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

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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) 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

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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 determinants of households' application 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 quite recently and which is composed of many different groups, 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 is consistent with the presence of a stigma effect playing an important role in the decision of applying for 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.

This paper is at the crossroads of two literatures: the literature on positive discrimination 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. In India, this question is at the heart of the debate on reservations:

people argue that there are counter productive because they are taken up by the better off among the eligibles[2]. 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 underlines 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, stigma, and its role 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. In this specific context, there is an additional source of stigma coming 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 is consistent with stigma impacting the decision of applying to reservation.

This paper is an important input to the literature for two main reasons. First, to my

[2]This debate is called the creamy layer debate.

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 reservations. This paper is therefore a non-negligible contribution to the knowledge on positive discrimination in India and it has policy implications. If the political power wants to increase the take-up rate of reservations, some work has to be done on the stigma that is related to it.

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. The identification strategy is very specific to the context of India, but 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 focusing on the OBC group and social status. Section 3 explains the empirical strategy and discusses its validity. Section 4 provides details on the data and some descriptive statistics. 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

According to the Sanskrit literature, the Hindu society is divided into four *varnas*: the Brahmans, the Kshatriyas, the Vaishyas and the Shudras. The varnas are hierarchically

sorted out in this order according to their purity, the "purest" being the Brahmans. The people who do not belong to one of these categories are the outcastes, also called dalits or *untouchables*. They are at the bottom of the hierarchy and are the most impure.

But concretely, the Indian society is divided in a multitude of *jatis* or subcastes[3], where each jati relates to a specific varna[4]. As the jati is hereditary, one has the same jati as his parents, and social status is determined at birth [Dumont, 1970]. Most jatis are geographically limited and the same jati is rarely present in more than two or three different States, but their scope extends beyond village boundaries.

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 menial jobs. So 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 favour 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 public universities and in local elections.

This reservation system was latter extended to jatis belonging to Shudras, the lowest of the four varnas. Although the Shudras are not untouchables, their position at the bottom of the traditional hierarchy restricted them to low-skilled works and they are considered as "economically and socially backward". The extension of the system of quotas to this category of population, now called the "Other Backward Classes" was however very gradual and a large freedom was left to the governments of the States to legislate on this matter.

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

[4]For example people from the jati "Rajput" are Kshatriyas or from the jati "Ezhava" are Shudras.

The reason for this flexibility on reservations for OBC was due to the controversial aspect of this policy. 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. The OBC population is also very heterogeneous on the contrary to the SC/ST who are almost without any exception very deprived. 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 the OBC, some jatis as a whole enjoy locally very influential positions due to their landholding position.

This complex situation made it complicated for the Central[5] 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 first States to implement reservations on the same basis as those for SC/ST were the four southern States (Kerala, Karnataka, Andhra Pradesh and Tamil Nadu)[Galanter, 1978] and the last were the States of the Hindu Belt (Rajasthan, Haryana, Uttar Pradesh, Madhya Pradesh). The Central Government finally catched up the movement by establishing in 1993 reservations for OBC in the Central administration and since 2008 27% of the seats in Central Universities are reserved for OBC.

2.2 OBC, stigma and social status

As for other social programs[6], it has been observed that those who benefit from reservations suffer from social stigma. Gudavarthy [2012], who studies the stigmatisation of reservations, for example reports that Scheduled Castes are often referred as *sarkar ke damad* (sons in law of the government). They are also accused to be less competent and the students who got access thanks to reservations in the universities are ostracised by high caste students.

While those at the bottom of the social hierarchy may not care about stigma because they

[5]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.

[6]For a literature review on the topic see Currie [2004]

have nothing to lose in terms of social status, the cost of stigma for those with a higher social status is more important. This is especially the case in a country like India where social status is a value in itself [Bloch et al., 2004]. Behaviours meant to improve or signal social status have frequently been observed in diverse situations: in eating habits [Srinivas, 1956], in wedding expenditures [Bloch et al., 2004] or in the time allocation of women [Eswaran et al., 2013]. According to the literature, status is even more important for OBC. Khamis et al. [2012] for example find that OBC spend 8 percent more on visible consumption than Brahmin and High Caste groups.

