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Does Employment Quota Explain Occupational Choice Among Disadvantaged Groups? A Natural Experiment from India

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Abstract

This paper examines the effect of a federally-mandated public sector employment quota policy for minorities on their occupational choice. We utilize multiple logit models to estimate the effect of the policy on the choice between a high, middle, or low-skill public sector occupation during the 1980s and 1990s. The main findings are, first, the policy has a significant effect on the choice of occupation for both groups. The policy increases the probability of the scheduled caste group choosing high-skill occupations and decreases the probability of choosing middle-skill occupations. In contrast, the policy decreases the probability of the scheduled tribe group choosing high-skill occupations and increases their probability of choosing low-skill occupations. Second, the influence of the policy is interrelated with an individual's years of schooling. Third, we find evidence of employment quota externalities in that a policy targeted at one group affects the occupational choice of the other group. Overall, the results suggest that federally-mandated employment quotas do change occupational choice for the target disadvantaged groups and contribute to their improved socio-economic standing.

JEL *classification*: J62, J61, J24, O10, O2.
Keywords: Occupational choice, Skill, Caste, India.

1 Introduction

Analyzing the impact of federally-mandated public sector employment quotas on the occupational choice of disadvantaged groups has received remarkably little attention in the literature. This research takes a first step towards assessing the extent to which India's federal policy of mandating state governments to reserve a certain percentage of all job vacancies for historically disadvantaged minorities has changed the composition of public sector employment during the 1980s and 1990s for the targeted groups. Economists have long been concerned with studying the observable factors influencing occupational choice due to its strong potential to affect socio-economic status of an individual.[1] While quantifying the effect of occupational choice on individual economic prosperity is important, there has also been an interest in understanding the factors affecting an individual's choice of occupation. Driver (1962) and more recently Tsukahara (2007), for example, identify the effect of family background on the occupational choice of children. Soopramanien and Geraint (2001) estimate the effect of gender on participation and occupational choice in the U.S. Iannelli (2002) study differences in the extent to which social origin affects young people's educational and occupational outcomes in the European Union countries. Similarly, Constant and Zimmermann (2003) analyze the contrast in the occupational choice of native and non-native Germans.

In this paper we provide the first estimates of the role that federally-mandated employment quotas have in shaping the occupational choice for two of India's largest minority populations, the Scheduled Caste and the Scheduled Tribe.[2] The policy of setting employment quotas is, in general, used by the government and other institutions to help historically disadvantaged sections of society. The primary objective of this kind of policy is to compensate for past discrimination and subsequently increase their economic prosperity. Some economists have even suggested that 'the occupational attainment of an individual will be a major determinant of their level of consumption, self-esteem, and their general status in society', (Harper and Haq, 1997). Given the importance of an individual's occupational status in shaping future socio-economic status, it is interesting to analyze the effect of a large federally-mandated employment quota policy on the occupational choice of the individuals around which the policy is

[1] (Tsukahara, 2007); (Maxwell, 1996); (Becker, May, 1962); (Driver, 1962).

[2] India's employment based affirmative action policy is arguably the worlds largest federally-mandated policy in both its nature and coverage.

designed.

Identifying the effect of federally-mandated employment quotas can be difficult because whether or how the quotas are determined is likely to be endogenous. One can easily imagine a scenario where institutions or places that have higher employment quotas for minorities are likely to favor them in other ways too, which potentially confounds the interpretation of estimated coefficients for a regression of occupational choice on levels of employment quota.[3] In the case of India, the way in which the federally-mandated employment quota policy is implemented facilitates the identification of its causal effect. In particular, the Indian Constitution stipulates that in each state the public sector employment quotas targeted at the Scheduled Caste group and the Scheduled Tribe group– the two principal historically disadvantaged populations in India– be equal to their respective shares of the state's total population in the most recently tabulated census of population. This policy rule generates variation in employment quota levels, which is plausibly exogenous to states, permitting the identification of the causal effect of employment quota levels on occupational choice. We account for intercensal fluctuations in minority population shares in order to avoid confounding the effect of the policy with other state-level changes likely to be correlated with occupational choice. It is erroneous to expect a minority population's share to only affect occupational choice through the federally-mandated employment quota policy. Instead, our identification strategy takes advantage of the fact that the employment quota levels set for the minority groups can only change with a time lag with respect to their respective current population shares. The lag generated by the policy rule allows us to separately identify the effect of employment quotas from the effect of contemporaneous changes in their population levels.

In this paper we propose to analyze the patterns of occupational choice using multiple logit models using gender, educational attainment, and age as individual-level explanatory variables (Schmidt and Strauss, 1975), as well as a number of relevant characteristics of the states in which these individuals reside and are employed. To estimate the models we use individual-level data from multiple rounds of the National Sample Survey (NSS) of India for the year 1983, 1988, 1994, and 1999, respectively (India, Government of, 1983-2000).[4] Our model does not require us to make an assump-

[3]For a detailed discussion on the issue of identification see Prakash (2008).

[4](India, Election Comission of, 1981-2000); (India, Government of, 1983-2000); (India, Census of,

tion about an appropriate reference point (such as average educational attainment). Instead, one of the the key advantages is that we can use individual level observations for the econometric analysis as opposed to percentages. Additionally, the multiple logit model is attractive, in that, it is consistent with notions of random utility maximization, easy to specify and straightforward to estimate using standard maximum likelihood procedures.[5]

Our main findings indicate that the occupational choice of individuals belonging to the target disadvantaged groups is responsive to the federally-mandated employment quota policy. Estimation of the effect of employment quota levels on occupational choice in India should be of interest for a number of reasons. First, we are not aware of any previous study which rigorously quantifies the role of this policy in shaping occupational choice. Yet, this is the largest federally-mandated employment quota policy in the world, and has existed for over a half century. Second, this paper contributes to the literature concerned with understanding the factors that have an affect on individual occupational choice. Finally, in the context of development, we show that the optimal design and implementation of affirmative action policies is likely to be complex as the economic incentives created by employment quota policies are interrelated with individual education.

The remainder of this paper proceeds as follows. Section 2 briefly discusses the related literature on occupational choice, while Section 3 provides background information on disadvantaged minorities and the employment quota policy in India. Section 4 describes the data used in our analysis and Section 5 presents the empirical framework we use for our estimation. We report the main findings of our study in Section 6. Finally, Section 7 concludes and discusses the importance of our findings for understanding how federally-mandated employment quotas affect the occupational choice of historically disadvantaged groups.

