Stigma in positive discrimination application? Evidence from quotas in education in India

Véronique Gille*

Centre d'Économie de la Sorbonne, Université Paris 1 Panthéon Sorbonne

November 30, 2012

Abstract

I study the determinants of households application to positive discrimination in education in India, with a focus on the role of social stigma. I look at the Other Backward Classes (OBC) who got eligible more recently, and I analyze the impact of the status of households' subcaste on their probability to apply to reservation. The identification strategy is based on the fact that the OBC group is composed of subcastes which are very different in terms of social status. The status of a subcaste group in rural India is locally determined and it strongly related to the proportion of land owned by this subcaste in the village. I use this exogenous and historical variation of status to identify the stigma effect. I find that stigma plays a significant role in preventing households from locally high ranked groups to apply for reservation.

Keywords: Positive Discrimination, Program take-up, Stigma, India

JEL Classification Numbers: D01, I38, 015, 053

*Address: 106-112 bvd de l'Hôpital, Maison des Sciences Économiques, 75647 Paris cedex 13 FRANCE, telephone: +33(0)144078243, e-mail:*veronique.gille@univ-paris1.fr*. I thank Kaivan Munshi for his advices on this paper and Andrew Foster for providing the data.

1 Introduction

Positive discrimination is a way to fight durable inequalities in a society and has been worldwide used as a policy tool. For example, the United States have affirmative action in favour of Blacks in various spheres of the society since 1964 [Deshpande, 2005]. Brazil recently adopted 50 % quotas for poor students in public universities. In India, positive discrimination has been applied on a very large scale in favour of low castes. There are quotas in education, for employment in the public sector and reserved seats in political elections. Whereas the impact of these "reservations" have been well studied for the case of India [e.g. Pande, 2003, Chattopadhyay and Duflo, 2004, Cassan, 2011, Bertrand et al., 2010, Howard and Prakash, 2012], little is known about the determinants of households' application to reservation: why and which households apply for reservation?

This paper aims at providing evidence on the reasons why households apply for reservations in education, and in particular on the role of stigma in this process. In this context, stigma can be defined as "the disutility arising from the participation in a welfare program per se" [Moffitt, 1983]. This disutility comes from a psychological cost which is due to negative self images because of the participation, or from "negative social attitudes towards welfare claimants" [Besley and Coate, 1992]. I focus on a specific group which got eligible for reservations more recently, the Other Backward Classes (OBC)[1] and I look at the impact of the social position of households' reference group on their choice of applying for reservation. I find that, for a given level of wealth, households who are from a subcaste socially higher ranked at the village level are less prone to apply for reservations in education than households lower ranked. This result shows that stigma plays an important role in the decision of application for positive discrimination.

This paper is at the crossroads of two literatures: the literature on positive discrimination

[1]The OBC is a non homogeneous group constituted by many castes. They are higher in the traditional hierarchy than the Untouchables but they are also considered as economically and socially backward. For more information, please refer to section 2.1.

in India and the literature on program take-up worldwide. A lot has been written on positive discrimination and in particular on reservation policies in India. The main focus has been on the impact of reserved seats in electoral positions on diverse outcomes. Pande [2003] for example looks at the impact of reservation on the policy influence of Scheduled Castes (SC) and Scheduled Tribes (ST) at the State level. Chattopadhyay and Duflo [2004] study the impact of women reservations on the provision of public goods. To my knowledge, very few papers focus on positive discrimination in education or in administrative jobs. Among the exceptions, Cassan [2011], using a quasi-natural experiment, finds that positive discrimination in education did not have an impact on the education level of scheduled castes. Bertrand et al. [2010] study the labor market outcomes of low castes who benefited from positive discrimination to enter universities and find that low castes improve their income by going to the university but less than high castes student. Howard and Prakash [2012], studying reservation in public jobs, find that employment quotas change the occupational choices of SC and ST.

However, there is no study on who among those who can benefit from reservations actually choose to apply for it. More generally, the literature on the determinants of program take-up is very scarce and focuses on the United States. For example, Heckman and Smith [2004] look at individual demographic characteristics of the applicants to a prototypical training program at different steps of the application procedure. Bertrand et al. [2000] study social effects in program participation, and find that they exist, but does not disentangle between the different channels. Finally, Aizer and Currie [2004] focuses on information barriers in application to Medicaid and find that they prevent people from taking advantage of the program. It is yet an important question for policy makers for two reasons. First, because it is necessary to evaluate policies design and studying the determinants of take-up is part of the evaluation. In particular it controls if the targeted ones are actually those who apply and benefit from the policy. Second, because it is important to identify the reasons why some eligible do not apply. In fact, for most social policies, the take-up rate is low. Aizer [2007]

for example underline that half a million children in the United States did not have a health insurance whereas they could benefit from Medicaid. Understanding the determinants of participation is therefore a key question in order to identify potential problems in policies designs or in their implementation.

