

# The Post-Reform Narrowing of Inequality Across Castes: Evidence from the States\*

Viktoria Hnatkovska<sup>†</sup> and Amartya Lahiri<sup>†</sup>

January 2012

## Abstract

The past three decades have seen a sharp macroeconomic takeoff in India. How have these aggregate changes affected the economic disparity between the different social groups? We examine this issue by studying the time series evolution of the economic disparities between scheduled castes and tribes (SC/STs) and non-SC/STs during the period 1983-2005. The distinctive feature of our study is that we exploit the variation in the evolution of these indicators of disparity to determine the role played by alternative factors in accounting for the overall patterns. Broadly, we find that both aggregate growth and political empowerment of SC/STs may have played a significant role in accounting for the declining gaps between these groups during this period.

**JEL Classification:** J6, R2

**Keywords:** Castes, convergence, states

## 1 Introduction

One of the most enduring legacies of Indian society is the caste system. This social arrangement wherein groups are socially segmented into various "castes" has been around in various degrees of rigidities for over 1500 years. The system originally was devised as a way of organizing the workforce by occupations. Over time however it gradually morphed into a social organization by birth, i.e., one was born into a caste rather than opting into one based on one's choice of occupation. Given the implicit social ordering of different occupations, the system opened the door to systemic

---

\*We would like to thank Arka Roy Chaudhuri and Sourabh Bikas Paul for providing excellent research assistance. We also thank the Templeton Foundation for providing funding to support this research.

<sup>†</sup>Department of Economics, University of British Columbia, 997 - 1873 East Mall, Vancouver, BC V6T 1Z1, Canada. E-mail addresses: viktoriya.hnatkovska@ubc.ca (Hnatkovska), amartya.lahiri@ubc.ca (Lahiri).

discrimination and social ostracization of groups that belonged to the castes that were typically associated with the most menial tasks. These groups, who are referred to as *Dalits* in modern India, were thus subjected to horrific social abuses as well as systemic economic discrimination as the upper castes denied them access to even basic amenities like local water and land, education opportunities, etc.. The typical pretext for these acts was these groups were "unclean" and hence upper castes would get "polluted" if they interacted with them.

Upon independence from Britain, India adopted a new constitution in 1950 in which a special provision was made for these lowest castes by setting aside a certain proportion of seats in institutions of higher education, in public sector jobs and in Parliament. These reservations were intended to correct the thousands of years of social and economic discrimination endured by the "lowest" castes. The castes that were provided this affirmative action protection were listed under a specific *schedule* of the constitution and hence came to be known over time as Scheduled Castes and Tribes or SC/STs.

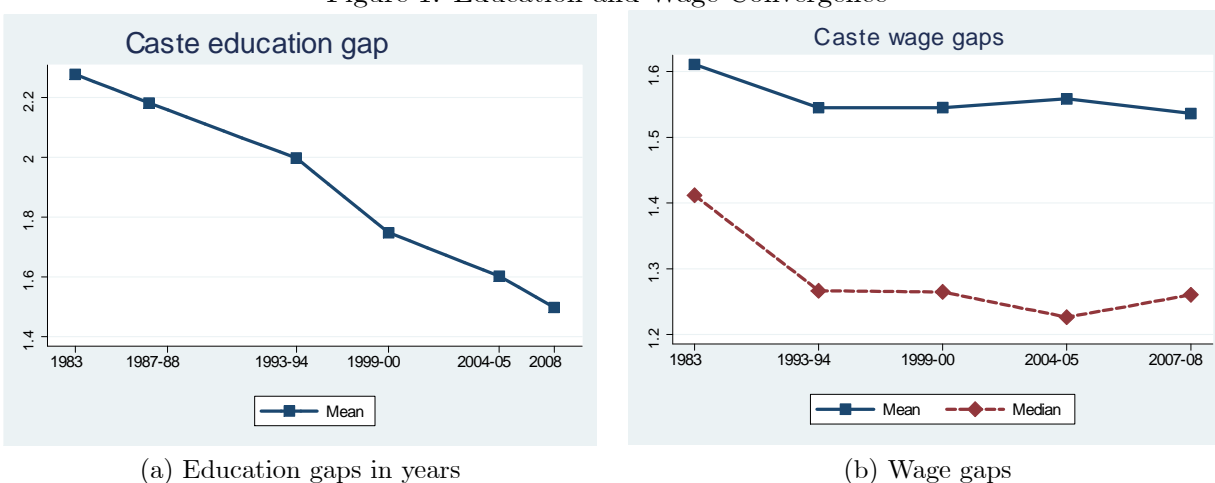
At the aggregate level, India has had two distinctly different phases. After over three decades of relatively tepid growth following independence in 1947, the period since the mid-1980s has been characterized by a sharp change in the economic fortunes of the country as a whole. Induced in part by a sequence of economic reforms, the average annual growth rate of GDP rose from around 3 percent till the early 1980s to upwards of 6 percent annually. Such rapid aggregate changes often accompany large underlying distributional changes with some sections gaining while others losing out in the process. Indeed, the effect of the reforms and aggregate changes on poverty has been the subject of some spirited debate amongst academics, observers and policymakers alike.

In this paper we focus on the fortunes of SC/STs since 1983. This period is particularly interesting to us due to its overlap with the economic takeoff of the India. Given that SC/STs are historically the poorest as well as being amongst the least educated groups, this focus allows us to potentially shed light on the effects of aggregate changes on the poor and disadvantaged. It has the additional advantage of potentially yielding insights regarding the efficacy of affirmative action programs, specifically the ones targeted toward SC/STs in India. This is of independent importance since it has now been over sixty years since the introduction of such constitutional protection for SC/STs, i.e., about three generations of SC/STs have potentially been covered by them. Clearly, some empirical feedback regarding the performance of these programs is desirable.

In recent work on this topic in Hnatkowska, Lahiri, and Paul (2012), we have shown that the overall gaps between SC/STs and non-SC/STs have declined sharply in education and wages

between 1983 and 2004-05. Panel (a) of Figure 1 shows the evolution of the ratio of mean years of education of non-SC/STs to SC/STs between 1983 and 2008. Panel (b) shows the evolution of the non-SC/ST mean and median wages relative to SC/ST wages. The two graphs reveal a similar pattern: the caste gaps have been declining secularly since 1983 in both education and wages. Crucially, a key finding in Hnatkovska, Lahiri, and Paul (2012) on the measured wage convergence was that most of it was due to convergence in the education attainment levels of the two groups. Moreover, the occupation distributions and consumption levels of the two groups have also been converging though the process has been more muted.

Figure 1: Education and Wage Convergence



In related work in Hnatkovska, Lahiri, and Paul (2011), we also examined the intergenerational mobility rates of SC/STs and non-SC/STs during this period in terms of education, occupation and wages. There too we found that the overall intergenerational mobility rates of the two groups have been converging sharply between 1983 and 2004-05. In other words, SC/ST children were changing their status relative to their parents at rates that were faster than the corresponding rates of non-SC/ST children. Moreover, we also found that education has played a key role in this process of convergence.