1981-1991); (India, Scheduled Caste and Scheduled Tribe Commision of, 1981-2000).

[5](Brown et al., 2008); (Constant and Zimmermann, 2003); (Harper and Haq, 1997); (Connolly et al., 1992); (Filer, 1986); ; (McFadden and Tye, 1981); (Boskin, 1974); (McFadden, 1973).

2 Related Literature

This paper contributes to the literature on factors that determine the occupational choice of an individual. The majority of previous studies on occupational choice focus on the neoclassical capital theory (Becker, May, 1962). Schmidt and Strauss (1975) study the occupational choice of workers in the U.S. by education, experience, race and gender. They find that race and gender have strong effects in determining occupational choice, and interpret this result as evidence which is suggestive of labor market discrimination. Constant and Zimmermann (2003) using multiple logit models examine the occupational choice behavior of male and female Germans, native Germans and immigrants. They find that gender significantly and differentially affects occupational choice, and that individuals with more education choose higher ranking jobs. Additionally, they find that immigrants' occupational choice is more influenced by their mothers's education and not by their fathers' education. A number of researchers have modeled occupational choice and estimated various factors influencing it. They have linked occupational choice to family backgrounds, race, caste, gender, etc. Most of the research is centered on analyzing the occupational choice of individuals in developed countries.

To our knowledge this study is the first to rigorously quantify the effects of public sector employment quota levels in India on the occupational choice of minorities. The results put forth here contribute to the literature by providing yet another factor influencing the occupational choice of an individual. Galanter (1984) provide a good qualitative discussion of the Indian employment quota policy. Some of the recent studies have also examined the effects of the political reservation policy in India. Pande (2003) find that changing the political representation for the Scheduled Caste group and the Scheduled Tribe group impact policy choices, which is consistent with policy preferences differing across social groups and politicians acting upon their constituent's preferences. Prakash (2007) find that the political reservation policy for minorities has reduced overall poverty in India. Additionally, Prakash (2008) find that federally-mandated public sector employment quotas for minorities have a significant effect on their labor market outcomes such as the probability of finding a salaried job. Thus, federally-mandated policies like employment quotas and political reservation appear to have a beneficial effect for the group for whom the policies are targeted. It is of natural

interest to examine if such polices also have an effect on the occupational choice of the minorities in India.

3 Institutional Background

3.1 Disadvantaged Minorities in India

The Indian constitution explicitly recognizes Scheduled Castes (SCs)[6] and Scheduled Tribes (STs)[7] as the two principal historically disadvantaged minority groups in India, previously known as the depressed classes.[8] They together account for 24.4 percent of the total population according to 2001 census.[9] The SCs, who make up 16.4 percent of the total population, are comprised of groups isolated and disadvantaged by their "untouchability" status.[10] The word "untouchability" refers to their low status in the traditional Hindu caste hierarchy which exposed them to invidious treatment, severe disabilities, and deprivation of economic, social, cultural, and political opportunities (Galanter 1984). The STs, who make up 7.9 percent of the total population, are distinguished by "tribal characteristics" and by their spatial and cultural isolation from rest of the population. In addition to the aforementioned characteristics, the identity of SCs and STs is historically determined. An individual is born as a member of the SC group or ST group and cannot change his/her caste over their lifetime.[11]

The SCs and STs in India do much worse off as compared to the non-minorities.

[6]Selection criteria for Scheduled Castes: 1. Cannot be served by clean Brahmans; 2. Cannot be served by barbers, water-carriers, tailors, etc who serve the caste Hindu; 3. Pollutes a high-caste Hindu by contact or by proximity; 4. Is one from whose hands a caste Hindu cannot take water; 5. Is debarred from using public amenities, such as roads, ferries, wells or schools; 6. Is debarred from the use of Temples (place of worship); 7. Will not be treated as an equal by high-caste men of the same educational qualification in ordinary social intercourse; 8. Is merely depressed on account of its own ignorance, illiteracy or poverty and, but for that, would be subject to no social disability; 9. Is depressed on account of the occupation followed and whether, but for that, occupation it would be subject to no social disability.

[7]Selection criteria for Scheduled Tribes: 1. Tribal origin; 2. Primitive way of life and habitation in remote and less accessible areas; 3. General backwardness in all respects.

[8]Some SCs in India are also known as Dalits and some ST people are also known as Adivasis.

[9]The criteria for the selection of "scheduled castes" and "scheduled tribes" groups as stated in Constitutional orders of 1950.

[10]The Indian Constitution prohibits the use of the word untouchability.

[11]The word caste or 'jati' is derived from the word 'jan', 'to be born' and indeed the jatis are endogamous: one is born in the caste one's parents belong to; they are organized in a hierarchical way due to their status, given in terms of ritual purity, according to a continuum ranging from Brahmins to the Untouchables.

Their poverty rate as measured by a headcount ratio is twice as high as the non-minorities. Specifically, the percentage of people below the poverty line is 48.3 for the SCs and 52 for the STs, while only 31.2 percent of non-minorities are reported to be poor. Similarly, their literacy rate is by far the lowest. Less than 30 percent are reported to be literate among the STs, while this number is only marginally higher for the SCs. The infant mortality rate for the SC group is 118 while for the ST group it is 121 compared to 80 among the non-SC/ST population. This systematic deprivation across all spheres has been the impetus for many government policies aimed at helping the SCs and STs. Among these policies is the federally-mandated public sector employment quota policy.

3.2 The Natural Experiment in India

The early traces of this employment quota policy for disadvantaged minorities in public sector jobs go back to the early 1930s, under the British rule. Under the same spirit and concern, this policy found a place when the Constitution of India was being drafted after its independence in 1947 and its transition to a sovereign republic in 1950. Specifically, Articles 16(4)[12], 320(4) and 335 of the Indian Constitution provide safeguards for SCs and STs in services and posts under the state with a view to ensuring their adequate representation in public sector jobs. The percentage of reservation in services/posts under the state government varies from one state to another and is fixed on the basis of the percentage of SC and ST population relative to the total population in the respective state.[13] This policy of official discrimination in favor of the worst-off sections of the population is unique in the world, both in the range of benefits involved and in magnitude of the groups eligible for the benefits.

