

# Political Economy of Identity Formation: Theory and Evidence from India

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December 10, 2019

## Abstract

An individual is characterized by several cultural markers such as race (black or white), religion (Muslim or Christian), language (Bengali or Tamil), caste (Brahmin or Dalit), location (North Indian or South Indian) etc. Yet, she considers one of them as her identity (sometimes, it can also be a combination of few markers—Tamil Brahmin for instance). In this paper, we propose a theory explaining how some of the markers become one's identity and provide empirical evidence from India's political history. In our definition a cultural marker becomes identity when political mobilization takes place along that dimension. In our model, exogenous technological (eg. green revolution) or institutional (eg. trade liberalization) shock creates different degree of inequality across different dimensions. We show that the identity politics emerge along the dimension in which inequality is the highest. So, if trade liberalization creates more inequality between High and Low caste people rather than between North Indians and South Indians, identity politics will assume the form of caste politics rather than regional politics. In our empirical section, we provide support for this theory by analyzing the impact of trade liberalization on caste politics. Indian trade liberalization increased the premium for higher education to which higher caste people had traditional access. This accentuates the inequality between high and low caste people making caste as the main dimension of identity politics. Therefore, we expect to see parties representing lower castes are getting higher vote share where the impact of trade liberalization is more. Our empirical result confirms this hypothesis.

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# 1 Introduction

An individual is characterized by several cultural markers such as race (black or white), religion (Muslim or Christian), language (Bengali or Tamil), caste (Brahmin or Dalit), location (North Indian or South Indian) etc. In this paper, we propose a theory explaining how some of the markers become one's identity and provide empirical evidence from India's political history. In our definition of identity a cultural marker becomes identity when political mobilization takes place along that marker. The general definition of identity however, may embrace a much broader definition. There are various cultural markers recognised in Indian society, which fail to qualify as identity in our paper as political mobilization does not take place along those markers. For example, Parsi, Tamil Brahmin or Bengali "bhadrolok" are often recognized as important identity markers for several activities such as entrepreneurship (for Tamil Brahmins and Parsis) and intellectual creativity (Bengali bhadroloks). But none of these groups participated in electoral politics and therefore, are not considered in our paper. The reason for this restriction largely comes from data issue – electoral success is easier to identify in data. Our theory however general enough to identify non-electoral mobilization (lobbying, civil society movements etc) as identifiers of identity politics.

There is not much work in economics explaining the genesis of identity. Barring a few papers published recently, the majority of economics research in identity is directed towards finding the impact of identity on economic outcomes. The majority of papers published in this area takes identity as given and finds its impact on economic outcome. Broadly speaking, there are two types of papers in this area – one looking at the impact of ethnic heterogeneity on economic development indicators (Easterly and Levine, 1997; Alesina et al., 2003; Banerjee and Somanathan, 2007) while the other looks at the effect of the culture associated with certain identity on economic outcome (Weber, 2005; Greif, 1993; Becker and Woessmann, 2009; Clark, 2008).

However, a few papers came up recently which seek to explain the genesis of identity or ethnic heterogeneity. For example, Ahlerup and Olsson (2012) find that the duration of human settlements since prehistoric times has a strong positive association with current levels of ethnolinguistic diversity. Moreover, they found that such diversity is negatively correlated with the length of modern state experience. In another paper, Michalopoulos (2012) found that variation in regional land quality and elevation, is a fundamental determinant of contemporary linguistic diversity. They argue that differences in land endowments gave rise to location-specific human capital, leading to the formation of localized ethnicities. In another paper which deals with a question that is closer to our case, Binzel and Carvalho

(2017) explain the rise of political Islam in Egypt in terms of lack of economic and social mobility – they argue that the educated youth of Egypt embrace Islamic identity as a coping mechanism in response to the lack of job opportunities.

As we mentioned above, our definition of identity is very specific and we identify political mobilization as the expression of identity formation. Our paper, in this sense, is also related to the literature on group formation. Our theoretical structure is close to that used in Esteban and Ray (2008) who try to explain why class conflicts are more prevalent than ethnic conflicts. They base their argument on input complementarity for conflict production. They argue that conflict production requires both capital and labor. Economics classes possess either of them, while ethnic groups have both of them making conflicts more probable along the ethnic lines. This paper allows both ethnic and economic identities for an individual that makes it possible for her to choose one set of identity over the other. While this paper allows individual to choose between economic and cultural identity, the set of cultural identity is exogenously fixed and this is the standard position that the literature usually takes. One of the few papers that allows for mobility across ethnic identity is Bhattacharya et al. (2015). They find that possibility of inter-group mobility affects the likelihood of conflict in a non-monotonic way so that too high and too low costs of switching identity deter conflict and there exists an intermediate costs of mobility for which open conflict can arise. But Bhattacharya et al. (2015) also looks at the consequence of switching groups along one possible social cleavage (say, race) but does not provide any explanation why people may choose one cleavage over the other i.e. racial identity (black or white) over the religious one (Christian vs Muslim).

