completing secondary schooling, a minimum qualification necessary to be able to access these reserved positions.
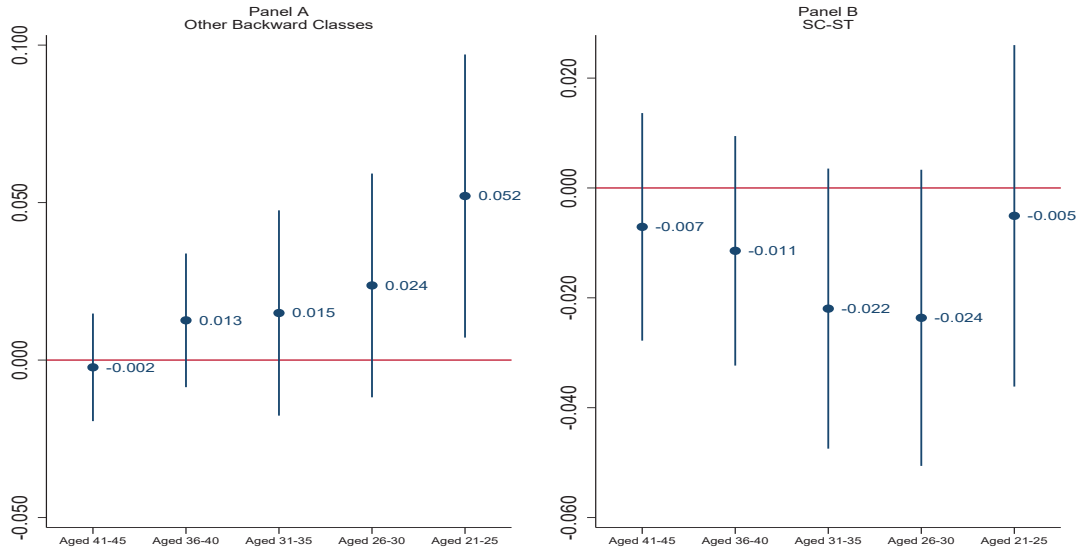
Panel A
Other Backward Classes

Panel B
SC-ST

Figure IX: Indirect effect of AA for the OBCs on the probability of completing secondary schooling

5 Conclusion

This paper traces the evolution in material indicators of standard of living over four decades for three broad caste groups: SC-STs, OBCs and Others, the latter a common proxy for upper castes. This period is characterised by a significant increase in the rate of growth of the Indian economy, accompanied by greater privatisation, marketisation and rapid global integration. We trace the evolution of inter-caste disparities using absolute as well as relative gaps. Additionally, we also calculate the intergenerational persistence in education for the three groups and changes therein between 1999-2000 and 2011-12. We find that overall, there is some flux in traditional caste hierarchies, in that in lower categories of education, gaps between caste groups are becoming smaller. However, in higher educational categories, as well as in household level monthly per capita expenditure, and in individual average daily wages and access to white-collar jobs, caste groups are moving further apart. Our estimates of labour market discrimination, using Blinder-Oaxaca decomposition techniques, show that the unexplained part of the wage gap, commonly taken as a proxy for labour market discrimination, has increased for both OBCs, as well as SC-STs, compared to Others. However, despite the

flux, and despite some evidence of convergence, the traditional caste hierarchies remain intact. In fact, we find evidence of divergence between upper and lower castes in key indicators such as higher education and the top end of the wage earners — categories that matter in terms of social mobility.

Evaluating the effect of extension of job quotas to OBCs, we find significant first-order effects, as the probability of access to government jobs increases for younger OBC cohorts compared to older. We also find an increase in access to secondary education, the minimum education needed to be eligible for government jobs, which we interpret as an incentive effect of the existence of quotas. Given the divergence in other indicators, we suggest that gaps might have been even wider in the absence of quotas.

Thus, while the Indian economy is growing, expanding, modernizing and globalising, and witnessing a great churning in terms of political representation, seen in the rise of the lower-castes in the political arena, the material realities of caste groups on the ground have yet to witness a concomitant churn. The evidence indicating divergence over time is more pervasive, i.e. can be seen in a much larger number of indicators, as compared to the evidence indicating convergence, which can only be seen in literacy and primary education categories. Caste hierarchies show no signs of shrinking or withering away as India's integration with the global economy increases and economic development becomes more market oriented. Affirmative action is most likely mitigating the trend towards divergence by increasing access of OBCs for government jobs. This widening of inter-caste disparities in the face of substantial structural change in the Indian economy ought to be of serious concern for policy as it can foment large-scale social unrest. This should prompt focused interventions, including and beyond affirmative action, geared towards closing these multi-dimensional gaps.