The National Scheduled Caste and Scheduled Tribe Commission handles the administration of the employment quota policy in India. The National Commission on SC and ST has a vigorous statutory mandate and the powers of a civil court.[14] This

[12]Nothing in this article shall prevent the State from making any provision for the reservation of appointments or posts in favor of any backward class of citizens which in the opinion of the State, is not adequately represented in the services under the State.

[13]Annual Scheduled Caste and Scheduled Tribe Commissioners Report.

[14]Under Article 338 of the Constitution, the President of India appoints a special officer known as the commissioner for SC and ST to investigate all matters relating to the safeguards provided for the SC and ST under the various provisions of the Constitution. In 1990, through the sixty-fifth amendment of the Constitution(Article 338) the special officer was replaced by a National Commission

Commission co-ordinates between the state government and the federal government once the recent census population estimates by social group arrive. Before implementing the recommendation by the Commission approval from several bodies is required. After the new estimates arrive, the Commission revises the percent of jobs reserved for SCs and STs according to the new census population estimates. Next, the Commission sends the recommendation to the President of India. Then, the Ministry of Social Justice and Empowerment places the recommendation before both houses of the Parliament which gives the final approval. Only after this set of administrative steps is the percent of jobs reserved revised to reflect the new census population estimates. The details of how the employment quota policy is implemented in India will enable us to identify the effects of this policy.

4 The data

The empirical analysis uses data assembled from a variety of sources. This section gives a brief summary of the data sources and the variables used; Appendix A provides a detailed account of the same.

The primary source is the National Sample Survey (NSS). This provides a large, nationally representative sample of households in India. We use data from the Employment and Unemployment rounds of this survey in 1983, 1988, 1993, and 1999. From the NSS, we extract the following sample: individuals who are currently aged 18-65, living in one of the 16 major Indian states named in Appendix A, and not currently attending school. This restriction is because the employment quota variables that we cover in these states over the 1983-1999 time period are consistent; at any rate, it should have minimal impact since these 16 states account for over 95 percent of the Indian population. All the occupation outcomes and individual demographic variables used in the empirical paper come from the NSS.

The Scheduled Caste and Scheduled Tribe Annual Commissioner's Report provides the policy variables for each state and year: employment quota for SCs and employment quota for STs. These policy variables are merged into the NSS individual-level data set by state and year.

for SC and ST with powers of a civil court to summon persons, files, etc. for securing evidence on oath.

The remaining data sources are as follows. The Census of India, Registrar General provides the data on SC and ST census population shares and current population shares. The Census Atlas, India provides population density data. Finally, state per capita income is from the Economic and Political Weekly Research Foundation. These data are at the state-year level, and merged into the NSS data set by state and year.

5 Estimation framework

To analyze the effect of the federally-mandated public sector employment quota policy on individual occupational choice we utilize the multinomial logit model (MNL) specified in equation (1):

$$Pr(Y_i = j) = \frac{e^{\beta_j' \mathbf{X}_i}}{\sum_{k=1}^{3} e^{\beta_k' \mathbf{X}_i}} \qquad j = 1, 2, 3 \tag{1}$$

where i indexes each individual in the sample and j indexes the realized choice Y_i between low, middle, and high-skill public sector occupations, respectively. We restrict our sample to individuals not currently attending school who are age 18-60 and living in one of the sixteen major Indian states.[15] We estimate our model separately for each group for the year 1983, 1988, 1994, and 1999 using maximum likelihood estimation procedures available through Stata.

Occupations are defined by the Indian National Classification of Occupations codes and we classify these according to skill level.[16] Each occupation in the public sector requires a passing score on an entrance examination; we assume that the higher the skill required for the occupation the more difficult the entrance exam. High-skilled occupations include positions such as teachers, administrative and executive government officials, as well as directors and managers of financial institutions. Middle-skill occupations include positions such as book keepers, office assistants, nurses and other medical and health technicians. Low-skill occupations include positions such as electricians, equipment operators, and individuals performing construction and other maintenance related services.

[15]The states represented in our sample are Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Jammu-Kashmir, Karnataka, Kerala,Madhya Pradesh, Maharashtra, Orissa, Punjab,Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

[16]See Appendix A for the details of the classification used here.

The vector of explanatory variables **X** includes individual characteristics as well as characteristics of the states in which the individuals reside and are employed. The individual characteristics include age, the square of age, gender, and years of schooling.[17] The state characteristics include the federally-mandated percentage of all public sector jobs in a state required to be allocated to each of the respective minority groups. In addition, we include the current population shares of each of the minority groups, the fraction of a state's public sector employment which is age 55 to 60, the population density of the state, and the natural log of per capita state income lagged one year.[18]

Identification requires a normalization of the coefficients and intercept to zero for one choice of occupation and we normalize relative to the middle-skill alternative. Test statistics are calculated following Small and Hsiao (1985) to assess whether the assumption that the ratio of probabilities of choosing any two alternatives is independent of the third choice.[19] In the literature this is known as the "independence of irrelevant alternatives" property and is the primary limitation of the MNL modeling approach. Departures from this assumption imply inconsistent parameter estimates in that omitted attributes of alternative occupations are plausibly correlated with the binary choice outcome of interest.

6 Results

6.1 Descriptive statistics

The sample means of state characteristics for 1983, 1988, 1994, and 1999 are reported in Table 1. Mean values of both the Scheduled Caste (SC) and Scheduled Tribe (ST) employment quotas have slightly increased over the sample period from about 16% and 8% to 17% and 9%, respectively. The federal strictures of the employment quota policy require the group-specific quotas to be based on their respective population shares in census years. Accordingly, we see that the mean population shares of

[17] Years of schooling is computed by assigning 0 years for no formal education, 5 years for primary school, 10 years for secondary school, 12 years for high secondary school and 16 years for a graduate studies.

[18] Table 1 summarizes the state characteristics and Table 2 summarizes the individual level data. Appendix A contains a detailed description of data sources and the construction of variables utilized in the model.

[19] We gratefully acknowledge Nick Winter for writing the Stata module which calculates the test developed by Small and Hsiao (1985).