Our study is based on the premise that among several cultural markers such as race, religion, ethnicity, language, gender that characterize an individual, one (or a few) subsumes the other markers to become his/her principal identity. This marker, which she/he considers as his/her main identity and which manifests itself in her choice of political mobilization, may also change with time. One case that illustrates the fluidity of identity is the identity formation in Bangladesh. When India was divided at the time of independence, it was divided on the basis of religion. Two geographical areas which formed Pakistan in 1947 were Muslim majority area as the partition was religious identity based. However, within a few years of independence language started emerging as the main identity cleavage between East and West Pakistan – people of East Pakistan wanted to use Bengali as their state language while their Western counterpart where their capital was situated, tried to impose Urdu. This conflict led to a war of independence and East Pakistan, in 1971, emerged as an independent nation named Bangladesh. This case illustrates how a group of people who

initially accepted religion as their main ethno-political identity and went on to form a state got divided again in the language dimension. Hence, identity is fluid and it changes through the course of history.

We pose the problem as one of coalition formation. In our model we have considered two possible cleavages but it can be generalized. We assume that there are two cleavages in the society – say geographical location and caste. Within each cleavage there are two identities possible – North or South as geographical identity, and High and Low as caste identity.

Table 1: Identity dimensions

	H	L
N		
S		

Given these dimensions of identities, any individual in this society will fall under any of the following categories North Indian Higher caste (NH), North Indian Lower caste (NL), South Indian Higher caste (SH) or South Indian Lower caste (SL). These possible identities mean that each individual must fit into one of the boxes in figure 1. If a shock comes, it comes both in the caste line and in the geographical line. We find conditions under which coalitions are formed in caste line rather than geographical lines. Specifically we find conditions under which North Indian Lower caste people are likely to form coalition with South Indian Lower caste (rather than North Indian Upper caste with North Indian Lower caste).

Besides the literature mentioned above, this paper is also related to the papers that look at the impact of different types of economic shocks on conflict. In one such paper, Bazzi and Blattman (2014) looked at the effect of commodity price shock on conflicts. They found that price shocks have no effect on new conflict. However, rising prices lead to weakly lead to shorter, less deadly wars. In a similar paper, Dube and Vargas (2013) examined the effect of export price shock on violent conflicts in Columbia. Theoretically, the effect of commodity price shock can go both way. On one hand, a positive shock of export commodities, will increase contestable income and conflict. On the other hand, negative shock may increase unemployment thereby reducing the opportunity cost of participating in conflict. The authors looked at price shocks of two main export items of Columbia – oil and coffee and found that coffee price shock has a negative impact on conflict while oil price shock has a positive impact.

The paper is organized as follows: in the next section we present the model. In section 3 we present the data and in section 4 empirical results. In section 5, we conclude.

## 2 Theory

Suppose that there is a unit mass of agents in a society, and these agents are divided into  $k$  groups denoted by  $i = 1, 2, \dots, k$ . These groups, in our set up is formed by the intersection of different bigger identities – Tamil Brahmin, or Bengali “Bhadroloks” can be the examples of such groups. Remember, we take these groups as given and then explain emergence of bigger identities such as Bengali, Tamil or Hindu through a mechanism of coalition formation.

Each group is of size  $s_i \in (0, 1)$  with  $\sum s_i = 1$ . Our model makes two crucial assumptions: First, all members of a group share the same identity markers (e.g. Tamil Brahmin). Second, the members of a group can internally co-ordinate and act to maximize the total payoff of the group subject to the actions of the other agents in the society.

We shall consider mobilization following a positive shock to an input. Suppose the per capita amount of that input in group  $i$  is  $y_i \geq 0$ , with  $\sum_i y_i s_i \equiv Y$ . We denote by  $p_i = \frac{y_i}{Y}$  the per capita *share* of the input in group  $i$ , with  $\sum_i p_i s_i = 1$ .