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APPENDIX

A1 Household level variables and their evolution

Table A1 presents D-I-D estimates of four indicators of standard of living for the three major caste groups for the two survey rounds for the years 1999-2000 and 2011-12 respectively. The indicators of interest are monthly per capita expenditure (MPCE) expressed in 1982 prices, proportion of the group that is urban, household size and land owned in hectares.

We run the following reduced form regression to obtain the D-I-D estimates:

$$Y_{ijk} = \delta_0 + \delta_1 D_j C_k + \delta_2 D_j + \delta_3 C_k + \varepsilon_{ijk}, \tag{8}$$

where Y is the outcome of interest. The subscript ijk indexes individual i, from social group j and round k. D_j is a dummy variable indicating the social group of the individual, where $j = \{OBCs; SC-ST\}$. It takes the value 1 if the individual belongs to the OBC group when we compare OBCs to the "Others" or to SC-STs, and zero otherwise. Similarly, it takes the value 1 if the individual belongs to the SC-ST group, when SC-ST are compared to "Others" and SC-ST and zero otherwise. Finally, C_k is a dummy variable which takes the value 1 if the observation is from 2011-12, i.e. NSS 68th round.

Panel A and C shows that the OBCs and SC-ST fall behind by Rupees.10 and 23, respectively, as compared to the "Others" in terms of the real MPCE over the two rounds. As the average real MPCE of the OBCs and SC-ST in 1999-2000 was Rupees 105 and 121, respectively, the absolute divergence is economically important and around 10 and 20 percent of their real MPCE in the 55th round. There is neither convergence nor divergence when we look at the category of land owned when comparing the OBCs and "Others". On the other hand, SC-ST increases their amount of land owned as compared to the other two social groups over the two rounds. The OBCs rates of urbanization are faster by 5.4 and 2.4 percentage points, respectively, than those of the "Others" and SC-ST

Table A1: Household level D-I-D estimates

	(1) MPCE in 1982 prices	(2) Proportion Urban	(3) Household Size	(4) Land owned(100s of hectares)
Panel A: D-I-D estimates of comparing OBCs and the Others				
D-I-D estimate	-10.9***	0.054***	0.020	0.017
	(1.98)	(0.0050)	(0.025)	(0.022)
	[-14.1 - -7.61]	[0.046 - 0.062]	[-0.021 - 0.061]	[-0.018 - 0.053]
Panel B: D-I-D estimates of comparing OBCs and the SC-ST				
D-I-D estimate	12.5***	0.024***	-0.13***	-0.087***
	(1.50)	(0.0051)	(0.026)	(0.019)
	[10.0 - 15.0]	[0.016 - 0.032]	[-0.18 - -0.092]	[-0.12 - -0.056]
Panel C: D-I-D estimates of comparing SC-ST and the Others				
D-I-D Estimate	-23.4***	0.030***	0.15***	0.10***
	(1.89)	(0.0051)	(0.025)	(0.021)
	[-26.5 - -20.3]	[0.022 - 0.039]	[0.11 - 0.19]	[0.069 - 0.14]

The standard errors are provided in the parenthesis and the 90 percent confidence interval in square brackets. $***p<0.01, **p<0.05, *p<0.1$.

over the two rounds; whereas the SC-ST also urbanize at a rate of 3 percentage points faster than the

"Others" over the two rounds considered.