SCs and STs, respectively, are slightly different from the mean level of employment quotas in each year. This variation is stimulated by intercensal population changes in each of the minority groups. These changes allow us to identify the effect of the employment quota policy independently of other general population changes within states which might also impact occupational choice. Lastly, the mean values of per capita state income rise over the years in our sample while the percentage of public sector employees between the ages of 55 and 60 have remained at around 78%. There is an upper age limit of forty years imposed on potential applicants for public sector occupations and once employed in the public sector individuals typically remain there until retirement at age 60. The consistency of this measure across years suggests there are no major differences in the public sector hiring process over this time period.

The sample means of individual characteristics for 1983, 1988, 1994, and 1999 are reported in Table 2. These individuals belong to the SC and ST groups, are age 18-60, not attending school, and are employed in either a high, middle, or low-skill public sector occupation. The percentage of both SC and ST individuals employed in high-skill occupations has steadily increased over the sample period while the percentage employed in low-skill occupations has declined. In contrast, the percentage of both SC and ST individuals employed in middle-skill occupations has remained fairly constant, with perhaps a small increase by 1999. Over 80% of public sector employees belonging to the SC and ST groups are male and the average age is about 36 years old.

One interesting distinction between the two groups is in terms of years of schooling. For both the SC and ST groups we see that mean education levels have increased over the sample period by about 5 years, on average. However, individuals belonging to the SC group have education levels considerably lower relative to individuals in the ST group. One explanation for this disparity is perhaps a higher utilization of informal schooling among the SC group relative to the ST group. We further explore the possibility that the employment quota policy might have differential effects on occupational choice depending on schooling levels. Finally, the sampling process utilized in the Indian National Sample Survey has changed somewhat over the sample period analyzed here. In particular, we have a much smaller sample of public sector employees belonging to the SC and ST groups for round 55 in 1999. We hypothesize that changes in the sampling distribution underly the failure of our tests of independence of irrelevant alternative for a few of the years, and we return to this issue below.

6.2 The effect of the employment quota policy on the occupational choice of the SC group

Table 3, 4, and 5 present the main findings of the effect of the federally-mandated employment quota policy on individual occupational choice for the SC group. These tables show the marginal effects of the explanatory variables on the probability of choosing an occupation which is high, middle, or low-skill, and are evaluated at the sample mean values.[20] We see that, in general, the SC employment quota policy increases the probability of SC individuals choosing high-skill occupations and lowers the probability of choosing middle-skill occupations. The effect on the probability of choosing a low-skill occupation is positive, but not statistically different from zero for any year.

It is not surprising that we find a significant positive effect of years of schooling on the probability of choosing high and middle-skill occupations and a significant negative effect on the probability of choosing low-skill occupations across all years. Interestingly, however, we also see that the effect of the employment quota policy is interrelated with individual years of schooling. The results in Table 3 suggest the higher educated individuals in the SC group are more responsive to the employment quota policy. In particular, we find that those with more education are even more likely to choose high-skill occupations in states which have higher quotas, and this is also true for middle-skill occupations. This suggests a differential effect of the policy for individuals with and without schooling, which is not always in the same direction.

In terms of the validity of our modeling approach, Table 6 provides assurance that our estimated marginal effects are not biased by our choice of normalization. Here we see that we fail to reject the null hypothesis of independent irrelevant alternatives for all but one subset of choices for 1999. These tests imply that our choice of normalization is appropriate in this context. The fact that the sample size of SC public sector employees falls by more than half in 1999 is suggestive of potential issues of representativeness in SC sampling for that survey round. Furthermore, the fraction of predictions implied by our model that were in fact correct is high and 70% or greater for all years.

[20]The maximum likelihood estimates of the coefficients from the MNL model in equation (1) do not have straightforward interpretations because they measure the change in the log odds ratio between two alternatives due to a unit change in an explanatory variable. For brevity, we do not report these results here and these results are available from the authors upon request.

6.3 The effect of the employment quota policy on the occupational choice of the ST group

Table 7, 8, and 9 present the main findings of the effect of the federally-mandated employment quota policy on individual occupational choice for the ST group. These tables show the marginal effects of the explanatory variables on the probability of choosing an occupation which is high, middle, or low-skill, and are evaluated at the sample mean values.[21] We see that, in general, the ST employment quota policy increases the probability of ST individuals choosing low-skill occupations and lowers the probability of choosing high-skill occupations. The effect on the probability of choosing a middle-skill occupation is generally small and positive, but not statistically different from zero for any year except 1994. For this year, in particular, we find the assumptions of our modeling approach are not met and therefore we place little weight on the interpretation of estimates for this year.

As with the SC group, we find a significant positive effect of years of schooling on the probability of choosing high and middle-skill occupations and a significant negative effect on the probability of choosing low-skill occupations across all years. However, in this case, we find less evidence that the effect of the employment quota policy is interrelated with individual years of schooling. The results in Table 7 suggest the higher educated individuals in the ST group are even more likely choose high-skill occupations in states which have higher quotas, despite the negative mean effect of the policy. In contrast, those with more schooling are less likely to choose middle-skill occupations, however, the effect is only weakly significant in 1999. Again, we find evidence that suggests the effect of the policy between individuals with and without schooling is not always in the same direction.

In terms of the validity of our modeling approach, Table 10 provides assurance that our estimated marginal effects are not biased by our choice of normalization in 1988 and 1999 only. Here we see that we fail to reject the null hypothesis of independent irrelevant alternatives for all but one subset of choices for these years, but do reject both null hypotheses for 1983 and one for 1994. Furthermore, the fraction of predictions

[21] The maximum likelihood estimates of the coefficients from the MNL model in equation (1) do not have straightforward interpretations because they measure the change in the log odds ratio between two alternatives due to a unit change in an explanatory variable. For brevity, we do not report these results here and these results are available from the authors upon request.

implied by our model that were in fact correct is still high at 60% or greater for all years in our sample period of 1983, 1988, 1994, and 1999, but relatively lower compared to those for the SC group.

7 Discussion

In this study we have applied the multiple logit model and employed data from various sources to predict occupational choice among the two historically disadvantaged groups in India. Methodologically, we have been careful to test the validity of this approach, given our choice of normalization. Our primary underlying assumption is that individuals choosing between public sector occupations which require high or middle-skill levels do not respond to occupational attributes specific to alternative low-skill occupations. Similarly, those choosing between occupations which require low or middle-skill levels are not responsive to attributes of alternative high-skill occupations. Overall, the results suggest that this policy has a significant effect on the choice of occupation for both of the groups.