This paper focuses on a social effect, the role of stigma in preventing households from applying to reservations in universities. As defined earlier, stigma is the psychological cost arising from participation in reservations. In the literature, this psychological cost is usually described as being due to other members of the society behaving negatively towards welfare recipients. But in this specific context, stigma may also come from the fact that reservations are historically associated with Untouchables (SC). Reservations were primarily designed for them before being extended to the OBC. The SC are at the bottom of the traditional hierarchy and are still today discriminated against because of their low status. Applying to reservations is therefore stigmatized, because it is behaving like people with a lower hierarchical status. If this is the case, stigma is expected to grow with social distance with SC.

To study if social stigma prevents OBC from applying to reservations, I take advantage of the fact that there is a dramatic and exogenous variation in the social position among OBC from different subcastes in villages, as well as variation in the social position of subcastes across villages. Controlling for unobserved factors at the subcaste level and at the village level, I find that households from subcastes who are socially higher ranked in the village are less prone to apply for reservation. This result underlines an impact of stigma on the choice of applying to reservation.

This paper is an important input to the literature for two main reasons. First, to my knowledge it is the first paper to be concerned with the determinants of reservation application in India and with the reservations for OBC in particular. It underlines that among the OBC, the households who apply are the most well-off in terms of wealth and education level. It also shows that social effects are important because stigma plays an important

role in preventing households from applying to reservation. It is therefore a non-negligible contribution to the knowledge on positive discrimination in India.

But this paper is also a complement to the literature on welfare take-up as a whole. By using exogenous factors related to jatis' social position, it allows a clean identification of the stigma effect. Even if this identification strategy is very specific to the context of India, it is a first step towards a better understanding of the social effects in welfare take-up.

The paper is organized as follows: section 2 explains the Indian context and the reservation policies before giving some arguments on the exogeneity of the measure of stigma. Section 3 provides details on the data and some descriptive statistics. Section 4 explains the empirical strategy and section 5 shows the results. Section 6 discuss alternative explanations and finally section 7 concludes.

2 Contextual background

Positive discrimination in India is caste based. This section therefore briefly describes the caste system and its relation to positive discrimination before focusing on the OBC and their social status in the Indian society in a second part.

2.1 Positive discrimination policies in India

The four varnas and the reservation system

According to the Sanskrit literature, the Hindu society is divided into four *varnas*: the Brahmans, the Kshatriyas, the Vaishyas and the Shudras. The people who do not belong to one of these categories are the outcastes, also called dalits or *untouchables*. However, the Indian society is in reality divided in a multitude of *jatis* (or subcastes), where each jati is related to a specific varna. All the jatis are hierarchically classified depending on their purity, the "purest" being the Brahmans and the untouchables being at the bottom of the hierarchy, right after the jatis classified as Shudras. As the jati is hereditary, one has the

same jati as his parents, and the status is determined at birth [Dumont, 1970][2]. Most jatis are geographically limited and the same jati is rarely present in more than two or three different States.

Because the untouchables are considered as very impure, they had been obliged for centuries to live in specific areas of villages, they were forbidden from using common goods such as wells or worshipping places and they were restricted to low quality jobs. Consequently, in addition to suffering from discrimination because of their low ritual status, they were (and still are) economically very disadvantaged.

Positive discrimination was seen as a way to fight this historically determined "backwardness". As early as 1882 the British created special schools for the untouchables [Jaffrelot, 2011]. After the Independence, reservation policies in favor of the Untouchables, now called the "Scheduled Castes" (SC) were written in the Constitution. The SC, as well as the ethnic minorities (called Scheduled Tribes, ST) were provided quotas in administration, in universities and in local elections.

The particular case of the Other Backward Classes

However, the SC/ST are not the only castes suffering from economic backwardness. The Shudras, also being from low castes even though they are not untouchables are also considered as a disadvantaged group. But the question of what to do in favor of those who are now called the "Other Backward Classes" stayed unresolved for sometimes.

The reason is double. First, the OBC constitute almost 50% of the Indian population. Therefore, extending the quotas to this whole population is not anecdotal and lowers the number of remaining seats for the other castes. Second, on the contrary to the SC/ST who are almost without any exception very deprived, the OBC population is more heterogeneous. Given that they suffer less from discrimination, some OBC had the opportunity to improve their economic status and cannot be considered anymore as disadvantaged. Moreover, among

[2]Hereafter I will indistinctly use the words subcastes or jatis to refer to these hereditary and endogamous groups.

the OBC, some jatis as a whole enjoy locally very influential positions.

This complex situation made it complicated for the Central[3] government to come up with a consensus on reservations for OBC. Therefore, the question was left to the States, which independently created positive discrimination for OBC. The Southern States were the first to implement reservations on the same basis as those for SC/ST. In 1993 were finally established reservations for OBC in administration at the Central level and in 2008 reservations in Central universities.