Our main conclusion from this work was that the past three decades have been historic in the sense that they have been a period in which large historical caste disparities have begun to shrink sharply. Moreover, the education convergence across the castes is particularly heartening as it signals that disparities along caste lines are unlikely to widen in the near future. The big question though is what accounts for these dramatic changes? There are a number of candidate explanations that one may think were important. The aggregate growth takeoff may clearly have

been important. The reservations policies in place since 1950 may have been another contributory factor as they may have aided the SC/STs in taking advantage of new opportunities that were opening up in a growing dynamic economy. The increasing political empowerment of Dalits over the past three decades may have been another contributory factor.

In this paper we attempt to evaluate the potential explanatory powers of these alternative explanations by exploiting the cross-state variation in the outcomes. Specifically, we use National Sample Survey data from rounds 38 (1983), 43 (1987-88), 50 (1993-94), 55 (1999-00) and 61 (2004-05). Our focus is the pattern of comovements of the caste convergence in education, wages and consumption with state level indicators of growth and reservation quotas. Additionally, we also examine outcomes in some outlier states where Dalit political empowerment was particularly marked during this period.

We find that higher growth was almost always associated with faster convergence of education attainment rates, wages and consumption. The initial income levels of the states in 1983 though tended to comove *negatively* with subsequent education and wage convergence. Our examination of the relationship between quotas and convergence suggests that quotas may have been an important contributory factor. However, what seems to have mattered more at the margin was the *level* of the quota in the state during the period rather than *changes* in the level of the quota.

The data also revealed a couple of outlier states. Andhra Pradesh and Himachal Pradesh stood out during this period as state where there was the most rapid and broad-based reduction in the caste gaps in education and wages. Orissa, on the other hand, was the worst performing state on the convergence metric almost across all the indicators that we examined. The large presence of scheduled tribes in Orissa suggests that there may be an important distinction between scheduled castes (SCs) and scheduled tribes (STs) with most of the convergence being concentrated on SCs. The relatively poor performance in education convergence of Madhya Pradesh, which is another state with a relatively large share of STs, indicates some support for this view. We should add though that Madhya Pradesh's performance in other indicators such as median wage convergence is better. Hence, this aspect of the evidence requires more detailed analysis.

One state which has seen rising Dalit political power since the mid-1980s is Uttar Pradesh (UP). A Dalit based party called the Bahujan Samaj Party (BSP) has in fact been the party in power in the state for significant periods since the 1990s. One might expect that this would have made the caste convergence process faster/stronger in UP due to the increasing political empowerment of SC/STs. Exploiting the time series variations in the caste gaps and the vote share of the BSP, we

do indeed find some evidence suggesting an important role for political empowerment. In spite of these findings, it is difficult to draw any conclusions regarding the effect of political empowerment from the UP experience for a couple of reasons. First, we don't really have a comprehensive way of evaluating the counterfactual of what might have happened to caste gaps in UP had the Dalit political empowerment not happened. Second, the popular appeal of the BSP in UP may itself have been due to the perceived absence of upward mobility of the backward castes. Lastly, since the convergence patterns are nationwide, the importance of political empowerment can be gauged fully only with an All-India study as opposed to just UP.

Our work is related to some existing work on caste gaps in wages, consumption and employment. Thus, Banerjee and Knight (1985) and Madheswaran and Attewell (2007) have studied wage discrimination faced by SC/STs in the urban India. Similarly, Borooah (2005) has studied employment discrimination in the urban areas while Ito (2009) focuses on wage and employment discrimination simultaneously by examining data from Bihar and Uttar Pradesh. Consumption inequality of SC/ST households has been the focus of work by Kijima (2006). Lastly, Munshi and Rosenzweig (2009) have documented the low degree of labor mobility in India. Our study differs from these in that we examine the data for all states and for both rural and urban areas. Moreover, by using data for five rounds of the National Sample Survey of households we are also able to provide a time series perspective on the evolution of the caste gaps, a feature that other studies have typically not examined.

In terms of political empowerment, our work relates to Pande (2003) who showed that greater political representation for SC/STs in India through reservations tended to change the composition of public expenditures. However, her results do not provide much guidance about whether these changes were beneficial for the targeted minorities. Our study measures some concrete outcomes and hence potentially sheds light on the welfare aspects of such representation.

The rest of the paper is organized as follows: the next section presents the basic cross-state data facts. Section 3 examines the potential explanatory factors underlying these trends while the last section concludes.

## 2 Cross-State Facts

We start with an examination of the patterns across the states in terms of convergence between SC/STs and non-SC/STs. There are five primary variables of interest – education, wages, con-

sumption, occupation distributions and employment distribution across industries. We compare the gaps between the groups in 1983 with the corresponding gaps in 2004-05 for each of these indicators. Our goals are twofold: (a) determine whether the gaps in 2004-05 were systematically smaller for all states relative to 1983; and (b) which states showed the sharpest narrowing of the gaps for most of the indicators.

Our data comes from the National Sample Survey (NSS) which has all-India coverage except for few inaccessible areas. We use rounds 38 (1983), 43 (1987-88), 50 (1993-94), 55 (1999-00) and 61 (2004-05). The NSS provides household-level data on approximately 600,000 individuals on education, employment, consumption, and wages as well as other social characteristics. We restrict the sample to individuals in the age group 16-65 who belong to male-headed households, who were not enrolled full time in any educational degree or diploma, and who were working full-time. The sample is restricted to those individuals who provided their occupation and industry of employment code information as well as their education information.<sup>1</sup> Full-time working individuals are defined as those that worked at least 2.5 days per week, and who are not currently enrolled in any education institution. This selection leaves us with a working sample of around 165,000-182,000 individuals, depending on the survey round. The wage data is more limited due to the presence of self-employed individuals. As a result, the sub-sample with wage data is limited to about 48,000 individuals on average across rounds.<sup>2</sup> For the state domestic product information we use real per capita state domestic product data available from the Handbook of Statistics on Indian Economy published by the Reserve Bank of India. Reservation quotas for SC/STs in Indian states for various years are obtained from the Report of the Commissioner for Scheduled Castes and Scheduled Tribes, published by the Government of India. Finally, BSP voting shares are obtained from the Statistical Reports of the Election Commission of India.

Our measures of caste gaps for any variable is non-SCST divided by SCST. Thus, the education gap is average years of education of non-SC/STs divided by the average years of education of SC/STs in the sample. The gaps for wages and consumption are computed analogously. Note that the consumption numbers reported in the NSS refer to consumption of a household. We use them to compute the per capita consumption of that household. The consumption gaps reported

---

<sup>1</sup>We also consider a narrower sample in which we restrict the sample to only males and find that our results remain robust.

<sup>2</sup>Wages are computed as the daily wage/salaried income received by respondents for the work done during the previous week (relative to the survey week). Wages can be paid in cash or kind. If paid in kind wages are evaluated at the current retail prices. We convert wages into real terms using state-level poverty lines that differ for rural and urban sectors. We express all wages in 1983 rural Maharashtra prices.

here thus refer to the mean per capita monthly consumption expenditure of non-SC/ST households divided by the corresponding measure for SC/ST households.