Specifically we find that the SC employment quota policy increases the probability of SC individuals choosing high-skilled occupations. Also, we find a significant positive effect of years of schooling on the probability of choosing a high and middle-skill occupation and a significant negative effect on the probability of choosing a low-skilled occupation across all of the years we analyze. In contrast, for the ST group, we find that the ST employment quota policy increases the probability of choosing a low skilled occupation and lowers the probability of choosing a high-skill occupation. This result is perhaps not very surprising because the majority of ST individuals are located where only low skilled jobs are available. Also, in general, minorities with more years of schooling have better opportunities elsewhere.

From a policy perspective our results provide evidence of significant changes in the composition of occupations among the two target disadvantaged minority groups. We reveal a possible mechanism through which the policy is working and find it is interdependent with schooling levels. These findings are particularly important if we believe that occupational choice is correlated with socio-economic standing in society. Here, we see that schooling levels are a strong predictor of occupational choice, however, we also see that individuals with more schooling are more responsive to the policy.

So to one extent we can attribute part of the improved socio-economic condition of the SC and ST groups to the employment quota policy. Some caution, however, is required in considering the optimal design and implementation of employment quota policies from a development standpoint. We find evidence of policy externalities, in this context, which is suggestive of inter-group competition for public sector occupations. Specifically, we see that individuals belonging to the SC group are more likely to choose middle-skill occupations in states which have higher levels of ST employment quotas, while the opposite is true for low-skill occupations. One explanation for this finding is that individuals belonging to the ST group typically live in relatively isolated areas where only low-skill jobs are available. Thus, despite the fact that ST individuals have higher education levels, on average, it might be the case that fewer of these individuals are located near areas requiring the services of middle-skill occupations. Moreover, we find that individuals belonging to the ST group are more likely to choose high-skill occupations in states which have higher levels of SC employment quotas. This suggests the responsiveness of target disadvantaged groups to employment quota policies might depend on the spatial distribution of employment opportunities relative to minority location within states. It is particularly important to keep this in mind if policymakers intend to change the magnitude of the effect of this policy. More research along these lines would likely prove informative for understanding how employment quotas change the economic incentives for minority groups.

References

Becker, G. S., May, 1962. Discrimination and the occupational progress of negroes: a comment. The Review of Economics and Statistics 44 (2), 214–215.

Boskin, M. J., Part I, M 1974. A conditional logit model of occupational choice. Journal of Political Economy 82 (2), 389–98.

Brown, S., Fry, T. R., Harris, M. N., May 2008. Untangling supply and demand in occupational choice. Economics Letters 99 (2), 414–417.

Connolly, S., Micklewright, J., Nickell, S., July 1992. The occupational success of young men who left school at sixteen. Oxford Economic Papers 44 (3), 460–79.

Constant, A., Zimmermann, K. F., 2003. Occupational choice across generations. SSRN eLibrary.

Driver, E. D., 1962. Caste and occupational structure in central india. Social Forces 41 (1), 26–31.

Filer, R. K., April 1986. The role of personality and tastes in determining occupational structure. Industrial and Labor Relations Review 39 (3), 412–424.

Galanter, M., 1984. Competing equalities: Law and the backward classes in india.

Harper, B., Haq, M., 1997. Occupational attainment of men in britain. Oxford Economic Papers 49, 638–650.

Iannelli, C., Jul 2002. Parental education and young people's educational and labour market outcomes: A comparison across europe. MZES Working Papers 45, MZES.

India, Census of, 1981-1991. India, office of the registrar general and census comissioner of. New Delhi India.

India, Election Comission of, 1981-2000. Statistical reports of assembly elections. New Delhi India.

India, Government of, 1983-2000. National sample survey organization: employment and unemployment round. New Delhi India.

India, Scheduled Caste and Scheduled Tribe Commision of, 1981-2000. Annual scheduled caste and scheduled tribe commisioners report. New Delhi India.

Maxwell, Mary P., M. J. D. S. E. K., 1996. Ethnicity, gender, and occupational choice in two toronto schools. Canadian Journal of Education 21 (3), 257–279.

McFadden, D., 1973. Conditional logit analysis of quantitative choice behavior. Frontiers of econometrics, New York: Academic Press, 105–142.

McFadden, D, T. K., Tye, W., 1981. An application of diagnostic tests for the independence from irrelevant alternative property of the multinomial logit model. Transportation Research Record 637, 39–46.

Pande, R., 2003. Can mandated political representation increase policy influence for disadvantaged minoritites? theory and evidence from india. American Economic Review 93 (4), 1132–1151.

Prakash, N., 2007. Does politcal reservation for minorities reduce poverty? evidence from india. University of Houston mimeo.

Prakash, N., 2008. Improving the labor market outcomes of minorities: The role of employment quota. University of Houston mimeo.

Schmidt, P., Strauss, R. P., 1975. The prediction of occupation using multiple logit models. International Economic Review 16 (2), 471–486.

Small, K. A., Hsiao, C., 1985. Multinomial logit specification tests. International Economic Review 26 (3), 619–627.

Soopramanien, D., Geraint, J., 2001. A new look at gender effects in participation and occupation choice. LABOUR 15 (3), 415–443.

Tsukahara, I., 2007. The effect of family background on occupational choice. LABOUR 21 (4-5), 871–890.

Table 1: The sample means of selected state characteristics in India[1]

	1983	1988	1994	1999
Scheduled Caste (SC) employment quota	16.0	15.9	16.6	16.5
	(5.1)	(5.1)	(5.7)	(5.7)
Scheduled Tribe (ST) employment quota	8.1	8.4	9.4	8.8
	(5.9)	(6.0)	(7.0)	(6.6)
SC current population share	15.9	16.1	17.1	17.8
	(5.8)	(5.7)	(5.6)	(5.6)
ST current population share	8.1	8.4	8.6	8.2
	(7.4)	(7.4)	(7.8)	(7.4)
Population density	267.2	262.5	264.9	262.7
	(143.6)	(146.1)	(148.4)	(143.9)
% of public sector employees age 55-60	81.3	78.2	76.9	78.6
	(3.2)	(3.5)	(4.2)	(3.8)
Ln(per capita income) lagged one year	7.0	7.10	10.7	11.0
	(0.3)	(0.3)	(0.6)	(0.6)

Note: Standard deviations reported in parentheses.