2.2 Land and social status

We expect that OBC households who are from jatis who have locally a high status will suffer more from stigma and will therefore be less prone to apply for reservations. I am able to identify this social stigma in reservation application because OBC households enjoy a different social status depending on the position of their jati in a village. There is heterogeneity of status *among jatis* in a same village. And there is heterogeneity of status *among villages* for a same jati. Therefore, depending on the village where the households are, their jati can enjoy a very different social position. The local social status is here measured with the amount of land owned by the jati in the village. The first part of this section aims at showing some evidence that the proportion of land owned by the jati is actually a good measure of the jati's social status. Moreover, given that there is variation of land ownership across jatis and across villages, I can control for jatis and villages unobservables. But the identification breaks down if the proportion of land owned by the jati is not exogenous to the characteristics of the jati. Therefore the second part of this section documents the exogeneity of land settlement.

[3]The word "Central" is used to refer to what is defined at the federal level, and the word "State" to what is defined at the State level.

Land as a determinant of social status

The fact that land is an important determinant of social status at the jati level in rural India has been well documented by anthropologists. Srinivas [1987], in his anthropological work on Indian villages, underlines that the life of Indian villages is governed by the caste which is economically the most powerful in the village, in other words the caste which owns the most land. This caste is called the "dominant caste". Dumont [1970], also underlines the importance of the control of land for dominance. This criteria of dominance through land control has later been used by Anderson [2011]. He makes the distinction between villages where low castes own the majority of land and villages where the majority of land is owned by high castes and he shows that in villages where the majority of land is owned by low castes households, low castes income is higher than in villages where the majority of land is owned by high castes households, because they have better access to private groundwater market. He underlines that depending on historical settlement, the "dominant caste" can be a caste classified as OBC. So while some OBC jatis can be socially disadvantaged at the State level they can have in some villages important positions.

My strategy differs from that of Anderson [2011] because instead of only using informations on which subcaste has the most land, I use the variation in the proportion of land owned between subcastes as an indicator of social status. In section 6, I provide further empirical evidence that the proportion of land owned by the jati is actually a good measure of the social status.

Exogeneity of land settlement

Given that the proportion of land owned by jatis in villages is used as a measure of their social position, there is an identification problem if land ownership pattern is not exogenous to jatis' characteristics. Two main evidence support this assessment. First, land ownership in villages is historically determined and has barely changed since the land reforms which took place after the Independence. Second, migration is very low which has preserved historical

patterns of land ownership.

The fact that land ownership is stable since the land reforms of the 1950s has been documented at the State level by Besley and Burgess [2000]. Anderson [2011] has further documented this fact at the village level. His work focuses on Northern India, but the ARIS-REDS data show a similar pattern for Southern States. Households' heads in the 2006 round had been asked about land transactions in their household since they became heads. In total, less than 1.6 % of the households declare having sold or gifted some land during this period. Furthermore, among those who did, 33% transferred the land to family members of friends. Given that most of the relationships are intra-jati, we can globally interpret this as a transfer to persons from the same jati. Therefore, if landownership has been modified, it is only marginally, given that transfers are few in quantity and are mainly to other members of the same jati.

Another important question is about migration. If migration is high and does not affect jatis evenly, it can modify the historical land settlement. However, evidence shows that migration is very low in rural India. According to the Indian census of 2001, only 4.7% of the total population of India was born outside of the State of residence. This point has been notably studied by Munshi and Rosenzweig [2009] who argue that this is due to strong insurance mechanisms in jatis.

3 Data and descriptive statistics

3.1 Data

The data used to conduct this study are from the 2006 round of the ARIS-REDS database from the National Council of Applied Economic Research (NCAER). Since 1971, the NCAER has been conducting household surveys along with villages surveys in 259 villages in the 17 major States of India.

The 2006 round is a very peculiar one, because along with the usual questions asked to

a sample of households, a complete census of all the households in every village has been conducted. Though the number of questions asked is much smaller than to the sample of households, several questions on reservations have been asked to the households, along with their demographic characteristics. Households were also asked about their application to reservations in the current year of the survey and during the last 10 years. I can therefore consider their behavior toward reservations on a 10 years period.

Out of the 17 States where the survey has been conducted, I exclude several States, either because they had reservations for OBC two recently (like Uttar Pradesh, West Bengal, Orissa, Madhya Pradesh, Rajasthan, Haryana), or because the policy in favour of the OBC was very marginal (like in Punjab where the quotas for OBC was only of 5 %)[4]. The States I consider are almost all in South India. The final sample is composed of 29208 OBC households distributed in 102 villages.

In the census, households were asked the name of their jati. I use this indication to construct the subcaste group of each household. The dependent variable is a dummy variable equal to one if a member of the household applied to reservation in education and 0 otherwise. I consider that a household applied to reservation if the chief or a member applied in 2006 or in the last 10 years. The amount of land owned by the household and the amount of land owned by the jati are calculated with the values of 10 years ago.

3.2 Descriptive Statistics

Table 1 shows summary statistics separately for the OBC households who applied to reservation and for those who did not.