Stigma and social status are two sides of the same coin because the cost of stigma is to lower one's social status. The cost of adopting a stigmatised behaviour like applying to reservations therefore increases with social status. We expect that other things being equal, if there is stigma, people with a higher social status will be less prone to apply for reservation.

3 Identification strategy

In India, social status is determined by the jati one is from: in a given village, households enjoy a different social status depending on their jati. To identify how social status impacts the probability of applying for reservations, I therefore use the variation of status *among OBC jatis* in a same village. This strategy permits the inclusion of village fixed effects to control for village level unobservables. However, if the status of a given jati is due to its unobservable characteristics, the measured effect of social status on reservation application is most likely to be biased. To control for that I exploit the fact that there is also exogenous variation of status in a same jati *among villages*. This variation of status comes from the importance of land ownership in determining the social position of a jati in rural India. A jati local hierarchical position depends on the proportion of land that the jati owns in the village: a locally powerful jati is a jati which has a high proportion of land in the village [Srinivas, 1987]. I therefore use the proportion of land owned by the jati as a measure of its

local social status. This strategy enables the control of villages and jatis heterogeneity.

The empirical specification is as follows:

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

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] and the equation is estimated with OLS. Given that the proportion of land owned by the caste determines its local social status, if there is stigma we expect that the probability of applying for reservation decreases with the proportion of land owned by the jati in the village

The identification allows the control of group and geographical unobservables. But the validity of this strategy relies on three hypothesis. First, the proportion of land owned by the jati needs to be a good measure of jatis' social status. The first part of this section discusses this issue. Second, there should be variation of land ownership pattern among jatis in a village and among villages for a jati. The second part aims at showing that this is the case. Finally, the proportion of land owned by the jati needs to be exogenous to the characteristics of the jati. Therefore the third part of this section documents the exogeneity of land settlement at the village level.

3.1 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]. She 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 she 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. She 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.

3.2 Variation of land ownership pattern

Using the proportion of land as a measure of social status requires that there is variation in the land ownership pattern among jatis and villages. To show that this is the case, table 1 takes the example of the jati composition of two villages situated in the State of Chhatisgarh. Village 1 has 7 OBC jatis and village 2 has 6. In both villages, there is variation of land ownership between OBC jatis of the same village: in villages 1, two jatis own respectively 21% of the land and 47% of the land while the five remaining jatis own each less than 5%. In village 2, the situation is a little more even between the jatis: one jati owns 37% of the land in the village and the other jatis own between 12 and 0% of the land. There is also variation for a same jati accross villages: while in village 1 the Kewat own 21% of the land in village

Table 1: OBC jati composition

Jati	Proportion of land owned in %	
	Village 1	Village 2
Ahir	0.02	0.12
Kallar	0.03	
Kewat	**0.21**	**0.06**
Kurmi	**0.47**	**0.08**
Lohar	0.05	0.01
Nai	0.01	0.02
Parit	0.03	
Patwa		0
Teli	**0.01**	**0.37**

The two villages are in the State of Chhatisgarh. The total amount of land is not equal to 100% because only the OBC jatis are reported.

2 they only have 6% and are among the jatis who have the least land. On the contrary, the Teli who have only 1% of the land in village 1 have 37% of the land in village 2.

Even is this is just an example, this is also true for the rest of the database. I exploit this variation in land ownership to identify the impact of status on the probability to apply for reservations.

3.3 Exogeneity of land settlement

Finally, 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 the exogeneity of land. 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. Her 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.

4 Data and descriptive statistics

4.1 Data and sample

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 too 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 %)[7]. Figure 2 in the appendix shows the geographical distribution of the States in the sample. They are almost all in South India. Because my identification strategy requires that there are several OBC jatis per villages, I also excludes the villages where there are less than three different OBC jatis. The final sample is composed of 29241 OBC households distributed in 103 villages. This sample is reduced when I use the specification with jati dummies because in this case I also exclude jatis which are not present in at least three villages.

4.2 Variables construction

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 a member applied in 2006 or in the last 10 years.