Sources: Quota data are obtained from the Scheduled Caste and Scheduled Tribe Annual Commissioner's Report (1955-2000); current population share and population density data are from the Census of India, Registrar General data; public sector employee data are from the Indian National Sample Survey rounds 38, 43, 50, and 55; state per capita income data are based on domestic product of states of India prepared by the Economic and Political Weekly Research Foundation.

[1]The states represented in our sample are Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Jammu-Kashmir, Karnataka, Kerala,Madhya Pradesh, Maharashtra, Orissa, Punjab,Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

Table 2: The sample means of selected public sector employee characteristics for the Scheduled Caste and Scheduled Tribe groups

	Scheduled Caste				Scheduled Tribe			
	1983	1988	1994	1999	1983	1988	1994	1999
% High-skill occupation	6.6	10.1	11.1	12.3	15.3	18.2	25.0	26.1
% Middle-skill occupation	23.4	23.8	23.9	24.4	26.1	27.3	27.6	30.2
% Low-skill occupation	70.0	66.1	65.0	63.3	58.6	54.5	47.4	43.7
% Male	84	84	85	85	88	84	83	85
Age	35.5	36.4	36.4	37.5	35.0	35.4	36.2	36.7
	(10.7)	(10.5)	(10.4)	(10.8)	(10.2)	(10.2)	(9.7)	(9.9)
Years of schooling	1.3	1.8	5.0	5.6	2.0	2.5	6.7	7.3
	(2.9)	(3.5)	(5.6)	(5.9)	(3.4)	(3.8)	(6.1)	(6.10)
Number of observations	7507	7992	6519	3396	1986	2803	1947	1038

Note: Standard deviations reported in parentheses.

Source: Indian National Sample Survey rounds 38, 43, 50, and 55 for the year 1983, 1988, 1994, and 1999, respectively.

Table 3: The predicted marginal effects of employment quotas, gender, and schooling on the probability of choosing a high-skill occupation for the Scheduled Caste group[1]

	High-Skill Occupation[2]			
	1983	1988	1994	1999
ST Employment Quota	0.0003	−0.0005	−0.0018	−0.0028
	(0.0012)	(0.0022)	(0.0020)	(0.0036)
SC Employment Quota	0.0049***	0.0054	0.0063	−0.0003
	(0.0016)	(0.0050)	(0.0061)	(0.0050)
Schooling x **SC Employment Quota**	0.0003***	0.0003	0.0002**	0.0001
	(0.0001)	(0.0004)	(0.0001)	(0.0003)
Schooling[3]	0.0162***	0.0246***	0.0088***	0.0126**
	(0.0019)	(0.0074)	(0.0025)	(0.0059)
Male	−0.0476***	−0.1417***	−0.1185***	−0.1462***
	(0.0160)	(0.0322)	(0.0191)	(0.0239)
Number of observations	7507	7992	6519	3396

Note: Reported standard errors in parentheses are clustered at the state level.

* Significant at 10-percent level,** Significant at 5-percent level, and *** Significant at 1-percent level.

[1]Marginal effects are evaluated at sample means and based on coefficient estimates from multinomial regression models which also include additional explanatory variables measuring individual age, the square of age, the state's current population share of the Scheduled Caste group, the state's current population share of the Scheduled Tribe group, the fraction of a state's public sector employment which is age 55 or older, the population density of the state, and the ln(per capita state income) lagged one year.

[2]High-skilled occupations include positions such as teachers, administrative and executive government officials, as well as directors and managers of financial institutions.

[3]Schooling is computed by assigning 0 years for no formal education, 5 years for primary school, 10 years for secondary school, 12 years for high secondary school and 16 years for graduate studies.

Table 4: The predicted marginal effects of employment quotas, gender, and schooling on the probability of choosing a middle-skill occupation for the Scheduled Caste group[1]

	Middle-Skill Occupation[2]			
	1983	1988	1994	1999
ST Employment Quota	−0.0014	−0.0028	0.0209**	0.0008
	(0.0079)	(0.0065)	(0.0086)	(0.0116)
SC Employment Quota	−0.0020	−0.0189**	−0.0296***	−0.0214*
	(0.0050)	(0.0077)	(0.0108)	(0.0111)
Schooling x **SC Employment Quota**	0.0022***	0.0018*	0.0008*	0.0003
	(0.0007)	(0.0010)	(0.0004)	(0.0004)
Schooling[3]	0.0450***	0.0488***	0.0225***	0.0208***
	(0.0120)	(0.0164)	(0.0068)	(0.0080)
Male	0.0971***	0.1059***	−0.0384	−0.0518*
	(0.0326)	(0.0331)	(0.0259)	(0.0279)
Number of observations	7507	7992	6519	3396

Note: Reported standard errors in parentheses are clustered at the state level.

* Significant at 10-percent level,** Significant at 5-percent level, and *** Significant at 1-percent level.

[1]Marginal effects are evaluated at sample means and based on coefficient estimates from multinomial regression models which also include additional explanatory variables measuring individual age, the square of age, the state's current population share of the Scheduled Caste group, the state's current population share of the Scheduled Tribe group, the fraction of a state's public sector employment which is age 55 or older, the population density of the state, and the ln(per capita state income) lagged one year.

[2]Middle-skill occupations include positions such as book keepers, office assistants, nurses and other medical and health technicians.

[3]Schooling is computed by assigning 0 years for no formal education, 5 years for primary school, 10 years for secondary school, 12 years for high secondary school and 16 years for graduate studies.

Table 5: The predicted marginal effects of employment quotas, gender, and schooling on the probability of choosing a low-skill occupation for the Scheduled Caste group[1]

	Low-Skill Occupation[2]			
	1983	1988	1994	1999
ST Employment Quota	0.0011	0.0033	−0.0191**	0.0020
	(0.0083)	(0.0081)	(0.0090)	(0.0126)
SC Employment Quota	−0.0030	0.0134	0.0233	0.0217
	(0.0053)	(0.0122)	(0.0148)	(0.0143)
Schooling x **SC Employment Quota**	−0.0025***	−0.0021*	−0.0010***	−0.0005
	(0.0007)	(0.0012)	(0.0004)	(0.0006)
Schooling[3]	−0.0612***	−0.0734***	−0.0312***	−0.0334***
	(0.0131)	(0.0206)	(0.0051)	(0.0111)
Male	−0.0495	0.0358	0.1569***	0.1980***
	(0.0358)	(0.0470)	(0.0323)	(0.0417)
Number of observations	7507	7992	6519	3396

Note: Reported standard errors in parentheses are clustered at the state level.