As we can see, there is selection in application. Households who apply for reservation are more educated (in mean the head of the household has 2.2 more years of education), and they are richer. Given that reservations are supposed to help the most disadvantaged households, this result can seem surprising. However it is in line with the literature [Bertrand

[4]Himachal Pradesh is also excluded because there not enough observations

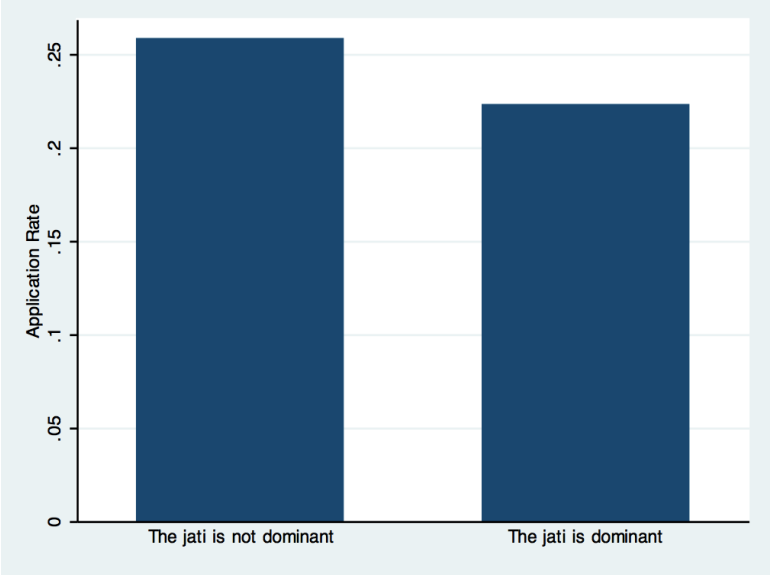
Table 1: Descriptive Statistics per application status

	No Application				Application				Diff	Sign
	Mean	Sd Dev	Min	Max	Mean	Sd Dev	Min	Max		
Age	46.14	13.59	19	106	47.28	12.71	19	105	-1.13	***
Female	0.11	0.31	0	1	0.10	0.30	0	1	0.01	*
Education	4.45	4.09	0	19	6.67	4.42	0	19	-2.22	***
Size of the HH	4.86	2.55	0	63	4.91	2.59	0	41	-0.57	N.S.
HH Land owned	1.09	13.67	0	1950	1.45	2.59	0	650	-0.36	*
Prop of land owned by the jati	0.28	0.28	0	0.87	0.28	.29	0	0.87	0.01	N.S.
N	24229				4979					

et al., 2010] and with the debates on the "creamy layers"[5]. The proportion of land owned by the jati in the village does not seem to differ depending on the application status.

But if we only look at jatis with a high status in at least one village, the picture is different. Figure 1 shows the application rate to reservation in education among jatis which own the highest proportion of land (or *dominant jatis*) in at least one village.

Figure 1: Application rate of jatis which are dominant in at least one village



[5]One principal argument against reservations for OBC was the fact that the OBC is a very heterogeneous category and that the reservations will be taken by the better off.

The left bar represents the application rate of dominant jatis in villages where they are not dominant and the right one in villages where they are dominant. When the jati is dominant in the village, the application rate of households belonging to this jati is lower than when the same jati is not dominant. So it seems that there is a difference of behavior among people in the same jati, depending on the social position of the jati in the village.

4 Empirical strategy

As argued earlier, the proportion of land owned by a subcaste in a village is a strong determinant of its social position in the village. So if there is stigma in reservation application, we expect that the probability of applying for reservation decreases with the proportion of land owned by the subcaste in the village.

I use the exogenous variation in subcaste status at the village level to identify the stigma effect. As underlined earlier, a subcaste can be socially high in one village but lower ranked in another village of the same State depending on the proportion of land owned by the subcaste in the village. So depending on the land ownership situation of the subcaste in the village, I expect the probability of applying for reservation of a OBC household from a given jati to change. I therefore look at the impact of the amount of land owned by the caste in a village, on the probability of applying for reservation.

The empirical estimation is as follows:

$$y_{ijv} = \alpha + \beta LAND_{jv} + \gamma X_{ijv} + \theta_j + \sigma_v + u_{ijv} \tag{1}$$

where y is equal to one if a member (including the head) of the household i of jati j in village v applied for reservation and zero otherwise. $LAND_{jv}$ is the proportion of land owned by the jati in the village and X_{ijv} is a vector of households characteristics. θ_j is a jati dummy which takes into account the heterogeneity among jatis and σ_v is a village dummy which captures the heterogeneity among villages. The error term u_{ijv} is clustered at the jati in

the village level [Moulton, 1990]. Given that the proportion of land owned by the caste determines its local social status, we expect that the more the caste owns land in the village, the less members of the caste will be prone to apply for reservation.

The identification comes from the fact that households from a same jati enjoy very different status across villages, depending on the amount of land owned by the jati in the village. This exogenous variation of status allows the control of group unobservables that are usually hard to be differentiated from the social effect in the study of peer effects. The equation is estimated using a linear probability model.