A2   Blinder Oaxaca decomposition of wage gaps

We decompose the average wage gaps separately between "Others" and OBCs, and "Others" and SC-STs using the standard Blinder-Oaxaca decomposition methodology. This methodology decomposes the average gap into two components – one that can be explained by observable characteristics such as education, age, marital status, urban or rural residence and the other part that cannot be so explained by the observable characteristics (Jann, 2008). The literature on decomposition methods is not unanimous about which variables to include in order to calculate the explained component. We thus use three specifications; the first (Specification I) is the most obvious: this includes exogenous personal characteristics, such as age, age squared, education, and marital status. Our second specification (Specification II) adds region of residence and rural/urban location (sector) to the first specification. The final full specification (Specification III) adds occupation as well. Given that wages and occupation are jointly determined, it is a moot point whether occupation can be added as an explanatory variable for wages. However, we follow the standard practice and present results using three specifications. As would be expected, as more explanatory variables are added to the equation, the explained part increases and the unexplained part goes down. The decompositions are done separately for each time period. Therefore, we use nominal average daily wages. The results reported in Table VII are for men in the age group 25 to 65. These results are summarized in Table A2, which shows that one, the gap in real wages between SC-STs and Others is greater than the gap between OBCs and Others. Two, over the period, the unexplained part of the wage gap has gone up for both groups. This could be either due to increase in returns to certain unobservable characteristics that favor the upper castes, or alternatively could be interpreted as evidence of labor market discrimination increasing against the disadvantaged group. We also see that while wage gaps between "Others" and SC-STs are larger than those for OBCs, the unexplained part of the wage gap is smaller for SC-STs compared to OBCs. As much as 44 percent of the wage gap between "Others" and OBCs in 2011-12 is unexplained. Similarly, as much as 32 percent of the wage gap between

Table A2: Blinder-Oaxaca Decomposition of Real Wages at 1982 Prices

	(1) Raw Difference	(2) Explained	(3) Unexplained	(4) %explained	(5) %unexplained
Blinder-Oaxaca Decomposition - Others vs OBCs **1999-2000**					
Specification I	58.31	41.96	16.35	0.72	0.28
Specification II	57.71	47.7	10.01	0.83	0.17
Specification III	57.71	49.33	8.38	0.85	0.15
2011-2012					
Specification I	173.72	96.77	76.95	0.56	0.44
Specification II	169.24	108.74	60.49	0.64	0.36
Specification III	169.24	118.95	50.29	0.7	0.3
Blinder-Oaxaca Decomposition - Others vs SC-ST **1999-2000**					
Specification I	74.79	60.63	14.17	0.81	0.19
Specification II	74.14	67.56	6.57	0.91	0.09
Specification III	74.14	67.19	6.94	0.91	0.09
2011-2012					
Specification I	213.94	145.22	68.72	0.68	0.32
Specification II	210.25	164.01	46.24	0.78	0.22
Specification III	210.25	169.47	40.78	0.81	0.19

The above presents the Blinder-Oaxaca decompositions of the real wage measured in 1982 prices. The Specification I controls only for personal characteristics, namely, age, age squared, years of education and marital status. Specification II additionally includes control for country region and urban dummy. Finally, Specification III adds occupational dummies.

"Others" and SC-STs could be potentially accounted for by labor market discrimination, though the data does not allow us to make any definitive conclusions as to what underlies the increase in the unexplained component.

A3 The making of the OBC category

While the criteria of selecting castes and tribes into the SC and ST lists are relatively clearer (although not completely free of contention), the making of the OBC category has been marked by controversy from the very beginning. Parts of British India enacted preferential policies for the "Depressed Classes", which included communities that were classified as "backward", as well as for the untouchables, tribals and some non-Hindu communities. Even though there were preferential policies for the "Backward Classes", their exact definition had not been clearly articulated. Details of the various definitions employed during the British period are spelt out in Galanter (1978) and Galanter (1984). The constitution of independent India did not define Other Backward Classes (OBCs) in a specific way either. However, after the Scheduled Castes were listed as a separate category, the term Backward Classes started to be used in two senses: one, as the group of all communities that needed preferential treatment, and two, as castes that were low in the socio-economic hierarchy, but not as low as the untouchables. We should note that the two usages overlap considerably. However, the exact identification of groups and communities to be counted as OBCs has been fraught with a great deal of strife.

Even before the constitution of independent India came into effect in 1950, several states formed the category of OBCs for the first time (e.g. Bihar in 1947; Uttar Pradesh in 1948) and conferred benefits on them, while those states which already had benefits for the backward castes from before independence, expanded the existing range of benefits. Thus, in 1978, without any central reservations for OBCs, at least 13 states reserved seats for Backward Classes, other than SCs and STs. These reservations were found throughout southern India, in Maharashtra and Gujarat and in parts of north India, with the heaviest representation in the south (Galanter 1984, 87).

The first Backward Classes Commission (with Kaka Kalelkar as its chairman) was established in 1953, which was directed to first ascertain the criteria that should be adopted to determine whether any section of the population could be considered backward (other than SCs and STs), and then

according to these criteria, prepare a list of such classes. The Commission prepared a list of 2399 groups, which were roughly 32 per cent of the population. It was generally understood that the groups identified by the commission would be castes or communities. This meant that backwardness was defined or understood in terms of the "social hierarchy based on caste". Thus, the commission listed as criteria of backwardness - trade and occupation, security of employment, educational attainment, representation in government service and the position in the social hierarchy.