We assume that the shock leads to a gain of 1 per unit of input owned, creating a total surplus  $Y$ . Some groups mobilize to redistribution of this surplus; others engage in counter-mobilization to prevent such redistribution. In our model, conflict will result in one of two *distributions* over the surplus. If mobilization for redistribution is successful, we say that the “political outcome” obtains, and the surplus is shared according to an exogenous distribution where the per capita payoff of a member of group  $i$  is  $\alpha_i Y$ , with  $\alpha_i \geq 0$  and  $\sum_i \alpha_i s_i = 1$ . On the other hand, if mobilization fails, then we say that the “natural economic outcome” prevails. In this case, the surplus is distributed according to the input owned, i.e., members of group  $i$  obtain a per capita payoff of  $y_i$ . Let us illustrate the set up using an example.

The vectors  $\{p_i, \alpha_i, s_i\}_{i=1,2,\dots,k}$  are the exogenous parameters of the game. Based on these parameters, our model helps identify the coalition that will mobilize against the laissez faire distribution of gains and the coalition that defends the laissez faire. We interpret this cleavage as the dimension of identity that becomes salient in conflict.

Whether mobilization will be successful or not depends on the aggregate effort exerted by each coalition. In particular, we assume a simple contest function: if  $e_M > 0$  is the mobilization effort and  $e_D > 0$  the total effort in defense of the natural outcome, then mobilization is successful with probability  $\frac{e_M}{e_M + e_D}$ . If an individual exerts effort  $e$ , he suffers a cost of  $\frac{1}{2}e^2$ .

Since effort is costly and there are an infinite number of agents, no agent would have any incentive to exert effort. However, we assume that effort

provision is co-ordinated at the group level. Each group assigns a rate of effort provision to its members that maximizes the group payoff. Our main departure from the "standard" framework is that political mobilization can be co-ordinated at the group level. In this context, we follow the rule-utilitarian framework by Harsanyi (1978) and later formalized by Feddersen and Sandroni (2006). However, in our case, the groups need not be large: in fact, we can capture a weakening of co-ordination within a group by simply considering a fragmentation into smaller groups.<sup>1</sup>

Formally, a group assigns to each individual an effort  $d$  for defending and  $m$  for mobilization in order to maximize the total group payoff

$$U_i(m, d) = s_i \left[ \frac{\alpha_i Y e_M + y_i e_D}{e_M + e_D} - \frac{1}{2} (m)^2 - \frac{1}{2} (d)^2 \right]$$

We have

$$\frac{\partial U_i}{\partial m} = s_i \left[ \frac{e_D}{(e_M + e_D)^2} s_i (\alpha_i - p_i) - m \right] \quad (1)$$

$$\frac{\partial U_i}{\partial e_D} = s_i \left[ \frac{e_M}{(e_M + e_D)^2} s_i (p_i - \alpha_i) - d \right] \quad (2)$$

From (1) and (2), it is easy to see that for group  $i$ ,

if  $\alpha_i > p_i$ , then  $m > 0$  and  $d = 0$ ,

if  $\alpha_i < p_i$ , then  $m = 0$  and  $d > 0$ ,

if  $\alpha_i = p_i$ , then  $m = d = 0$ .

This already gives us our main result about the dimension of conflict. Groups which obtain a higher share of the surplus through the political outcome mobilize while those that obtain a higher share through the natural economic process defend the laissez faire. Say that  $i \in M$  if  $\alpha_i > p_i$  and  $i \in D$  if  $\alpha_i < p_i$ . Then  $M$  is the mobilizing coalition and  $D$  is the defending coalition. We now have the effort provision by each group

$$\text{If } i \in M, e_M^i = s_i m_i = \frac{e_D}{(e_M + e_D)^2} s_i^2 (\alpha_i - p_i) \text{ and } e_D^i = 0 \quad (3)$$

$$\text{If } i \in D, e_D^i = s_i d_i = \frac{e_M}{(e_M + e_D)^2} s_i^2 (p_i - \alpha_i) \text{ and } e_M^i = 0 \quad (4)$$

Aggregating over all  $i$ , we get

$$e_M = \frac{e_D}{(e_M + e_D)^2} \sum_{i: \alpha_i > p_i} s_i^2 (\alpha_i - p_i) \quad (5)$$

$$e_D = \frac{e_M}{(e_M + e_D)^2} \sum_{i: \alpha_i < p_i} s_i^2 (p_i - \alpha_i) \quad (6)$$

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<sup>1</sup>At this stage, it is important to note that since we work with the objective of maximization of group payoffs, the within-group inequality in distribution of benefits is immaterial.