5 Results: the determinants of reservation application

In this section, I first begin by looking at households' determinants of reservation application. I then study the impact of the social position of the caste group.

5.1 Households characteristics

The descriptive statistics were only shown for OBC, here I also run the regressions for SC/ST. It enables the comparison of the behavior towards reservations of OBC and SC/ST. The regressions are conducted separately for these two groups. Table 2 shows the results.

The first two columns show the results for the SC/ST and the two last ones show the results for the OBC group. Each time the regression is run with and without jati dummies. The first striking point is that the results are very similar for SC/ST and OBC. The age of the household head, his/her education level and the size of the household increase significantly the probability of applying for reservations in education, both for SC/ST and OBC. Having a female at the head of the household on the contrary does not matter both for SC/ST and OBC. Moreover, the coefficients on these variables are similar for SC/ST and OBC. The only difference is on the impact of the area of land owned. It has a positive and significant impact for OBC but not for SC/ST. But the level of the coefficient is the same for both SC/ST and

Table 2: Who applies to reservation?

Dependant Variable:	**Application status to reservation in education**			
	(1)	(2)	(3)	(4)
Group considered:	SC/ST	SC/ST	OBC	OBC
Age (Years)	0.000821**	0.00103***	0.000743***	0.000914***
	(0.000356)	(0.000345)	(0.000248)	(0.000282)
Female	-0.0184*	-0.0145	0.00641	0.00542
	(0.00999)	(0.00995)	(0.00653)	(0.00723)
Number of years of schooling & college	0.0108***	0.0116***	0.0108***	0.0114***
	(0.00206)	(0.00212)	(0.00184)	(0.00225)
Household Size	0.00642**	0.00704***	0.00654***	0.00688***
	(0.00250)	(0.00243)	(0.00160)	(0.00185)
HH land owned (in log)	0.00963	0.00857	0.00752*	0.00894*
	(0.00763)	(0.00797)	(0.00449)	(0.00504)
Village Dummies	yes	yes	yes	yes
Jati Dummies	no	yes	no	yes
N	15839	15839	29208	23095
r2	0.333	0.369	0.319	0.324

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The regressions are estimated with a linear probability model and standard errors are corrected for clustering at the jati in the village level. Age, female and education are those of the household head.

OBCs. Overall, it consequently seems that people who apply for reservation have the same demographic characteristics among SC/ST and among OBCs .

The second interesting result is that including jati dummies does not change the coefficients of the control variables. It means that there is no jati unobservables correlated to the households characteristics having an impact on the probability of applying for reservation.

Broadly, the results confirm what was shown in the descriptive statistics. Households who apply for reservation are significantly more educated and are richer than those who do not apply.

5.2 Social effects in reservation application

5.2.1 Main specification

I now study the social effects in reservation application by looking at the impact of the proportion of land owned by the jati on the probability to apply. Given that the proportion of land owned by the jati measures the status of the jati in the village, we expect that its coefficient is negative and significant for OBC, but it should have no impact for SC/ST. Table 3 shows the results. Again, the regressions are estimated separately for SC/ST and OBC and with and without jati dummies. All the regressions are run with the control variables of table 2 but given that the coefficients do not change significantly with the inclusion of the jati level variable, they are not reported. I just report the coefficients on the area of land owned by the household and the area of land owned by the jati.

Table 3: Stigma in reservation application

Dependant Variable:	**Application status to reservation in education**			
	(1)	(2)	(3)	(4)
Group considered:	SC/ST	SC/ST	OBC	OBC
HH land owned (in log)	0.00996	0.00756	0.00973**	0.00980*
	(0.00820)	(0.00855)	(0.00445)	(0.00507)
Jati prop land owned	0.136***	0.0936	-0.0476***	-0.0551**
	(0.0455)	(0.0949)	(0.0184)	(0.0253)
Village Dummies	yes	yes	yes	yes
Jati Dummies	no	yes	no	yes
Control variables	yes	yes	yes	yes
N	13105	13105	29208	23095
r2	0.358	0.376	0.320	0.324

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The regressions are estimated with a linear probability model and standard errors are corrected for clustering at the jati in the village level. Age, female and education are those of the household head.

The results on the proportion of land owned by the jati in the village are as expected. For SC/ST, the coefficient is positive and significant in column (1), so the relative position of the jati in the village seems to be positively correlated to the application status. But

when I introduce jati dummies in column (2), the coefficient is still positive but not anymore significant. The estimated effect in column (1) was actually due to jati unobservables at the State level.

The results for the OBC are completely different. In both specifications with and without jati dummies, the coefficient on the proportion of land owned by the jati in the village is negative and significantly different from zero. In column (3), the estimation is made only with village dummies, showing that the relative social position of the jati in the village has a strong impact on the probability to apply. The higher is the jati in the village hierarchy, the less are households from this jati prone to apply. Column (4) shows the results with village dummies and jati dummies. The coefficient is slightly bigger in absolute value and is statistically significant at a 5% level. This result confirms that the impact of the jati level variable measured in column (3) is not driven by jati unobservables. Households from the same jati, but in different villages do not have the same probability to apply for reservation: *ceteris paribus*, households whose jati has more land in one village have a lower probability to apply for reservation in this village than in a village where this jati owns less land. This result is consistent with the existence of a stigma effect among OBC in applying to reservation.