Much like the contemporary experience, there was a rush among communities wanting to be classified as backward due to the potential benefits that this status would confer upon them. However, in deciding on the validity of these multiple claims, the commission was stymied by the lack of data. Despite the lack of data, the commission made wide-ranging recommendations for benefits to be conferred to the backward classes, often relying on just the names of the caste to make its case. However, at the last minute, the chairman repudiated the report of the commission by stating that he found the use of caste as antithetical to democracy and to the eventual creation of a casteless and classless society. Due to several factors (the rush of communities wanting to be classified as backward, the unreliability of data, the extensive recommendations of the commission), the work of the commission was widely criticized. The basic point of contention was the use of caste or community as one of the principal criteria to determine backwardness. There was a forceful plea made to use economic criteria alone to determine backwardness, and hence decide which *individuals* should be considered backward on the basis of objective economic indicators, rather than designate entire castes or communities as backward. In 1965, when the report was finally tabled in parliament, the central government firmly opposed the definition of backwardness on the basis of communal criteria (i.e. communities or castes), arguing that the use of caste was administratively unworkable and was contrary to the "first principles of social justice" in their exclusion of other poor. The Centre decided not to impose a uniform criterion on the states, but persuaded them to use economic criteria, rather than community based ones, to identify the backward.

Various state governments set up backward classes commissions, and some followed the eco-

nomic criteria endorsed by the Centre. However, most states continued to place a greater emphasis on the caste criterion. The second Backward Classes commission was set up in 1978 under the chairmanship of B.P. Mandal to examine the entire issue of backwardness, starting again with ascertaining the criteria that should be used to identify the backward.

The Mandal Commission used 11 criteria to determine eligibility, which were grouped under three heads: social, educational and economic. These were combined using weights (social criteria were given a weight of three, educational got two and economic criteria were given a weight of one). This was done for all the Hindu communities. For the non-Hindus, the commission used another set of criteria: all untouchables who had converted to other religions but were still identifiable by their traditional occupations, for which the Hindu counterparts were included in the list of backward classes, also got enlisted.

Based on this, the commission identified 3743 caste groups as backward, which were estimated as 52 per cent of the population (as against 32 per cent identified by the Kalelkar commission and the roughly identified 40 per cent from the NSS data). The 52 per cent figure was arrived at after subtracting from 100 per cent the share of the SC-ST population, the non-Hindu population based on the 1971 census, and the share of the Hindu upper castes extrapolated from the 1931 census. The residual was actually 43.7, to which was added half of the non-Hindu population share. Since the identification of OBCs is done at the state-level, there are communities identified as OBCs in one state, but not in another, e.g. Jats were classified as OBCs in Rajasthan, but not in Haryana. However, after an earlier draft of this paper was written, through a March 2014 order, the Supreme Court overturned the Central government's decision to classify Jats as backward. We discuss the issue of amendments to these administrative categories in the next section. Several of the communities classified as OBCs are "occupation castes" e.g. darzi (tailor), teli (oil presser), julaha (weaver), sonar (goldsmith), kanbi (agricultural caste), madari (juggler and/or monkey-minder, someone who earns money by showing tricks to a crowd), rangrez (painter), halwai (sweetmeats and snacks maker) etc.

It is clear that seen at the national level, the OBC category is an omnibus one, which includes

a diverse set of communities. In some states, groups classified as OBCs are dominant landowning castes, such as Kammas and Reddys in Andhra Pradesh, or Vokkaligas and Lingayats in Karnataka. These groups are not necessarily backward in terms of their socio-economic status, but are included in the legal OBC category. The OBC count with NSS data includes all the legal OBCs, thus cannot distinguish between dominant OBC castes and those that are truly backward. As we note in Deshpande and Ramachandran (2016), in states where (legal) OBCs are also dominant (in terms of status), the aggregate outcomes of OBCs would be pulled up, as the dominant OBCs are also the landowning castes. This heterogeneity also characterizes the comparison social category of "Others" (and to a smaller extent, SCs and STs), such that the inclusion of poorer "Others" pulls the averages for the "Others" category down. As a result, a comparison between these omnibus categories would understate the actual gap between the top end of the "Others", and those who are genuinely backward among the OBCs.

A3.1   Is the composition of the administrative categories stable?