Now we define the following constants

$$\begin{aligned} v_i^2 &\equiv s_i^2 |\alpha_i - p_i| \\ v_M^2 &\equiv \sum_{i:\alpha_i > p_i} s_i^2 (\alpha_i - p_i) \\ v_D^2 &\equiv \sum_{i:\alpha_i < p_i} s_i^2 (p_i - \alpha_i) \end{aligned}$$

With this notation, we can solve equations (5) and (6) simultaneously to obtain the values of the aggregate effort of the two coalitions

$$e_M^* = \frac{v_M}{\sqrt{\frac{v_D}{v_M}} + \sqrt{\frac{v_M}{v_D}}} \text{ and } e_D^* = \frac{v_D}{\sqrt{\frac{v_D}{v_M}} + \sqrt{\frac{v_M}{v_D}}} \quad (7)$$

Moreover, for the effort provided by the individual groups is given by

$$\frac{e_M^i}{e_M} = \frac{v_i^2}{v_M^2} \text{ if } i \in M, \text{ and} \quad (8)$$

$$\frac{e_D^i}{e_D} = \frac{v_i^2}{v_D^2} \text{ if } i \in D \quad (9)$$

Before engaging in the further analysis, we mention a few assumptions underlying this framework. We think of groups as co-ordinating devices. There are two levels of co-ordination. Across groups, there is co-ordination to ensure that political gains are distributed in the ratio  $(\alpha_1, \alpha_2, \dots, \alpha_k)$ , if mobilization is successful. Within groups, agents co-ordinate to supply the effort that would maximize the group's expected payoff. While we work with the metaphor of equal effort provision within the group, this is somewhat at odds with inequality in the distribution of inputs. In fact however, all that matters is the total provision of effort by the group, and how it is generated from group members is immaterial for the analysis.

Finally, while the contest form says that one of the two discrete outcomes is implemented, everything we do is consistent with the idea that each individual in group  $i$  receives a convex combination  $\lambda \in (0, 1)$  between  $y_i$  and  $\alpha_i Y$ , with  $\lambda = \frac{e_D}{e_M + e_D}$ .

We have two types of results: one set pertaining to the dimension of conflict and the other to the intensity of conflict. We present them in two separate sections.

## 2.1 Dimension of conflict

Our analysis allows us to approach an important question: among the many possible cleavages, which is the one along which conflict is precipitated by

a technological shock? Very broadly speaking, the conflict happens along the dimension in which the technology shock creates inequality: those benefitting more from the shock (high  $p_i$ ) tend to defend and those gaining less (low  $p_i$ ) tend to mobilize. However, the precise coalitions depend on the comparison between the gains from the political process and the gains from the natural economic process. Thus, the distribution of gains under the political outcome also plays a role. This distribution depends on a lot of factors including the type of the political mobilization (legislative or electoral), the existing sharing norms, social and historical context.

While our results are generally applicable, there are at least three specific distributions of empirical relevance. The first and commonest of these is the equal distribution of surplus, i.e.,  $\alpha_i = 1$  for all  $i$ . A lot of legislative politics is aimed at ensuring an equitable distribution of gains from the different shocks to the economy.

Another interesting case is when the distribution  $(\alpha_1, \alpha_2, \dots, \alpha_k)$  denotes a status quo distribution of economic payoff in the society. This could be due to existing government policy like affirmative action or progressive taxation or due to the presence of certain powerful political groups. Mobilization may be aimed at redistributing the gains from shock by bringing it under the ambit of redistributive policy.

Another commonly studied case is where each coalition aims to grab the entire surplus created by the technological shock. This case can be captured by separating the groups into two coalitions  $A$  and  $B$  such that the inputs are concentrated entirely in  $A$  ( $\sum_{i \in A} s_i p_i = 1$ ) and the political gains entirely in  $B$  ( $\sum_{i \in B} s_i \alpha_i = 1$ ).<sup>2</sup> This case appears when the two coalitions are fighting over a group-specific public good: say Hindus and Muslims fighting over whether a temple or a mosque will be constructed at a particular site. There is a lot of literature modelling civil conflict according to this sharing rule (examples here).