Before proceeding it is worth presenting some basic cross-state sample statistics regarding our key measures of caste gaps. Table 1 shows the caste gaps for education, wages and consumption for 1983 (38th round of the NSS employment survey) and 2004-05 (61st round) across all the constituent states. Two features are worth noting. First, the gaps, averaged across all the states, have fallen for both education years and wages while staying relatively unchanged for consumption, indicating a broad trend towards convergence in the country as a whole. Second, the dispersion in the gaps across the states (as measured by the standard deviation) has fallen for both the education and median wage gaps. This suggests a pattern of cross-state convergence in these two indicators. The dispersion in the consumption gap on the other hand has increased between 1983 and 2004-05. This is a recurrent feature of the data: consumption patterns are often at odds with those in education and wages.

Table 1: Summary cross-state statistics for caste gaps:

<i>Variable</i>		<i>Mean</i>	<i>St. Dev</i>	<i>Max</i>	<i>Min</i>
Education years gap	1983	2.22	0.42	3.01	1.37
	2004-05	1.58	0.25	2.11	1.04
Median wage gap	1983	1.43	0.33	2.47	1.00
	2004-05	1.19	0.19	1.85	1.00
Consumption gap	1983	1.34	0.10	1.54	1.13
	2004-05	1.35	0.15	1.71	1.07

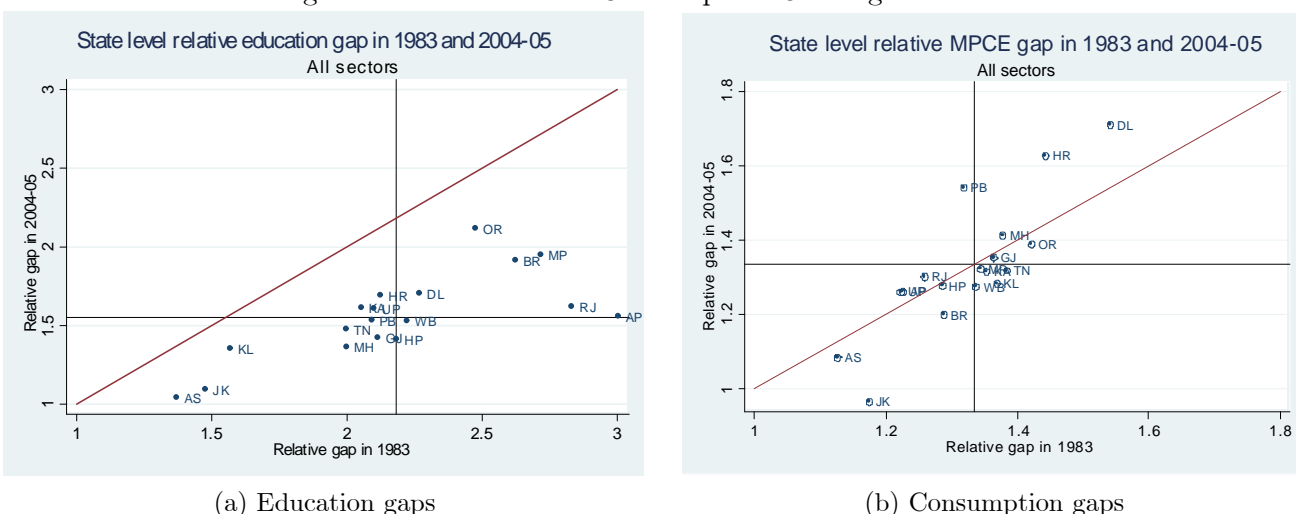
Note: The table presents the mean of the caste gaps across the constituent states, the dispersion of the caste gaps across the states as well as the max and the min for each variable for the 38th and 61st rounds of the NSS employment survey.

We start our detailed analysis of the time series patterns with education. Panel (a) of Figure 2 shows the gaps in education attainment between the groups. The diagonal line is the 45 degree line. Observations along the 45 degree line indicate no change in the education gaps during the period while observations below the line indicate convergence since the gaps in 2004-05 were smaller than in 1983. The key feature to leap out from Panel (a) of the Figure is that there has been a sharp convergence in education attainment levels of the two groups during this period. Moreover, this pattern has been almost uniform across the different states. In terms of strong and weak performers, Andhra Pradesh appears to have outperformed almost everyone in narrowing the caste education gap while Orissa showed little change during this period.

Panel (b) of Figure 2 shows the gaps in the mean per capita monthly consumption expenditure

(MPCE) between the groups. This reveals a slightly different picture relative to the education plot. Specifically, while there has been convergence in the consumption levels in some states, there has also been divergence in other states. Obviously, the convergence in education hasn't always carried over into convergence in consumption. However, as we have shown elsewhere (Hnatkowska, Lahiri, and Paul (2012)), consumption has converged at the aggregate level for the country as a whole. These results show that the aggregate picture masks significant underlying state-level variation. Individually, the consumption gap between the castes fell the fastest in Jammu and Kashmir while gap actually rose in the northern belt states of Punjab, Haryana and Delhi.

Figure 2: Education and Consumption Convergence



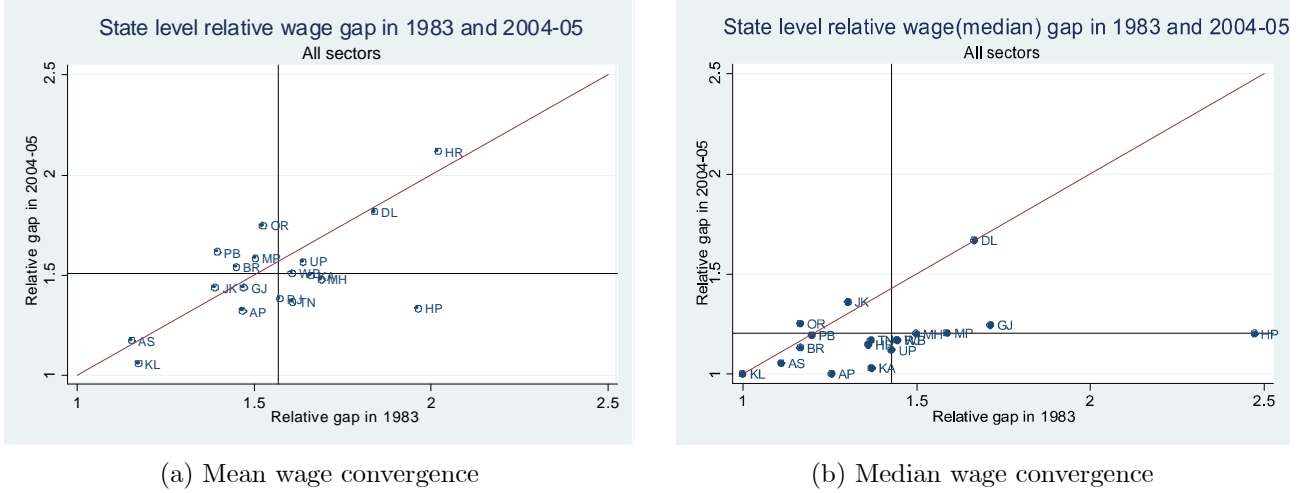
(a) Education gaps

(b) Consumption gaps

The next variable of interest is wages. Panel (a) of Figure 3 depicts the mean wage convergence in each of the states between 1983 and 2004-05 while panel (b) shows the corresponding patterns for median wages. An overwhelming majority of states show a sharp convergence in median wages between the groups during this period. The convergent trends in mean wages are bit more muted. Relative to median wages, more states show divergence while the size of the improvement is often smaller in the states with convergent trends. However, overall, both measures suggest an overall convergence of wage gaps between the groups. In terms of individual states, Himachal Pradesh was an outstanding performer in terms of narrowing the caste wage gaps while Orissa performed the worst.