Owing to the various controversies over demands of groups for inclusion into the OBC category, it could be argued that the identification of who belongs to the OBC group is extremely subjective, open to political bargaining and changes from time to time, and state to state. If this were correct, the D-I-D strategy would not be appropriate tool to analyze the evolution of gaps, as the composition of the group would have changed over time.

We should note that all the bargaining happens before a jati is designated as OBC. What we see in the data is the post-bargaining position of jatis - either classified as OBC or not. More importantly, it is incorrect to believe that bargaining has marked the formation only of the OBC list, but not the SC-ST lists. Galanter (1984) discusses the bargaining process that went into the formation of SC and ST categories, as well as the multiple criteria used for the pre-independence 1935 list, which despite being based on the 1931 census, was subject to a great deal of bargaining, as inclusion in the

list was associated with specific benefits.

As far as period-to-period changes are considered, indeed, jatis have been added or deleted from the OBC list, but this modification is exactly similar to frequent changes in the SC-ST lists. State-to-state variation is natural, as jatis are state-level categories, not national. Jatis and communities are classified as OBC (for that matter, even SC-ST) for each state separately, and the so-called "national" list in an umbrella list of all the state lists, just as it is for SC and ST categories. If this criticism is upheld and accepted, all hitherto published research, which compares aggregates of caste groups across time would have to be questioned.

Table A3 shows the percentage of social group populations across the recent thick samples of NSS (where the OBC category has been counted). We have included a previous thick round only for comparison. These are our estimates from the employment-unemployment surveys (EUS). The larger point to note is that given that these are survey estimates, some round-to-round fluctuation is to be expected. We see from Table I that the earliest estimate of OBC population is from 1999-00,

Table A3: Percentage share of social groups based on EUS, NSS large samples

Social Group	50th Round 1993-94	55th Round 1999-00	61st Round 2004-05	66th Round 2009-10	68th Round 2011-12
ST	8.43	11.04	8.42	8.67	8.69
SC	18.37	22.14	19.74	19.86	18.85
OBCs	not counted	36.9	41.16	41.7	44.03
OTHERS	73.2	29.92	30.68	29.71	28.44

and between the 55th and 61st rounds, the percentage goes up by four percentage points and then by a further two percentage points in the 68th round. On a base of 44, this amounts to 14 percent. Even if this entire change is due to changing classification, then our results are being driven by the remaining 86 percent. Thus, even admitting to contamination due to changing categories, our results are pretty robust. Also, notice that over this period, the "Others" category has remained fairly stable, so some of this is possibly being driven by re-classification between SC and OBCs, a process that is

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not uncommon.[16]

A concomitant question could be that comparing the socio-economic outcomes of different birth cohorts of OBCs with their cohort counterparts from other social groups runs the risk of confounding patterns over time with random changes in state-level protection being extended to certain groups at different times. Again, the SC-ST list has seen frequent changes that could be characterized as equally random. Let us focus first on the post-independence changes. The Scheduled Castes list was first prepared in 1950 via "Constitution (Scheduled Castes) Order 1950". This was substituted by the Scheduled Castes and Scheduled Tribes (modification) order in 1956 to include Dalit Sikhs. Changes to this list were made in 1976, 1986, 1990, 2000, 2002, 2003, 2007 and so on.[17] Similar changes have been made to the ST list. Even since the 2001 census, (i.e. only in the last decade), there have been 242 modifications in the ST list, with 235 additions and 15 deletions and other changes. Additionally, there have been changes in state-level ST populations due to migration. This is just counting some of the changes in the post-independence period. These lists, to a large extent, carry forward the "depressed classes" list from British India, which was first drawn up in 1935 based on the 1931 census under J.H.Hutton (Galanter, 1984; Deshpande, 2013). The 1950 list after independence carried forward the same list with the addition of four Dalit Sikh castes. In 1956, other Dalit Sikhs were added; in 1990, neo-Buddhists were added to the SC list.