5.2.2 Heterogeneity of the impact

I now look at the heterogeneity of the impact. Is the stigma uniform among households or does it differ depending on households demographic characteristics? I consider two sources of heterogeneity. First, stigma can depend on the education level of the household's head. One can think for example that more educated people are less sensible to stigma. Second, stigma can depend on the social position of the household itself. To consider these two questions, I interact the proportion of land owned by the jati with the education level of the household's head on one hand, and with the amount of land owned by the household (in log) on the other hand. Table 4 shows the results of including these interaction terms in the main specification.

Table 4: Heterogeneity of stigma

Dependant Variable:	**Application status to reservation in education**			
	(1)	(2)	(3)	(4)
Group considered:	OBC	OBC	OBC	OBC
Number of years of schooling & college	0.0135***	0.0137***	0.0108***	0.0115***
	(0.00237)	(0.00297)	(0.00184)	(0.00225)
Educ * prop land jati	-0.0107**	-0.00867		
	(0.00493)	(0.00597)		
Jati prop land owned	0.0104	-0.00683	-0.0209	-0.0353
	(0.0313)	(0.0387)	(0.0180)	(0.0258)
HH land owned (in log)	0.0105**	0.0106**	0.0325***	0.0289***
	(0.00445)	(0.00501)	(0.00781)	(0.00730)
HH Land owned * prop land jati			-0.0639***	-0.0538***
			(0.0171)	(0.0165)
Village Dummies	yes	yes	yes	yes
Jati Dummies	no	yes	no	yes
Control variables	yes	yes	yes	yes
N	29208	23095	29208	23095
r2	0.32	0.32	0.32	0.32
Interact & jati var	0.005	0.048	0.000	0.001
Interact & HH var	0.000	0.000	0.000	0.000

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The regressions are estimated with a linear probability model and standard errors are corrected for clustering at the jati in the village level. Age, female and education are those of the household head. The two last lines of the table report the p-value for the joint significance of the interaction term and the variable with which jatis' proportion of land owned is interacted.

Column (1) and column (2) show the results when the education level of the household's head is interacted with the proportion of land owned by the jati in the village. Column (1) shows the results without jatis dummies and column (2) with jati dummies. The interaction term is significant in the first specification but is not robust to the inclusion of jati dummies. Stigma does not seem to differ accross different levels of education.

On the contrary, the results on the interaction of the proportion of land owned by the jati with the area of land owned by the household are very interesting. In both specifications

with and without jati dummies, the interaction term is negative and strongly significant. This result shows that the *negative* impact of the proportion of land owned by the jati - the stigma- *increases* (in absolute value) with the amount of land owned by the household. More clearly, this result shows that the stigma is stronger for richer households than for poorer households. It also means that the *positive* impact of the amount of land owned by the household *decreases* with the proportion of land owned by the jati. The impact even becomes negative when the household is from a jati which owns large proportion of land in the village. In other words, while rich households of not so powerful jatis are more prone to apply for reservation than poor ones, rich households from powerful jatis are less prone than poor households. Therefore, it seems that stigma prevents rich households with high status from applying to reservation.

6 Discussion

The results shown in section 5 underline strong social effects for OBC in positive discrimination application. These results are robust and do not seem to be driven by village or jati level unobservables. In this section I discuss the interpretation of the results. In a first part I provide evidence that the proportion of land owned by the jati really measures jati social status. In a second part I discuss alternative explanations to stigma.

6.1 Ownership of land and political outcomes

To give empirical credit to the measure of the jati's social status, I study the impact of the proportion of land owned by the jati on political outcomes. If it actually measures the social position of a jati in the local hierarchy, we expect that people from this jati have higher probability to be candidates[6] in local elections other things being equal. I estimate

[6]Household level informations on election output are not available.

Table 5: Political outcomes

Dependant Variable:	**Candidate to a local election**			
	(1)	(2)	(3)	(4)
Group considered:	OBC	OBC	OBC	OBC
Level of aggregation:	Household	Household	Village	Village
HH land owned (in log)	0.0112***	0.0137***		
	(0.00279)	(0.00345)		
Jati prop land owned	0.0149***	0.0155**	0.0211*	0.0214
	(0.00533)	(0.00768)	(0.0118)	(0.0182)
Village Dummies	yes	yes	yes	yes
Jati Dummies	no	yes	no	yes
Control variables	yes	yes	yes	yes
N	29208	23095	757	533
r2	0.0463	0.0614	0.303	0.525

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Columns (1) and (2) are estimated with a linear probability model and columns (3) and (4) are estimated in OLS. Standard errors are corrected for clustering at the jati in the village level for columns (1) and (3) and at the village level for columns (2) and (4). Age, female and education are those of the household head.

the following equation:

$$candidate_{ijv} = \alpha + \beta LAND_{jv} + \gamma X_{ijv} + \theta_j + \sigma_v + u_{ijv} \tag{2}$$

where $candidate_{ijv}$ is equal to one if someone of the household was a candidate to a local election and zero otherwise, $LAND_{jv}$ is the proportion of land owned by the jati in the village, X_{ijv} are households characteristics. Depending on the specification I add jati dummies θ_j or village dummies σ_v. The regressions are estimated with a linear probability model. Table 5 shows the results.