* Significant at 10-percent level,** Significant at 5-percent level, and *** Significant at 1-percent level.

[1]Marginal effects are evaluated at sample means and based on coefficient estimates from multinomial regression models which also include additional explanatory variables measuring individual age, the square of age, the state's current population share of the Scheduled Caste group, the state's current population share of the Scheduled Tribe group, the fraction of a state's public sector employment which is age 55 or older, the population density of the state, and the ln(per capita state income) lagged one year.

[2]Low-skill occupations include positions such as electricians, equipment operators, and individuals performing construction and other maintenance related services.

[3]Schooling is computed by assigning 0 years for no formal education, 5 years for primary school, 10 years for secondary school, 12 years for high secondary school and 16 years for graduate studies.

Table 6: The Chi-square statistics testing the null hypothesis of independence of irrelevant alternatives and the percentage of the observations the model correctly predicts for the Scheduled Caste group[1]

	1983	1988	1994	1999
χ^2 test that the choice of high vs. middle-skill occupation is independent of low-skill attributes	6.24 [0.937]	13.05 [0.444]	13.68 [0.397]	11.85 [0.540]
χ^2 test that the choice of middle vs. low-skill occupation is independent of high-skill attributes	12.76 [0.466]	18.81 [0.129]	6.29 [0.935]	20.04* [0.094]
% correct predictions	76	75	72	70
Number of observations	7507	7992	6519	3396

Note: P-values are in brackets.

* Significant at 10-percent level,** Significant at 5-percent level, and *** Significant at 1-percent level.

[1]The test statistics are Chi-square distributed with 13 degrees of freedom; the test is developed in Small and Hsiao (1985) and is robust to correlation of observations within states.

Table 7: The predicted marginal effects of employment quotas, gender, and schooling on the probability of choosing a high-skill occupation for the Scheduled Tribe group[1]

	High-Skill Occupation[2]			
	1983	1988	1994	1999
SC Employment Quota	−0.0001	0.0082	0.0193	0.0382***
	(0.0032)	(0.0088)	(0.0186)	(0.0085)
ST Employment Quota	−0.0252***	−0.0192***	0.0107	−0.0342***
	(0.0083)	(0.0049)	(0.0186)	(0.0105)
Schooling x **ST Employment Quota**	−0.0006	−0.0001	−0.0002	0.0009***
	(0.0004)	(0.0005)	(0.0004)	(0.0003)
Schooling[3]	0.0448***	0.0519***	0.0419***	0.0255***
	(0.0063)	(0.0063)	(0.0051)	(0.0043)
Male	−0.1306***	−0.3392***	−0.3304***	−0.3884***
	(0.0436)	(0.0531)	(0.0471)	(0.0593)
Number of observations	1986	2803	1947	1038

Note: Reported standard errors in parentheses are clustered at the state level.

* Significant at 10-percent level,** Significant at 5-percent level, and *** Significant at 1-percent level.

[1]Marginal effects are evaluated at sample means and based on coefficient estimates from multinomial regression models which also include additional explanatory variables measuring individual age, the square of age, the state's current population share of the Scheduled Caste group, the state's current population share of the Scheduled Tribe group, the fraction of a state's public sector employment which is age 55 or older, the population density of the state, and the ln(per capita state income) lagged one year.

[2]High-skilled occupations include positions such as teachers, administrative and executive government officials, as well as directors and managers of financial institutions.

[3]Schooling is computed by assigning 0 years for no formal education, 5 years for primary school, 10 years for secondary school, 12 years for high secondary school and 16 years for graduate studies.

Table 8: The predicted marginal effects of employment quotas, gender, and schooling on the probability of choosing a middle-skill occupation for the Scheduled Tribe group[1]

	Middle-Skill Occupation[2]			
	1983	1988	1994	1999
SC Employment Quota	0.0006	0.0064	0.0065	−0.0246*
	(0.0114)	(0.0097)	(0.0220)	(0.0147)
ST Employment Quota	−0.0007	−0.0008	0.0926***	−0.0154
	(0.0147)	(0.0089)	(0.0140)	(0.0116)
Schooling x **ST Employment Quota**	0.0001	−0.0011	0.0004	−0.0008*
	(0.0010)	(0.0015)	(0.0003)	(0.0004)
Schooling[3]	0.0599***	0.0848***	0.0265***	0.0256***
	(0.0126)	(0.0156)	(0.0055)	(0.0078)
Male	0.0665*	0.1038*	0.0006	−0.0170
	(0.0382)	(0.0595)	(0.0332)	(0.0518)
Number of observations	1986	2803	1947	1038

Note: Reported standard errors in parentheses are clustered at the state level.

* Significant at 10-percent level,** Significant at 5-percent level, and *** Significant at 1-percent level.

[1]Marginal effects are evaluated at sample means and based on coefficient estimates from multinomial regression models which also include additional explanatory variables measuring individual age, the square of age, the state's current population share of the Scheduled Caste group, the state's current population share of the Scheduled Tribe group, the fraction of a state's public sector employment which is age 55 or older, the population density of the state, and the ln(per capita state income) lagged one year.

[2]Middle-skill occupations include positions such as book keepers, office assistants, nurses and other medical and health technicians.

[3]Schooling is computed by assigning 0 years for no formal education, 5 years for primary school, 10 years for secondary school, 12 years for high secondary school and 16 years for graduate studies.