Lastly, we turn to the evidence on employment patterns of the two groups. We examine two indicators: the occupation distribution and the employment distribution by industry. We measure

Figure 3: Wage Convergence Across States

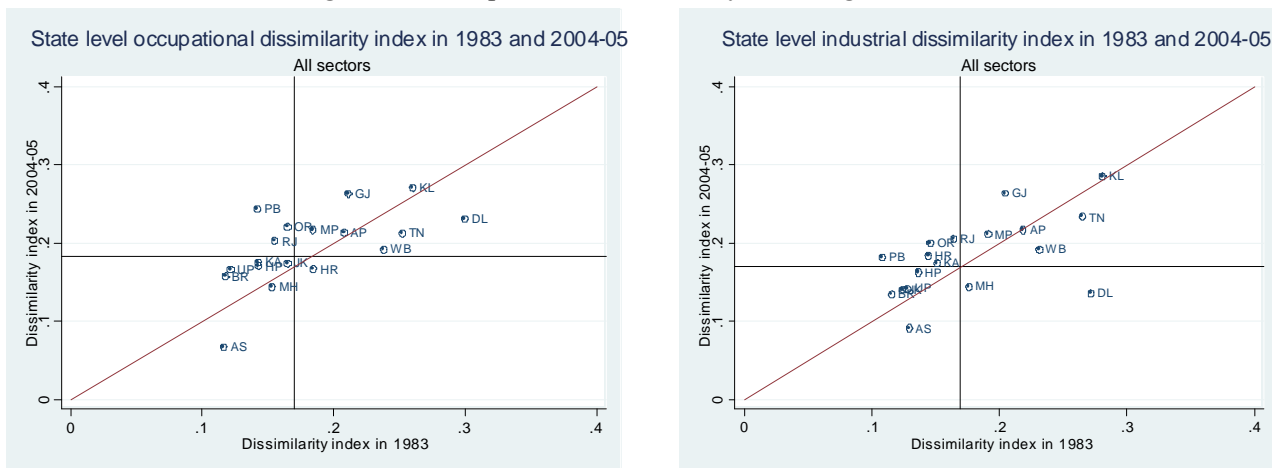


the gaps in distributions of the two groups by using the *Dissimilarity Index*:  $d = \frac{1}{2} \sum_{i=1}^J \left| \frac{N_i}{N} - \frac{S_i}{S} \right|$ , where  $\frac{N_i}{N}$  indicate the share of Non-SC/STs in occupation (or industry)  $i$ , while  $\frac{S_i}{S}$  measures the corresponding share for SC/STs.  $d = 0$  indicates complete similarity while  $d = 1$  indicates complete segmentation or dissimilarity.<sup>3</sup> Figure 4 plots the the dissimilarity indices for the occupation and industry distributions of the labor force of the two groups. The main pattern that emerges from the two panels of the figure is that cross-state evidence on convergence in the employment distribution of the groups is very mixed. While our previous study at the aggregate level suggests overall convergence in the employment distribution, albeit muted, there is clearly huge underlying variation across states. On both indicators, Punjab and Orissa performed the worst, i.e., they showed the largest increase in the dissimilarity index over time for both the occupation and industry distributions of the two groups.

The preceding results have three main takeaways. First, education attainment and median wages converged not just at the aggregate level but almost in all the constituent states of India, i.e., this was a broadbased, countrywide phenomenon. Second, the evidence on employment and consumption convergence is more mixed. While both these indicators showed overall convergence at the aggregate level, there has been significant cross-state variation in the patterns. Third, Himachal Pradesh (and to a lesser extent Andhra Pradesh) was one of the better performing states on this margin as it showed wide-spread decreases in caste gaps across a variety of indicators. On the flip side, Orissa (and to a lesser extent Punjab and Haryana) performed relatively poorly across all

<sup>3</sup>While there is no uniformly accepted metric for comparing distributions, this index is often used in analyzing inter-group heterogeneity.

Figure 4: Occupation and Industry Convergence



(a) Occupational dissimilarity

(b) Industrial employment dissimilarity

states in narrowing the caste gaps.

The heterogeneity in outcomes across states suggests that one might learn much more about the key drivers of the observed aggregate changes by exploiting these state-level variations in outcomes. This is precisely what we do next.

### 3 Explanations for the trends

While the overall trends towards shrinking gaps between SC/STs and non-SC/STs is encouraging news, what is equally important is to determine the proximate factors that may have been responsible for the changes. There are a few obvious explanations. The first is the role of the economic reforms in India during this period which translated to high growth rates in India during this period. A second factor may have been the reservations policy enshrined in the Constitution which provided affirmative action protection for SC/STs in education, jobs and political representation. A third factor could be the increasing political empowerment of SC/STs during this period. We examine each of these below more systematically.

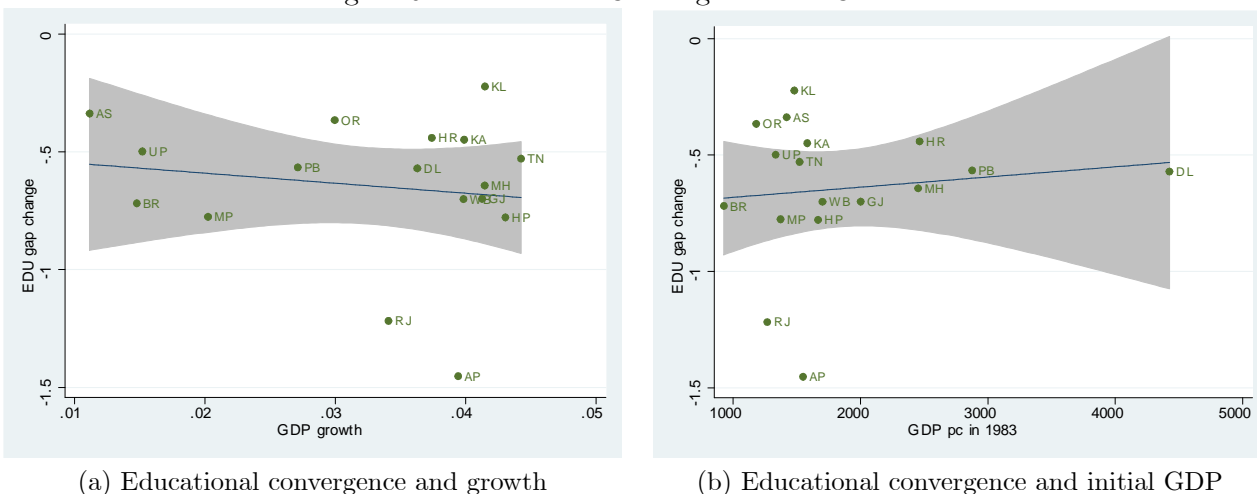
#### 3.1 Growth and convergence

We start by examining the relationship between the cross-state convergence patterns and the growth performance of the states. Of key interest is whether the states that grew the fastest were also the ones where the castes gaps narrowed the most. Figure 5 shows the relationship between the educational gaps and the GDP of the states.