Column (1) and column (2) estimate the impact of the amount of land of the jati on the probability of being a candidate in any local election (panchayat and pradhan). In column (1), the equation is estimated with village dummies. All the control variables have the expected sign so I do not show the coefficients for these variables. The variable of interest, the amount of land owned by the jati is also positive, showing that being from

a jati which owns a lot of land in the village increases the probability to be a candidate. Column (2), shows the results with jati dummies. It confirms the results obtained in column (1): the amount of land owned by the jati has a positive impact, and this is not due to jati unobservables. So households from jatis owning a high proportion of land have a higher probability to be candidates.

However, given that the jatis which have a high proportion of land are also the most numerous, it is not surprising that being from these jatis highers the probability to be a candidate. To check if this is what is driving the impact of the proportion of land owned by the jati, I run the same regressions but at the jati level. The dependant variable is now the proportion of households who are candidates to local elections per jati. Column (3) shows the estimation with village dummies, The results confirm what was obtained at the household level: jatis with a high proportion of land in the village have a higher proportion of candidates to local elections, after controlling for other factors. Column (4) shows the estimation with jati dummies. The coefficient is not precisely estimated but has the same size as before. The proportion of land owned by the jati consequently seems to be a good indicator of social status.

6.2 Alternative explanations

My explanation to the negative impact of the proportion of land owned by the jati is a stigma effect. However, one can think of alternative explanations to stigma for these social effects. Here I consider two alternative explanations besides stigma: other social costs to reservation application and outside opportunities.

6.2.1 The information channel

The theoretical literature underline other possible social effects than stigma in welfare take-up [Moffitt, 1983]. In particular, information has been shown to be an important determinant of program participation [Aizer, 2007, Heckman and Smith, 2004]. Information sharing is

consequently another channel through which the group could affect reservation application. One could argue that the measured social effect actually capture this information channel. However, several facts contradict this argument.

First, we would expect households from more powerful jatis -jatis with a higher proportion of land- to be better informed. So if the proportion of land owned by the jati captures information effects, we would expect that being in a jati which owns a high proportion of land would have a *positive* impact on the probability to apply for reservation.

Second, it has been shown that in India, higher educated people have better access to information [Foster and Rosenzweig, 1996]. Therefore, if there are social effects related to information sharing, we expect that the mean education level of neighbors will have an impact on the probability to apply for reservation. Column (1) and (2) of table 6 show the result of the estimation with the jati mean education level. The jati mean education level is not significant and it does not affect the coefficient of the proportion of land owned by the jati.

Table 6: Alternative explanations

Group considered:	OBC			
	(1)	(2)	(3)	(4)
Dependant variable:	Application	Application	Education	Education
Jati prop land owned	-0.0497***	-0.0573**	-0.0213	0.220
	(0.0190)	(0.0257)	(0.238)	(0.275)
Jati mean educ	-0.00529	-0.000310		
	(0.00370)	(0.00457)		
Village Dummies	yes	yes	yes	yes
Jati Dummies	no	yes	no	yes
N	29208	23095	29208	23095
r2	0.320	0.324	0.257	0.282

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Columns (1) and (2) are estimated with a linear probability model and also includes all the control variables calculated at the jati level. Columns (3) and (4) are estimated in OLS. Standard errors are corrected for clustering at the jati in the village level. Age, female and education are those of the household head.

6.2.2 Outside opportunities

Another alternative explanation to the negative impact of the proportion of land owned by the jati is related to outside opportunities. Given that I control for the area of land owned by the household, the jati effect does not proxy for households' wealth. However, we can think that households who are members of a jati with a large proportion of land do not apply for reservation because they do not need higher education. In fact, even poor households from jatis with a lot of land will be able to work on the land of other households from the jati.

If the proportion of land captures this lower demand for education, then we would expect that rich households in powerful jatis are less affected than poor ones. The rational is that rich households should not be impacted by the proportion of land owned by their jati if it captures outside opportunities because they already have work opportunities in their own household. But if we look at table 4, in column (3) and (4) we can see that rich households (those with more land) are actually more affected by the proportion of land owned by their jati. This result seems to contradict this alternative explanation to stigma.