The result in the previous section can be used to deduce which cleavage of the society will be salient in conflict over the surplus created by technology. We already know that a group joins the mobilizing coalition if  $\alpha_i > p_i$  and the defending coalition if  $p_i > \alpha_i$ . Thus, under the equal sharing rule, conflict happens exactly along the dimension of inequality created by the shock:  $i \in M$  if  $p_i < 1$  and  $i \in D$  if  $p_i > 1$ . In other words, groups who get less than the equal share mobilize for redistribution while those who get more than equal share counter-mobilize to protect their gains from the natural process. If the sharing norms were driven by the status quo distribution, then conflict would happen in the dimension along which the natural economic process distorts the status quo. In case of conflict over group-specific public good, the dimension of conflict is already exogenously

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<sup>2</sup>Writing it another way,  $\alpha_i = 0$  and  $p_i \geq 0$  if  $i \in A$  and  $\alpha_i \geq 0$  and  $p_i = 0$  if  $i \in A$ .



defined.

For the next proposition and further examples, we will use the equitable distribution as the typical sharing rule, although the same results can be very easily generalized to other sharing norms. The proposition tells us that from among the various ways the society can be separated into two coalitions, the separation that generates the maximum inequality across the coalitions in terms of economic gains will be salient in conflict.

In order to present this proposition, we need to develop some notation. Define a *cut* of the society as a binary partition of the  $k$  groups: it can be thought of an ascriptive or cultural marker. Denote such a cut by  $\{A, A'\}$ , and the set of all possible cuts  $\mathcal{A}$ .<sup>3</sup>

The total share of population in the two sets is

$$s_A = \sum_{i \in A} s_i \text{ and } s_{A'} = \sum_{i \in A'} s_i$$

and the respective share of inputs is

$$q_A = \sum_{i \in A} s_i p_i \text{ and } q_{A'} = \sum_{i \in A'} s_i p_i$$

We are interested in the degree of inequality in the distribution of inputs created by this cut  $\{A, A'\}$ . We do so by measuring in L1 norm the distance between the distribution induced by  $\{A, A'\}$  and the equitable distribution. This also gives us the average distance from the uniform distribution as induced by this cut.

$$L(\{A, A'\}) = \frac{|q_A - s_A| + |q_{A'} - s_{A'}|}{s_A + s_{A'}} = |q_A - s_A| + |q_{A'} - s_{A'}|$$

**Proposition 2.1** *Assume equal sharing norms for political gains. Then the equilibrium cut  $\{M, D\}$  generates the maximum inequality among all possible cuts of the society.*

$$L(\{M, D\}) \geq L(\{A, A'\}) \text{ for all } \{A, A'\} \in \mathcal{A}$$

*Moreover, if  $p_i \neq 1$  for all  $i$ , then the equilibrium cut generates strictly higher inequality compared to every other cut.*

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<sup>3</sup>There are  $2^{k-1} - 1$  possible cuts of the society

**Proof** We have

$$\begin{aligned}
L(\{A, A'\}) &= |q_A - s_A| + |q_{A'} - s_{A'}| \\
&= \left| \sum_{i \in A} p_i s_i - \sum_{i \in A'} s_i \right| + \left| \sum_{i \in A} p_i s_i - \sum_{i \in A'} s_i \right| \\
&= \left| \sum_{i \in A} (p_i s_i - s_i) \right| + \left| \sum_{i \in A'} (p_i s_i - s_i) \right| \\
&\leq \sum_{i: z_i > s_i} |p_i s_i - s_i| + \sum_{i: z_i < s_i} |p_i s_i - s_i| = \sum_i |p_i s_i - s_i| = L(\{M, D\})
\end{aligned}$$

If we have an equality above, i.e.,

$$\left| \sum_{i \in A} (p_i s_i - s_i) \right| + \left| \sum_{i \in A'} (p_i s_i - s_i) \right| = \sum_i |p_i s_i - s_i|,$$

then it must be the case that  $(p_i s_i - s_i)$  has the same sign for all  $i \in A$  as well as for  $i \in A'$ . Also,  $p_i \neq 1$  implies that  $p_i s_i \neq s_i$  for all  $i$ . Since  $\sum_i p_i s_i = \sum_i s_i$ , it cannot be the case that  $p_i s_i - s_i$  has the same sign for all  $i$ . Therefore, it must be the case that  $p_i s_i > s_i$  has positive sign for all  $i \in A$  and  $p_i s_i < s_i$  for all  $i \in A'$  (or vice versa). However, the equilibrium cut is the unique cut that satisfies this property.

The following example illustrates how different identities may become salient. The broad inspiration is drawn from the Indian context.