The variable of interest is the proportion of land owned by the jati in the village. To compute this variable I use the area of land owned by the households ten years ago. The control variables are the age of the household's head, his/her gender, his/her education level, the number of members in the household, and the amount of land owned by the household. The amount of land owned by the household is the area of land owned ten years ago in log[8].

[7]Himachal Pradesh is also excluded because there are not enough observations.

[8]Several households do not have land so this variable is transformed in log after having added one to the actual value.

4.3 Descriptive Statistics

Table 2 shows summary statistics separately for the OBC households who applied to reservation and for those who did not.

Table 2: Descriptive Statistics per application status

	No Application				Application				Diff	Sign
	Mean	Sd Dev	Min	Max	Mean	Sd Dev	Min	Max		
Age	46.13	13.6	19	106	47.27	12.72	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	13.66	0	1950	1.45	9.8	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	24260				4981					

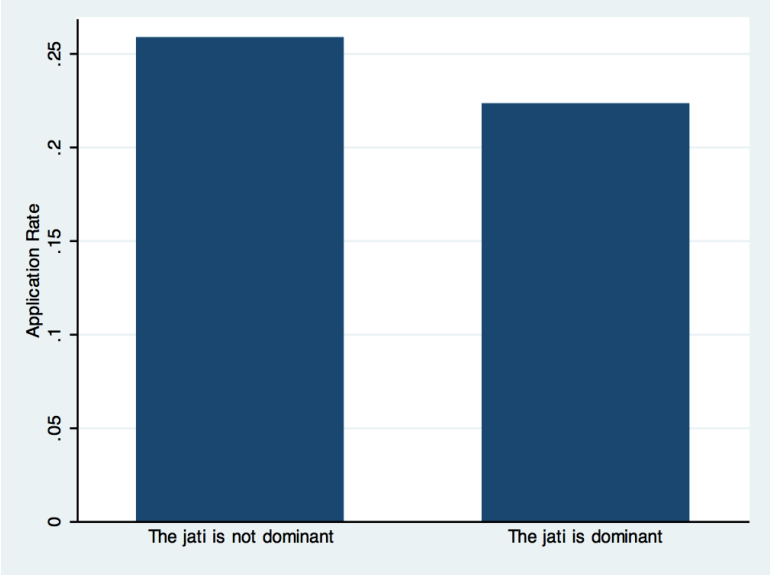
As we can see, there is selection in application. Households who apply for reservation are more educated (in mean the head of the household has 2.2 more years of education), and they are richer. Given that reservations are supposed to help the most disadvantaged households, this result can seem surprising. However it is in line with the literature [Bertrand et al., 2010] and with the debates on the "creamy layers"[9]. 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.

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.

[9]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.

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



5 Results: the determinants of reservation application

5.1 Main results

Table 3 shows the results of the estimation of equation 1. In columns (1) and (2) the equation is only estimated with the household level control variables. Column (3) to (6) show the results with the proportion of land owned by the jati.

The results on the households characteristics are as expected. Column (1) shows the estimation with village dummies and column (2) shows the estimation with village and jati dummies. The number of observations diminishes when the jati dummies are added because I only keep the jatis which are exist in more than two villages to have enough variation. The probability to apply for reservations significantly increases with the age of the households' head, the size of the household, the number of years of schooling of the household's head and the amount of land owned by the household. All the results are robust to the inclusion of jati dummies ant the coefficients are stable, meaning that there is no jati unobservables correlated to the households characteristics having an impact on the probability to apply for

Table 3: Main results: households characteristics and stigma in reservation application