A second argument is that if the result is just related to a lower demand for education from households in jatis with a lot of land, then we expect that households in this jati have a lower level of education. A simple unconditional correlation between the mean level of education of the jati and the proportion of land owned actually shows a positive and very low correlation of 10% between these two variables. To confirm this statistic, I run the same regression as before, but with education of the household head as a dependant variable. Table 6 shows the results of the regression with and and without jati dummies.

negative in the regression without jati dummies but positive in the regression with jatis dummies. And in both specification, the coefficient is insignificant. It seems to underline that the jati social position is not correlated with the demand for education.

7 Conclusion

Determining who among the ones who have the right to benefit from welfare programs actually take advantage of them is very important for policy designs. Here, I am concerned with a very controversial program, a positive discrimination program in favor of disadvantaged castes in India. This program is addressed to the "Other Backward Classes", an heterogeneous entity composed of groups with very different social and economic status. Given that the jatis (subcaste groups) concerned by this program are hierarchically higher in the traditional ranking of castes than the groups historically targeted for positive discrimination (the untouchables), stigma may actually have a role in the choice of applying to reservation.

To study that, I look at the impact of the social status of the jati in the village on the probability of applying to reservation. I take advantage of two facts to identify the impact of being from a socially higher subcaste. First, in Indian villages the relative social position of a jati depends on the proportion of land the jati owns in the village, which is exogenous. The pattern of land ownership is historically determined and has not changed significantly since the land reforms of the 1950s. Second, the land pattern varies dramatically across jatis in villages and accross villages. I am therefore able to take into account villages' and jatis' specificities in my specification.

Using a linear probability model to estimate the impact of the proportion of land owned by the jati on the decision of households to apply for reservation, I find that being from a jati which has a higher proportion of the land and is consequently locally more powerful lowers the probability of applying to reservation. I also find that this impact is higher for richer households. It therefore seems that stigma may be at stake in keeping households from locally higher subcastes to apply for reservation.

The results show that positive discrimination in favor of OBC as well as reservations in favor of SC/ST actually end up helping the richest and the most educated. But for OBC, stigma seems to compensate this selection by preventing households from powerful castes to apply.

References

Anna Aizer. Public health insurance, program take-up, and child health. *The Review of Economics and Statistics*, 89(3):400–415, 2007.

Anna Aizer and Janet Currie. Networks or neighborhoods? correlations in the use of publicly-funded maternity care in california. *Journal of Public Economics*, 88(12):2573–2585, 2004.

Siwan Anderson. Caste as an impediment to trade. *American Economic Journal: Applied Economics*, 3(1):239–263, 2011.

Marianne Bertrand, Erzo F.P. Luttmer, and Sendhil Mullainathan. Network effects and welfare cultures. *The Quarterly Journal of Economics*, 115(3):1019–1055, 2000.

Marianne Bertrand, Rema Hanna, and Sendhil Mullainathan. Affirmative action in education: Evidence from engineering college admissions in india. *Journal of Public Economics*, 94(1-2):16–29, 2010.

Timothy Besley and Stephen Coate. Understanding welfare stigma: Taxpayer resentment and statistical discrimination. *Journal of Public Economics*, 48(2):165 – 183, 1992.

Timothy J. Besley and Robin Burgess. Land reform, poverty reduction, and growth: evidence from india. *The Quarterly Journal of Economics*, 115(2):389–430, 2000.

Guilhem Cassan. The impact of positive discrimination in india: Evidence from a natural experiment. Working paper, 2011.

Raghabendra Chattopadhyay and Esther Duflo. Women as policy makers: Evidence from a randomized policy experiment in india. *Econometrica*, 72(5):1409–1443, 2004.

A. Deshpande. Affirmative action in india and the united states. 2005.

Louis Dumont. *Homo hierarchicus; an essay on the caste system.* University of Chicago Press, [Chicago], 1970.

Andrew D Foster and Mark R Rosenzweig. Technical change and human-capital returns and investments: Evidence from the green revolution. *American Economic Review*, 86(4): 931–53, 1996.

James J. Heckman and Jeffrey A. Smith. The determinants of participation in a social program: Evidence from a prototypical job training program. *Journal of Labor Economics*, 22(2):243–298, 2004.

Larry L. Howard and Nishith Prakash. Do employment quotas explain the occupational choices of disadvantaged minorities in india? *International Review of Applied Economics*, 26(4):489–513, 2012.

Christophe Jaffrelot. *Religion, Caste, and Politics in India*. Columbia University Press, june 2011.

Robert Moffitt. An economic model of welfare stigma. *The American Economic Review*, 73 (5):1023–1035, 1983.

Brent R. Moulton. An illustration of a pitfall in estimating the effects of aggregate variables on micro units. *The Review of Economics and Statistics*, 72(2):pp. 334–338, 1990. ISSN 00346535.

Kaivan Munshi and Mark Rosenzweig. Why is mobility in india so low? social insurance, inequality, and growth. NBER working papers, National Bureau of Economic Research, 2009.

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

Mysore Narasimhachar Srinivas. *Social change in modern India*. Orient Longman, New Delhi, 1987. Includes index.

Appendix

Figure 2: States in the sample