Table 9: The predicted marginal effects of employment quotas, gender, and schooling on the probability of choosing a low-skill occupation for the Scheduled Tribe group[1]

	Low-Skill Occupation[2]			
	1983	1988	1994	1999
SC Employment Quota	−0.0005	−0.0146	−0.0258	−0.0136
	(0.0121)	(0.0105)	(0.0319)	(0.0147)
ST Employment Quota	0.0259	0.0200**	−0.1033***	0.0497***
	(0.0186)	(0.0092)	(0.0198)	(0.0124)
Schooling x **ST Employment Quota**	0.0005	0.0012	−0.0002	−0.0001
	(0.0012)	(0.0019)	(0.0002)	(0.0003)
Schooling[3]	−0.1048***	−0.1367***	−0.0684***	−0.0511***
	(0.0158)	(0.0202)	(0.0037)	(0.0060)
Male	0.0641	0.2355***	0.3298***	0.4055***
	(0.0487)	(0.0623)	(0.0463)	(0.0245)
Number of observations	1986	2803	1947	1038

Note: Reported standard errors in parentheses are clustered at the state level.

* Significant at 10-percent level,** Significant at 5-percent level, and *** Significant at 1-percent level.

[1]Marginal effects are evaluated at sample means and based on coefficient estimates from multinomial regression models which also include additional explanatory variables measuring individual age, the square of age, the state's current population share of the Scheduled Caste group, the state's current population share of the Scheduled Tribe group, the fraction of a state's public sector employment which is age 55 or older, the population density of the state, and the ln(per capita state income) lagged one year.

[2]Low-skill occupations include positions such as electricians, equipment operators, and individuals performing construction and other maintenance related services.

[3]Schooling is computed by assigning 0 years for no formal education, 5 years for primary school, 10 years for secondary school, 12 years for high secondary school and 16 years for graduate studies.

Table 10: The Chi-square statistics testing the null hypothesis of independence of irrelevant alternatives and the percentage of the observations the model correctly predicts for the Scheduled Tribe group[1]

	1983	1988	1994	1999
χ^2 test that the choice of high vs. middle-skill occupation is independent of low-skill attributes	29.37*** [0.006]	11.29 [0.587]	24.74** [0.025]	12.09 [0.521]
χ^2 test that the choice of middle vs. low-skill occupation is independent of high-skill attributes	23.92** [0.032]	14.19 [0.360]	19.02 [0.123]	5.34 [0.967]
% correct predictions	68	69	67	62
Number of observations	1986	2803	1947	1038

Note: P-values are in brackets.

* Significant at 10-percent level,** Significant at 5-percent level, and *** Significant at 1-percent level.

[1]The test statistics are Chi-square distributed with 13 degrees of freedom; the test is developed in Small and Hsiao (1985) and is robust to correlation of observations within states.

Appendix A

Data Sources and Construction of Variables

This paper builds on a wide variety of data sources. The data source used in this paper covers sixteen main Indian states from the period 1983-1999 unless mentioned otherwise. These states are Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Jammu-Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. The outcome variables and individual level control variables comes from the National Sample Survey (NSS) rounds conducted in 1983, 1988, 1993 and 1999. These are large quinquennial surveys that covered the Employment and Unemployment rounds. The Employment and Unemployment round of NSS is the only survey that collects information on individual's earning and labor market characteristics for the entire India. Each survey collects information on approximately 120,000 households and over half a million individuals. The policy variables comes from the Annual Scheduled Caste and Scheduled Tribe Commissioner's Report (1955-2000). NSS is an individual-level data while my policy variables are at state-time level. These policy variables are merged into the NSS individual-level data by state and year.

Outcome Variables

Occupation

The occupation outcomes are constructed using NSS Employment and Unemployment rounds as defined by the Indian National Classification of Occupations. From the NSS, we extract the following sample: individuals who are currently aged 18-65, living in one of the 16 major Indian states, and not currently attending school. This paper uses three occupation categories defined as follows:

-*Low Skill*: This outcome variable is constructed using the Indian National Classification of Occupations. The low skilled occupation consists of service workers (building caretakers, sweepers, cleaners and related workers, protective service workers), production and related workers (miners, quarryman, well drillers and related workers, machinery fitters, machine assemblers and precision instrument makers, electric fitters and related electrician and electronic workers, and transport equipment operators).

-*Middle Skill*: The middle skill occupation consists of nursing and other medical and health technicians, clerical and other supervisors, village officials, book keepers, cashiers and related workers, clerical and related workers, transport and communication supervisors, transport conductors and guards, and telephone and telegraph operators.

-*High Skill*: The high skill occupation consists of teachers, jurists, administrative and executive officials government and local bodies, directors and managers, and financial institutions.

Policy and Control Variables

Employment quota

This paper uses the Scheduled Caste and Scheduled Tribe Annual Commissioner's Report (1955-2000) for the employment quota variables for SCs and STs. The institutional details for the Employment Quota policy also comes from this report. This is a state level data available for the period 1955-1999. The employment quota variables are "Employment Quota for SC" and "Employment Quota for ST" and is denoted as "SC Employment Quota" and "ST Employment Quota".

-*Employment Quota for SC(ST)*: defined as total number of jobs reserved for SC(ST) in public sector divided by total number of new jobs advertised in the state in a specific year.

Population data

This paper uses Census of India, Registrar General data from 1981-2001. The data series has been interpolated for inter-censal years. I use "SC (ST) current population share" which is the interpolated SC (ST) population share from the census as measured in the current year. Population density is computed as the ratio of interpolated total population data from the census as measured when reservation was determined in the state divided by total land area of the state, as reported in the Census Atlas, India. This variable is also updated according to the two conditions described above.

-*SC (or ST) Current population share*: defined as population count of SC (or ST) in a state divided by total population count in that state in the current year.

-*Census population density*: defined as interpolated total population count from the census as measured when reservation was determined divided by total land area in a state.

Individual Characteristics from the NSS

The individual level controls for this paper is extracted from the NSS. They are an individual's age, gender, caste, and marital status. Years of school is computed by assigning 0 years for no formal education, 5 years for primary school, 10 years for secondary school, 12 years for high secondary school and 16 years for graduate degree.

Fraction of elderly people in public sector employment

The variable is constructed using NSS rounds. This is the total number of people between age 55-60 in the public sector employment divided by total public sector em-

ployment time 100. This variable captures across state variation in share of elderly people in public sector job. If there are higher share of such people then this could have a direct effect on potential vacancy in public sector employment.

State Domestic Product

State domestic product is the log of real per capita state income. The data source is: Domestic Product of States of India from 1983 to 2000 prepared by Economic and Political Weekly Research Foundation.