Dependant Variable:	**Application status to reservation in education**					
	(1)	(2)	(3)	(4)	(5)	(6)
Age (Years)	0.000740***	0.000934***	0.000759***	0.000946***	0.000901***	0.000948***
	(0.000248)	(0.000281)	(0.000248)	(0.000281)	(0.000292)	(0.000284)
Female	0.00641	0.00555	0.00638	0.00571	0.00520	0.00558
	(0.00652)	(0.00717)	(0.00656)	(0.00719)	(0.00727)	(0.00717)
Number of years of schooling & college	0.0108***	0.0114***	0.0108***	0.0114***	0.0114***	0.0114***
	(0.00184)	(0.00224)	(0.00184)	(0.00224)	(0.00235)	(0.00224)
Household Size	0.00651***	0.00688***	0.00650***	0.00688***	0.00704***	0.00687***
	(0.00159)	(0.00184)	(0.00159)	(0.00184)	(0.00188)	(0.00184)
HH land owned (in log)	0.00755*	0.00887*	0.00978**	0.00972*	0.00966*	0.00550
	(0.00449)	(0.00502)	(0.00446)	(0.00505)	(0.00505)	(0.0119)
Jati prop land owned			-0.0479***	-0.0547**	-0.0583**	-0.0545**
			(0.0184)	(0.0252)	(0.0256)	(0.0251)
Jati mean education					-0.000120	
					(0.00459)	
HH land sq (in log)						0.00212
						(0.00547)
Village Dummies	yes	yes	yes	yes	yes	yes
Jati Dummies	no	yes	no	yes	yes	yes
Jati level variables	no	no	no	no	yes	no
N	29241	23221	29241	23221	23221	23221
r2	0.319	0.338	0.320	0.338	0.338	0.338

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

reservation. Having a female at the head of the household on the contrary does not matter. Whereas the age of the household's head and the household size mechanically increase the probability to apply for reservations because the dependent variable is at the household level[10], the results on the education of the household's head and on the land owned by the household 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.

[10]The age of the household's head has a positive impact because it increases the probability that the household has members in age of applying for reservations

Column (3) to (6) 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 for reservations. 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 if there is stigma. Column (3) and (4) show the basic estimation of equation (1), without and with jati dummies. In both specifications, 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 within 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. Column (5) includes the control variables at the jati in the village level, to see if the proportion of land owned by the jati does not capture other jati's characteristics effect. Only the mean education level of the jati is reported, but none of the control variable at the jati level is significant. The coefficient on the proportion of land owned by the jati is still negative and significantly different from zero. Finally column (6) includes the amount of land owned by the household squared to control for a creamy layer problem[11]. The inclusion of this variable does not affect the coefficient of the proportion of land owned by the jati.

The results obtained in column (3) to (6) confirm that the proportion of land owned by the jati in the village has a negative impact on the probability to apply for reservations. This result is consistent with the existence of a stigma effect among OBC in applying for

[11]Some households don't have the right to apply for reservations even if their jati is listed as OBC if they are too rich

reservation.

5.2 Robustness checks

The proportion of land owned by the jati has a negative impact on the probability to apply for reservations for OBC. This result is consistent with a stigma effect. But in the measure of the dependent variable, there is no differentiation between those who apply to the university and those who did not. So it can also be that the proportion of land owned by the jati changes the probability to apply to the university. If households from jatis with a high proportion of land have a lower return to education, then there should be a negative impact of the proportion of land owned by the jati on the probability to apply to the university. If this is the case, there would be a negative impact of the proportion of land owned by the jati on the probability to apply for reservations, independently of stigma. To rule out this alternative explanation, I run several tests whose results are shown in table 4. I only report the estimations with village and jatis dummies, but they are similar than the ones with only village dummies.

In column (1), I control for the primary occupation of the household's head. Given that the returns of education are highly correlated to the occupation the household has, controlling for this variable should lower the impact of the jati's proportion of land owned if it captures the effect of the returns of education. It is not the case. Adding the occupation does not change the impact of the proportion of land owned by the jati.

Column (2) focuses on a different sample. The probability to get education is highly correlated to the education level of one's parents. So in column (2) I restrict the sample to households whose members have a high probability to get education, that is to say households where the household head is educated. There are not enough households where the household's head has a university degree so I focus on households whose head has at least finished primary school. In this restricted sample, the impact of the proportion of land owned by the jati is less precisely estimated, but still significant at a 10 % level and the

Table 4: Robustness checks

Dependant Variable:	**Application status to reservation in education**			**HH's head educ**
	(1)	(2)	(3)	(4)
Group considered:	OBC	OBC	SC/ST	OBC
HH land owned (in log)	0.00705	0.0101	0.0276**	0.734***
	(0.00588)	(0.00641)	(0.0116)	(0.0836)
Jati prop land owned	-0.0522**	-0.0603*	0.154*	0.247
	(0.0252)	(0.0355)	(0.0812)	(0.274)
Village Dummies	yes	yes	yes	yes
Jati Dummies	yes	yes	yes	yes
HH Control variables	yes	yes	yes	yes
Occupation	yes	no	no	no
N	23199	12287	5819	23221
r2	0.346	0.358	0.377	0.284

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The regressions are estimated with OLS and standard errors are corrected for clustering at the jati in the village level.

coefficient is broadly the same as in the main estimation. So focusing on households with a high probability to get education does not change the results.