Panel (a) of the figure shows the relationship between the change in the educational gaps (in years) and the average annual growth rate of GDP for each state during the period 1983-2005. Shaded areas on all figures below indicate 95% confidence interval. There is a mild but clear negative relationship illustrating the fact that the states which grew faster during this period were also the ones where the education gaps declined relatively more. Amongst the states with the highest GDP growth as well as the largest reduction in the education gap was Andhra Pradesh. Contrarily, Orissa stands out in terms of poor performance. Its growth rate during this period was about the average but the caste gap in education barely moved.<sup>4</sup>

A related issue of interest is the importance of the initial income of the states in accounting for the observed convergence patterns. Panel (b) of the figure shows that the relationship between the education gaps and initial income was positive, i.e., the initially richer states saw a slower decline in the educational gaps between SC/STs and non-SC/STs. This graph also highlights the dramatic contrast between Andhra Pradesh and Orissa. The two states are neighbors and had fairly similar income levels in 1983. The subsequent performance of the two in terms of narrowing the education gap between the SC/STs and non-SC/STs however was diametrically different.

Figure 5: Educational Convergence and GDP

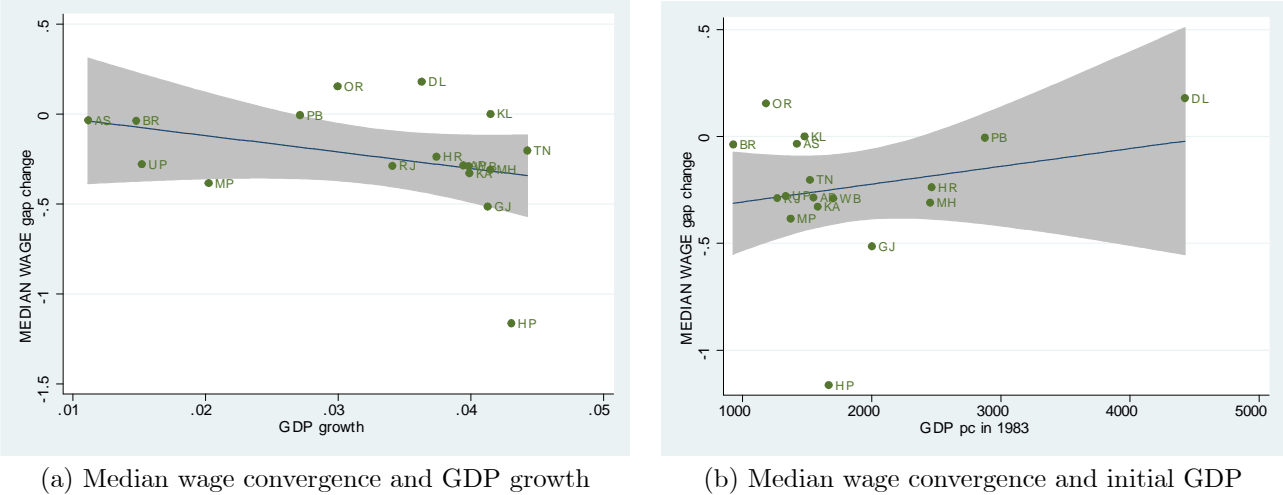


Next, we examine the joint evolution of wage convergence and GDP of the states. Figure 6 shows the patterns for median wage convergence. Panel (a) of the figure plot the change in the wage gap against the average GDP growth of the concerned state between 1983 and 2005. Clearly, wage gaps declined at a faster rate in states which grew faster during this period, corroborating

<sup>4</sup>Kerala too showed a very small decline in the caste gap in education years. However, the initial gap in 1983 in Kerala was itself very small – it was amongst the three states with the smallest caste gaps in education.

the pattern for education convergence. Himachal Pradesh was amongst the top performers whilst Orissa again stood out in terms of underperforming on reducing the wage gap (the wage gap actually rose) despite a middling performance in terms of growth.

Figure 6: Median Wage Convergence and GDP

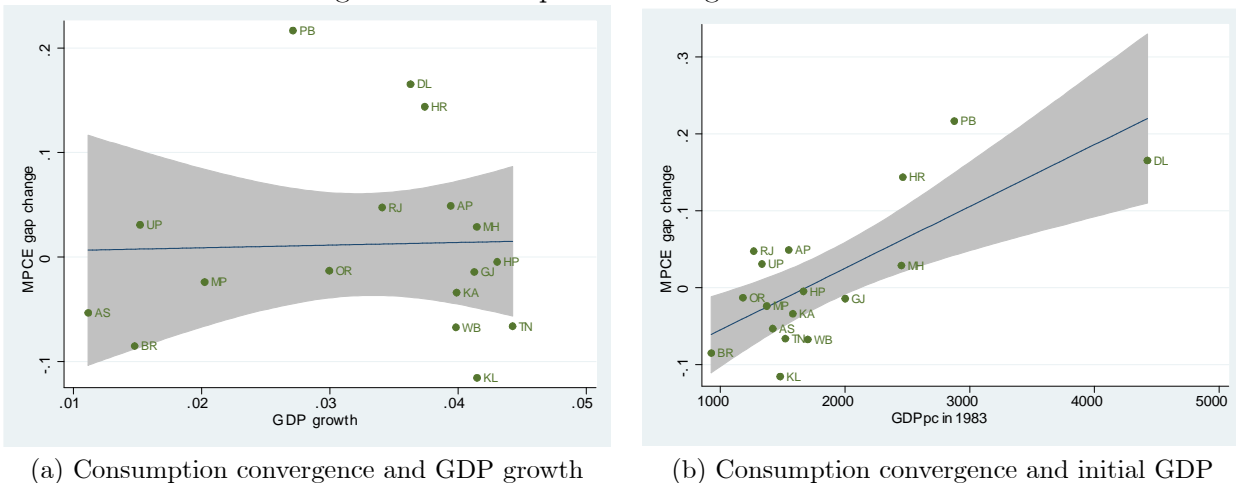


Panel (b) of Figure 6 shows the scatter plot of changes in the wage gaps against GDP in 1983 of the states. The graph shows an upward sloping relationship indicating that the states that were relatively richer in 1983 showed smaller declines in the wage gaps over this period. This pattern is similar to that for education where too the richer states showed the smallest reduction in the gaps.

A third metric of interest is consumption convergence. Figure 7 shows the relationship between changes in the gap in the average mean per capita consumption expenditures of non-SC/STs and SC/STs and GDP. Panel (a) of the figure shows that the relationship between changes in consumption gaps and GDP growth is almost flat, i.e., there is barely any discernible trend. Panel (b) of the figure shows that the relationship between changes in the consumption gaps and GDP in 1983 however is positive, i.e., the consumption gap tended to fall more in the relatively poorer states. This was similar to the pattern for wage convergence.

The positive relationship of all three indicators of caste convergence with initial income could indicate some sort of decreasing returns in the process if the gaps were small to start with in the richer states. However, this seems unlikely since both the consumption and wage gaps actually *widened* in some of the more well-off states in 1983 like Delhi, Haryana and Punjab. Moreover, as indicated in Figures 2 and 3, Delhi and Haryana were two states with the largest initial gaps between the groups in both consumption and wages.