Hnatkovska et al. (2012) examine birth cohorts across five NSS rounds, and their oldest cohort is born between the years 1919-1925. They state "the classification of Scheduled Castes and Scheduled Tribes groups remained unchanged over the rounds" (p. 301). This assumes that those classified as SC-ST in 1983 were also classified as such during 1919-1925 (when, in fact, there was a composite

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[16]There are several instances of communities being reclassified from OBCs to other groups. E.g. OBCs to STs in Assam http://www.ncbc.nic.in/Writereaddata/6635221885006435731.pdf; OBC to SC in Orissa and Punjab http://www.ncbc.nic.in/Writereaddata/note24635288555466310667.pdf; OBC to SC in Andhra Pradesh http://www.ncbc.nic.in/Writereaddata/15062016RIDKP636053131895118339.pdf; and OBC to ST in Himachal Pradesh and Sikkim http://www.ncbc.nic.in/Writereaddata/25052016RIDKP636034171955897712.pdf

[17]http://socialjustice.nic.in/pdf/scorder1950.pdf, accessed 24 January, 2015.

category called "depressed classes" that encompassed present-day equivalents of SCs, STs, and OBCs - the latter included in Hnatkovska's "non-SC-ST" or "Others" category). They state explicitly that the category "neo-Buddhist", who are actually SCs was done away with in the 50th round. Thus, even in the broad aggregate categories that NSS uses, there have been changes over the rounds. More importantly, reservations were *not a national policy* in the pre-independence period, hence the risk of confounding patterns is actually greater for SC-STs than OBCs.

Our argument is that the issue of non-comparability across time is applicable to at most 14 percent of our sample. The frequent changes in classification, which are opaque (i.e., the motivation for them is unclear), affect all categories. Despite this, a comparison between groups across time has great validity, for reasons discussed above. Finally, note that we focus only on all-India averages, since state-level changes in populations of social groups due to migration are hard to estimate.
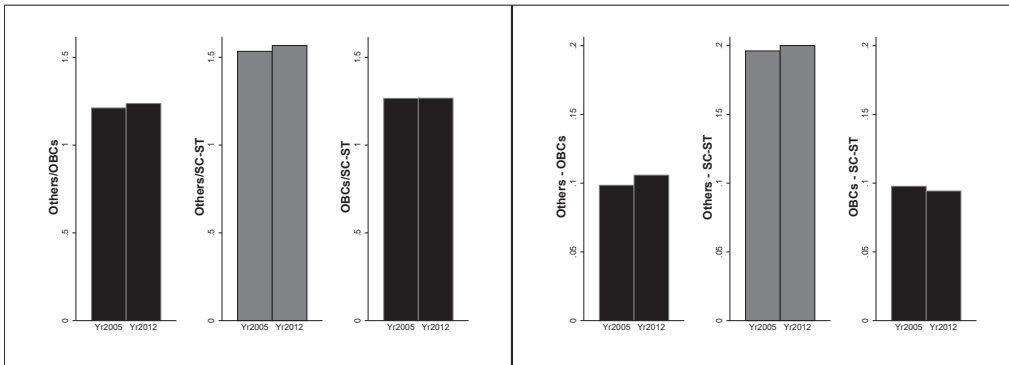
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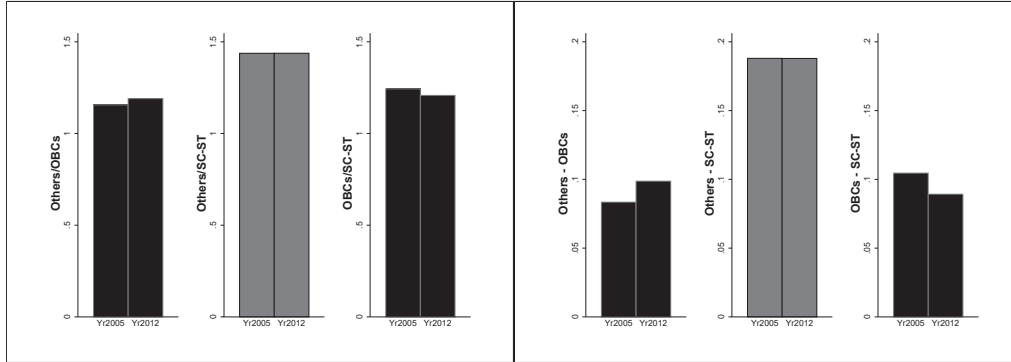
(a) Evolution of relative gaps
Proportion of children aged 8 to 11
who can read an entire paragraph or story

(b) Evolution of absolute gaps
Proportion of children aged 8 to 11
who can read an entire paragraph or story

Figure A1: Evolution of relative and absolute gaps - of children aged 8 to 11 who can read an entire paragraph or story

(a) Evolution of relative gaps
Proportion of children aged 8 to 11
who can divide or subtract

(b) Evolution of absolute gaps
Proportion of children aged 8 to 11
who can divide or subtract

Figure A2: Evolution of relative and absolute gaps - of children aged 8 to 11 who can divide or subtract