In column (3) I look at the impact of the proportion of land owned by the jati on the probability to apply for reservations of the SC/ST. As we do not expect stigma for SC/ST, if the the proportion of land owned by the jati has a negative impact on the probability to apply for reservations because of stigma, then we do not expect a negative impact of the proportion of land owned by the jati for SC/ST. But if the proportion of land owned by the jati changes the return to education, then we would expect that the proportion of land owned by the jati has the same impact for OBC and SC/ST. Column (3) shows that for SC/ST the impact of the proportion of land owned by the jati has a positive impact on reservations, which is contradictory to this variable capturing different returns to education and consistent with a stigma effect for OBC.

Finally, column (4) looks at the correlation between the household's head level of education and the proportion of land owned by the jati in the village. If the return to education

diminishes with the proportion of land owned by the jati, then we would expect that the households' head from jatis with a high proportion of land have a lower level of education. The results from column (4) contradict this hypothesis: the level of education of households' heads is not correlated with the proportion of land owned by the jati.

All these robustness checks seem to contradict the interpretation of the main results as a lower return to education of households from jatis with a high proportion of land in the village. Even if it is impossible to fully rule out this alternative explanation, the interpretation of these results in terms of stigma is the most convincing. In section 6 I further discuss this interpretation.

5.3 Heterogeneity of the impact

I now look at the heterogeneity of the impact. Is 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 5 shows the results of including these interaction terms in the main specification.

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 across 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.

Table 5: Heterogeneity of stigma

Dependant Variable:	**Application status to reservation in education**			
	(1)	(2)	(3)	(4)
Number of years of schooling & college	0.0135***	0.0137***	0.0108***	0.0115***
	(0.00237)	(0.00297)	(0.00184)	(0.00224)
Educ * prop land jati	-0.0108**	-0.00871		
	(0.00493)	(0.00598)		
Jati prop land owned	0.0103	-0.00616	-0.0213	-0.0352
	(0.0313)	(0.0387)	(0.0180)	(0.0256)
HH land owned (in log)	0.0105**	0.0105**	0.0326***	0.0287***
	(0.00445)	(0.00499)	(0.00782)	(0.00728)
HH Land owned * prop land jati			-0.0640***	-0.0537***
			(0.0172)	(0.0164)
Village Dummies	yes	yes	yes	yes
Jati Dummies	no	yes	no	yes
Control variables	yes	yes	yes	yes
N	29241	23221	29241	23221
r2	0.32	0.34	0.32	0.34
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 OLS 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.

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[12] in local elections other things being equal. I estimate the following equation:

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

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 6 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

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

Table 6: Political outcomes

Dependant Variable:	**Candidate to a local election**			
	(1)	(2)	(3)	(4)
Level of aggregation:	Household	Household	Village	Village
HH land owned (in log)	0.0112***	0.0137***		
	(0.00279)	(0.00344)		
Jati prop land owned	0.0148***	0.0152**	0.0209*	0.0210
	(0.00533)	(0.00765)	(0.0115)	(0.0201)
Village Dummies	yes	yes	yes	yes
Jati Dummies	no	yes	no	yes
Control variables	yes	yes	yes	yes
N	29241	23221	753	530
r2	0.0464	0.0618	0.308	0.531

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. 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.

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. The fact that there may be different returns to education across jatis has been considered in section 5.2. Here I consider two other alternative explanations besides stigma: the fact that there are 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 (5) of table 3 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.

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 5, 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.

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 partially compensate this selection by preventing households from powerful castes to apply.

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Appendix

Figure 2: States in the sample