Figure 7: Consumption Convergence and GDP



Our principal conclusion from the above is that aggregate growth was clearly a key factor associated with the declining caste gaps in education and wages during the period under study.

### 3.2 Reservations and convergence

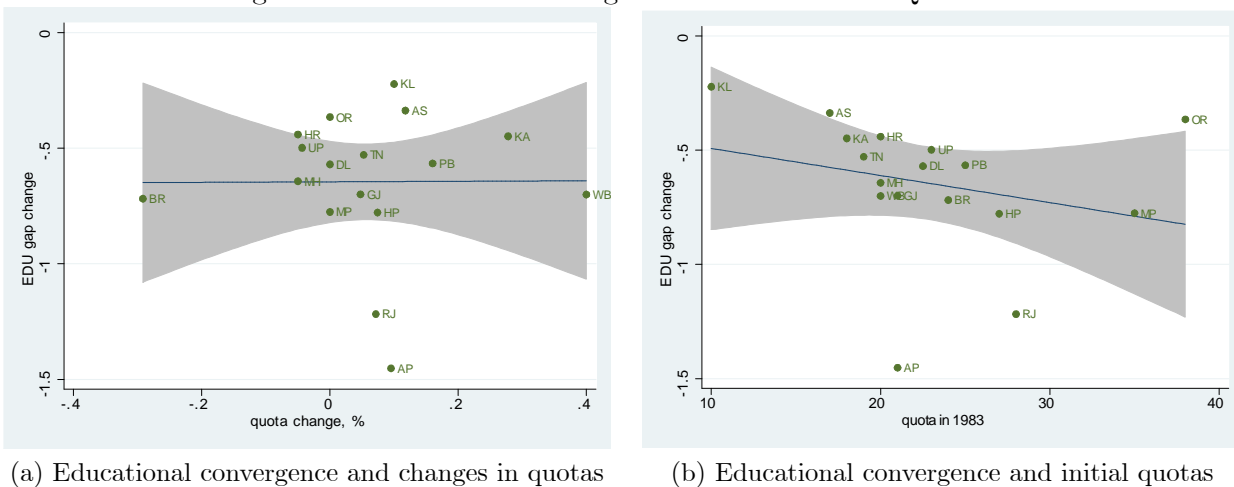
We now turn to the potential effects of the reservations in educational institutions and public sector employment on the caste gaps. India enshrined these reservations in the Constitution that it adopted in 1950 and are amongst the largest affirmative action programs implemented anywhere in the world. The quotas were set aside for SC/STs in proportion to their population representation both at the federal and state levels. Hence, there are periodic revisions of the quotas in every state based on the latest census results. This procedure for adjusting the quotas leads to sources of lags between changes in the population representation of SC/STs and changes in the quotas set aside for them. First, the censuses are conducted every ten years while the population representation of these groups changes continuously. Second, there are administrative lags in translating the population share numbers in the latest census into changes in the implemented quotas.

Our study is related to a recent work by Prakash (2009) who exploits the exogenous variation in changes in the quotas to study the impact of reservations on employment patterns, wages and consumption of SC/STs. His principal findings are that reservations did not significantly affect wages or consumption but they did affect the composition of the employment of SC/STs; quotas tended to increase the probability of salaried employment of SC/STs. However, Prakash (2009) focus was not on examining the convergence patterns between the groups, neither did it study the cross-state variation in the patterns. Lastly, we are also interested in overall education outcomes

such as total years of schooling, Prakash (2009) focused on school enrollment rates in order to measure education outcomes.

We start by examining the cross-state comovements of quotas and education gaps. Panel (a) of Figure 8 shows the scatter plot of the changes in the education gaps (in years) and the *change* in the quotas allocated to SC/STs between 1983 and 2005. The relationship is basically flat indicating the absence of any clear relationship between the two. Panel (b) of Figure 8 shows the relationship between the initial level of the quota in each state and the change in the education gaps that followed during 1983-2005. This relationship is clearly negative, i.e., states with larger quotas in 1983 saw larger declines in the education gaps between the castes. The key suggestion from Figure 8 is that the initial *level* in the quota was more important for changing education gaps than the *changes* in the quotas.

Figure 8: Educational Convergence and Reservation Quotas

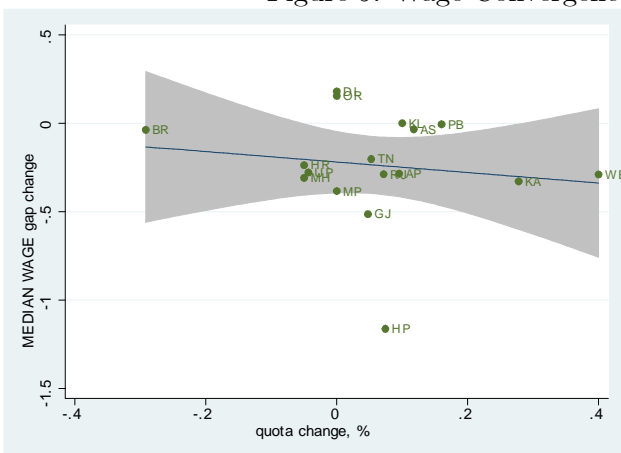


How important were quotas for the convergence in wages? Figure 9 shows the relationship between the change in the median wage gaps and quotas. The pattern is the same for both mean and median wages. Larger increases in the quotas were accompanied by bigger declines in the wage gaps between the groups (Panel (a)). On the other hand, akin to the result for education gaps, higher initial levels of the quota were typically also associated with larger reductions in the caste wage gaps.

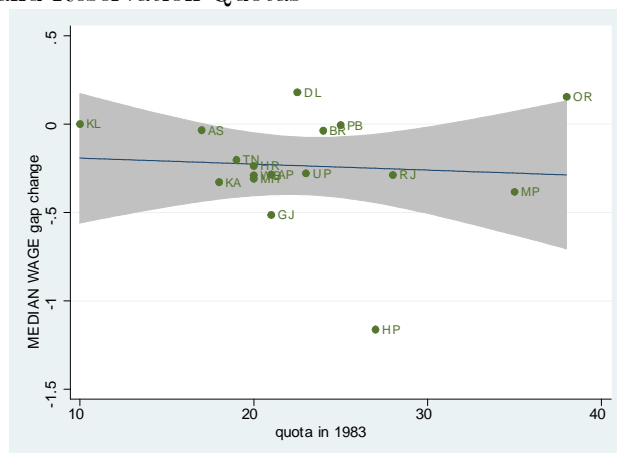
The relationship between the initial level of the quotas and the subsequent changes in the education and wage gaps we have found here is in the spirit of Hnatkovska and Lahiri (2011) who develop a skill and occupation choice model to show that caste gaps can decline in response to a rise in aggregate growth without any change in reservations for SC/STs as long as the *pre-existing*

affirmative action inducements are sufficiently strong.

Figure 9: Wage Convergence and Reservation Quotas



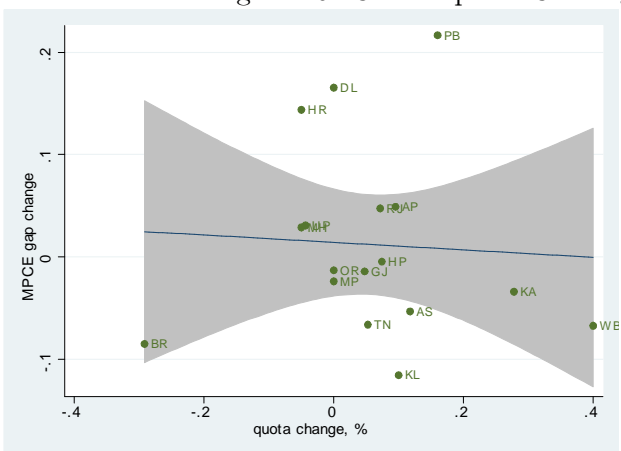
(a) Median wage convergence and changes in quotas



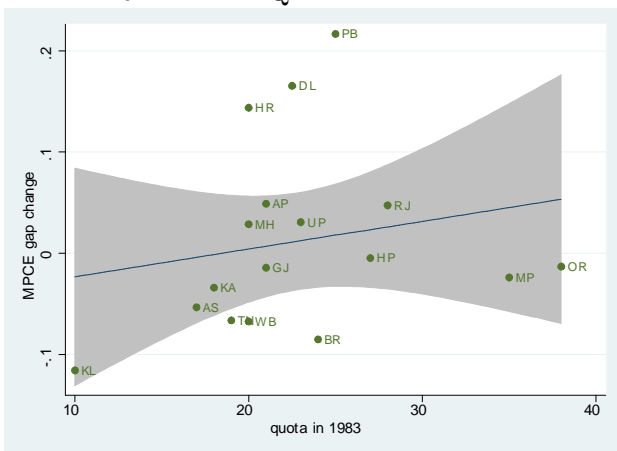
(b) Median wage convergence and initial quotas

Lastly, Figure 10 shows the relationship between quotas and the changes in the consumption gaps between SC/STs and non-SC/STs. The relationship between changes in the quota and the consumption gap is similar to that between the change in quotas and the wage gap. The difference lies in the relationship between the initial level of the quotas and changes in the gaps. Panel (b) of Figure 10 shows a positive relationship while the corresponding relationships for education gaps and wage gaps were negative. This is an intriguing feature of the data and reinforces our previous impression that consumption dynamics at the household level are often at odds with some of the individual level movements in education and wages.

Figure 10: Consumption Convergence and Reservation Quotas



(a) Consumption convergence and changes in quotas



(b) Consumption convergence and initial quotas

Overall, we conclude from this analysis that reservation quotas may well have been important in explaining the declining caste gaps. However, the effect is nuanced in that the level of the quotas were possibly more important than the effects of changes in the quotas in accounting for the cross-state variation in the caste gaps in education, wages and consumption. It is worth noting that these results are consistent with the findings of Prakash (2009) who found fairly muted effects of quotas.

### **3.3 Political Empowerment: The Case of Uttar Pradesh**

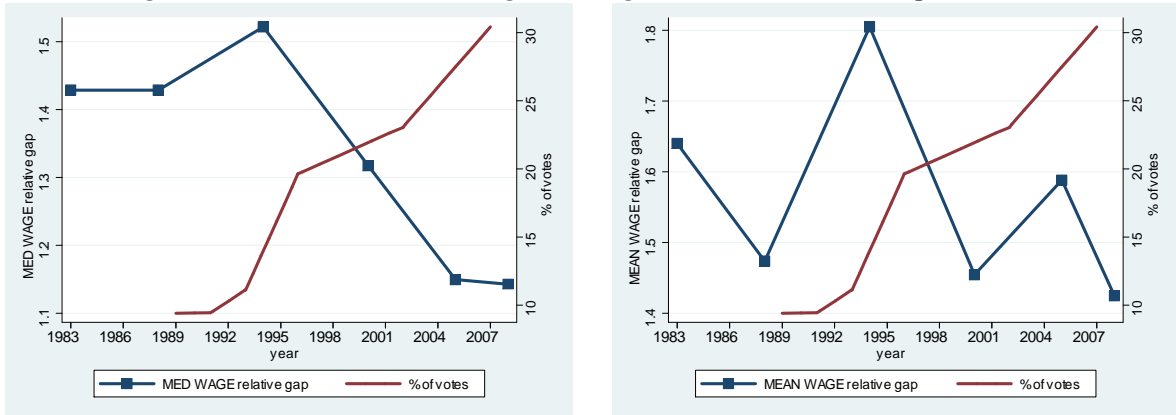
A third possible explanation for the declining overall caste gaps is that SC/STs have become more politically empowered over the course of the past 30 years and this has translated into lesser discrimination, more opportunities and consequently, better relative outcomes. Indeed Pande (2003) as well as Duflo (2005) document how political representation of minorities influence public policy in terms of expenditure patterns on public goods. However those papers do not examine the effect of these changes on the welfare of the targeted groups.

Is there any evidence to suggest that political empowerment and representation may have had a role to play in narrowing the caste gaps? We approach this question by looking at the case of Uttar Pradesh (UP). UP is special amongst the states in that a party called the Bahujan Samaj Party (BSP), which is essentially an SC/ST and other backward castes (also called Dalits) supported party. If political empowerment is indeed an important factor underlying the overall trends one would expect to see UP amongst the states that performed the best in narrowing the caste gaps.

As can be seen from Figures 2 and 3 above, UP did not show any dramatic decline in the gaps between SC/STs and non-SC/STs in education, consumption and wages between 1983 and 2004-05. On most of the indicators, UP had an average caste gap in both 1983 and 2004-05. However, this picture is potentially a bit misleading since the BSP was only formed in 1984 and began to seriously contest elections in 1989. The political rise of the party was quite swift in that it actually became part of a coalition government in 1992 and continued to be in power through different coalition governments off and on all the way through to 2007 when it was voted to power on its own. The key question then is how have the caste gaps evolved since 1992 and are there any differences in the patterns before and after 1992?

Figure 11 shows the paths of the median and mean wage gaps (Panels (a) and (b) respectively) and the vote share of the BSP in the UP Assembly elections since 1989 (which was the first year that the BSP fought elections in the state in any major organized way). The Figure reveals two

Figure 11: Uttar Pradesh: Wage convergence and Political Empowerment

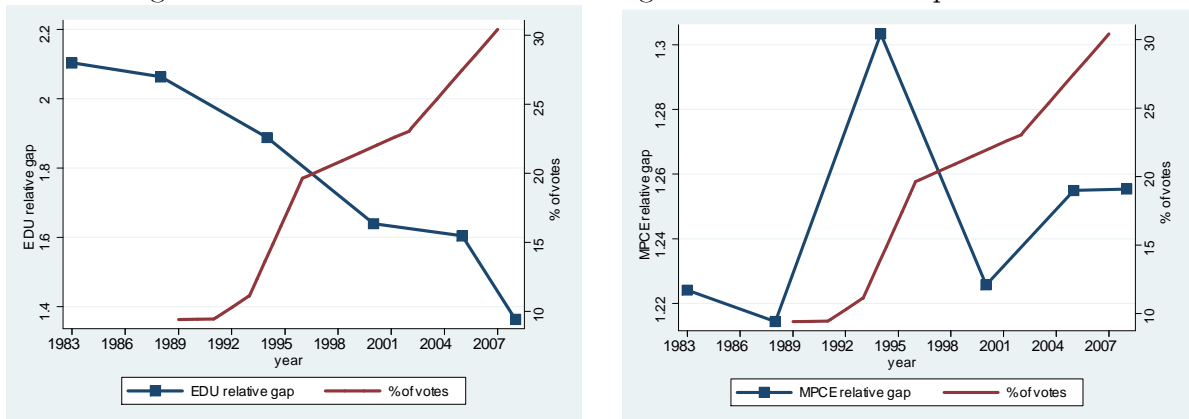


(a) Median wage convergence and BSP vote share (b) Mean wage convergence and BSP vote share

interesting features. First, the wage gaps between the two groups actually widened between 1983 and 1993-94 (left axis of the graphs). Second, wage gaps have been declining since 1993, which is the first year in which the BSP was actually part of the government as part of the ruling coalition.

Is this pattern restricted to the caste wage gaps? Figure 12 shows the education gaps (in years) and the per capita mean consumption gaps (Panels (a) and (b)) between the castes against the BSP vote share. This Figure corroborates the impression given by Figure 11. The education convergence was weaker before 1993 than after 1993, while consumption gaps widened till 1993 before beginning to fall. Clearly, even though UP began and finished the period 1983-2007 being an average performer in terms of the caste gap trends, there was significant underlying time variation in the trends suggesting a key role of political empowerment of SC/STs in accounting for the overall trends.

Figure 12: Uttar Pradesh: Caste Convergence and Political Empowerment



(a) Education convergence and BSP vote share (b) Consumption convergence and BSP vote share

Clearly, there could be other factors accounting for the time trends in the caste gaps documented above. First, it could be that widening gaps between the groups during 1983-93 was a nation-wide trend. Figure 1 shows that that was most certainly not the case. Both education and wage gaps fell between 1983 and 1993. Hence, UP behaved differently from the norm during that period. Second, it could be that UP's growth performance during 1983-93 and post 1993 could account for the different behavior of the caste gaps in education and wages in these two phases. However, per capita income in UP grew at an average annual rate of 1.6 percent during 1983-93 and at 1.5 percent during 1993-2005. Thus, there was hardly any difference in the growth rates during the two phases. Between 2005 and 2008 UP has grown at a much faster per capita annual rate of 5.6 percent. But this is precisely the period when the rate of decline of the wage gap between SC/STs and non-SC/STs has slowed down. Based on this, we do not believe that growth has been the key underlying driver of the caste gaps in UP since 1983. Lastly, it is important to point out that the reservation quotas in UP stayed unchanged over the sample. Hence, additional affirmative action protection cannot account for the reduction in the caste gaps in UP since 1992.

While our results from UP are most certainly not definitive regarding the effect of political empowerment of SC/STs on the caste gaps, they are suggestive of the fact that this may have been an important factor nation-wide in driving its dynamics. This deserves more in-depth and careful analysis which, while beyond the scope of this study, is an issue that we intend to pursue in future research work.

## 4 Conclusion

The past three decades have been a period of rapid and historic changes in India at the aggregate level. In recent work Hnatkovska, Lahiri, and Paul (2012) and Hnatkovska, Lahiri, and Paul (2011) have shown that this period has also proven to be historic in terms of the changes that have occurred in the fortunes of scheduled castes and scheduled tribes (SC/STs). Between 1983 and 2004-05, SC/STs have dramatically narrowed their gaps with non-SC/STs in education attainment rates, wages and consumption. Moreover, gaps in the occupation distributions have also narrowed. In this paper we have examined the potential contributions of three factors for these trends: aggregate growth effects, reservations and political empowerment. The key innovation of the study is to exploit the cross-state variation in outcomes (the key measures of convergence across castes) to ascertain the explanatory potential of the different channels.

Our primary finding is that aggregate growth effects are usually important for education and wage convergence across the castes. Interestingly, we find that the initially richer states saw a slower reduction in the education, wage and consumption gap. We also find relatively mixed associations of reservations with our measures of convergence. While the initial level of quotas seem to correlate positively with the subsequent convergence of the education and wage gaps, i.e., larger initial quotas appear to coincide with faster subsequent convergence. The *change* in the quotas during the period however have a more muted relationship with caste convergence rates. Education convergence, for example, appears to be uncorrelated with changes in the quotas.

We also examine the potential effect of political empowerment of the SC/STs by examining in greater detail caste gaps in Uttar Pradesh (UP). Examining the joint patterns of the vote share of the Dalit party (the BSP) and the caste gaps in education, wages and consumption since the mid-1980s, we do find some evidence suggestive of a convergence payoff to greater political empowerment of SC/STs in UP. This is a topic that deserves closer examination due to issues associated with identification of political empowerment as well as reverse causality. We intend to pursue it in future work.

One last point is worth stressing. A common feature of a number of our results is that the consumption patterns are often at odds with the patterns in education and wages. This probably partially reflects the fact that the consumption data reflects the household while the education and wage data is at the individual level. However, whether or not there are interesting intra-household redistribution and insurance mechanisms at play is an issue of independent interest which may worth pursuing in future research.

## References

- BANERJEE, B., AND J. KNIGHT (1985): “Caste Discrimination in the Indian Urban Labour Market,” *Journal of Development Economics*, 17(3), 277–307.
- BOROOAH, V. K. (2005): “Caste, Inequality, and Poverty in India,” *Review of Development Economics*, 9(3), 399–414.
- DUFLO, E. (2005): “Why Political Reservations?,” *Journal of the European Economic Association*, 3(2-3), 668–678.

- HNATKOVSKA, V., AND A. LAHIRI (2011): “Convergence Across Castes,” Igc working papers, International Growth Center.
- HNATKOVSKA, V., A. LAHIRI, AND S. PAUL (2011): “Breaking the Caste Barrier: Intergenerational Mobility in India,” Working papers, University of British Columbia.
- HNATKOVSKA, V., A. LAHIRI, AND S. PAUL (2012): “Castes and Labor Mobility,” *American Economic Journal: Applied Economics* forthcoming.
- ITO, T. (2009): “Caste Discrimination and Transaction Costs in the Labor Market: Evidence From Rural North India,” *Journal of Development Economics*, 88(2), 292–300.
- KIJIMA, Y. (2006): “Caste and Tribe Inequality: Evidence from India, 1983-1999,” *Economic Development and Cultural Change*, 54(2), 369–404.
- MADHESWARAN, S., AND P. ATTEWELL (2007): “Caste Discrimination in the Indian Urban Labour Market: Evidence from the National Sample Survey,” *Economic and Political Weekly*, 42(41), 4146.
- MUNSHI, K., AND M. ROSENZWEIG (2009): “Why is Mobility in India so Low? Social Insurance, Inequality, and Growth,” Working papers, Brown University, Department of Economics.
- PANDE, R. (2003): “Can Mandated Political Representation Increase Policy Influence for Disadvantaged Minorities? Theory and Evidence from India,” *American Economic Review*, 93(4), 1132–1151.
- PRAKASH, N. (2009): “The Impact of Employment Quotas on the Economic Lives of Disadvantaged Minorities in India,” Working papers, Dartmouth College, Department of Economics.