**Example** Suppose that there are two different identity markers, caste {upper (U), lower (L)} and region {north (N), south (S)}. Thus, there are four demographic groups {UN, US, LN, LS}. 20% of the population are U and 80% L. On the other hand, 60% are N and 40% are S. Therefore the respective population proportions in the four groups {UN, US, LN, LS} is  $s = \{0.12, 0.08, 0.48, 0.32\}$ . We consider the input as human capital proxied by school education. Assume that the probability of having gone to school in each group is  $y = \{0.4, 0.5, 0.1, 0.21\}$  respectively, and as a result of economic change, there are  $Y$  new jobs available only to those who have gone to school. The expected share of incremental jobs (share of gain from the economic process) to these four groups is approximately  $q = \{0.236, 0.197, 0.236, 0.331\}$ . Comparing  $q$  with  $s$ , we see that only LN has a share of jobs lower than its share of population. Therefore, only the group {LN}, i.e., lower castes from North will mobilize for redistribution while all upper castes and lower castes from South defend the natural economic process. Now, suppose that the group LN undergoes a process of

development and the rate of school education goes up from 0.10 to 0.12. Now, we will have  $q' = \{0.225, 0.188, 0.271, 0.316\}$ . An increase in the level of education in LN reduces everyone's share of the economic gains, and in particular reduces the share of LS below its population share. Now, the groups to mobilize would be  $\{LN, LS\}$ : the identity marker salient in conflict would be caste.

The above example provides a number of lessons. While exogenous markers may become salient in conflict, sometimes there is no single exogenous marker that drives conflict. Multiple markers together may become salient, as was the intersection of caste and region in the first case of the example. Second, the change in the input ownership within one group may induce a switch in the coalition membership of another group.

Notice also that for each of the two exogenous markers (caste and region), one can calculate the induced inequality according to the definition used in Proposition 1, i.e.,  $|z_A - s_A| + |z_{A'} - s_{A'}|$ . This value can be calculated as 0.466 (0.426) for caste and 0.256 (0.208) for region for the first (second) case. Since caste creates higher inequality in gains from the natural economic process, the endogenous conflict dimension must be either caste or a composite one.

Next we turn to results on intensity of conflict.

## 2.2 Intensity of Conflict

From (7) we can see that  $v_M$  is the index of the effort for the mobilizing coalition and  $v_D$  is that for the defending coalition. In the special case where  $v_M = v_D$ , we can unambiguously measure the intensity of conflict as the effort exerted by either coalition. This is the case we start with.

### 2.2.1 Equal group sizes

Suppose that  $s_i = s = \frac{1}{k}$ . In other words, each self-coordinating group is of equal size. This may be the case if there is some technological feature that limits the size of a group that can co-ordinate the actions of its members. The crucial implication is that there is no difference in the ability of either coalition to co-ordinate the actions of its members.

In this case, we have

$$v_D^2 = v_M^2 = v^2 = \frac{1}{2} s^2 \sum_i |\alpha_i - p_i|$$

which gives us

$$e_M^* = e_D^* = \frac{v}{2} \tag{10}$$

The following result relates the intensity of conflict with inequality in the distribution of inputs

**Proposition 2.2** *If all groups are of equal size, the intensity of conflict is increasing in  $\sum_i |p_i - \alpha_i|$ . Under equitable distribution of political gains, intensity increases in the inequality of distribution of inputs  $\sum_i |p_i - 1|$ .*

The above result suggests that the intensity of the conflict is maximum if  $p_j = 1$  for some group  $j$  and 0 for all other groups.<sup>4</sup> Thus, conflict intensity is maximum when all inputs are concentrated in one group. In this case, we can model conflict as a contest between group  $j$  and a coalition of all other groups for an indivisible prize worth  $(1 - \frac{1}{k})$ .

Finally, note that the intensity of conflict is a function of within-group co-ordination. As the self-coordinating groups become progressively smaller, i.e.,  $k$  increases and  $s$  decreases, the intensity of conflict  $v$  decreases. In the limit, if  $s \rightarrow 0$ , we have complete free-riding and all conflict vanishes.

### 2.2.2 Unequal group sizes

First, we study the role of group size by comparing the effort provision among two groups with different sizes in the same coalition.

Denote  $\alpha_i s_i - p_i s_i = z_i$ . This is the net total benefit to group  $i$  from the political outcome relative to the natural economic outcome. Now, consider two groups say  $i$  and  $j$  such that both belong to the mobilizing coalition, i.e.,  $\alpha_i > p_i$  and  $\alpha_j > p_j$ . From (8) we have

$$\frac{e_M^i}{e_M^j} = \frac{v_i^2}{v_j^2} = \frac{s_i z_i}{s_j z_j}$$

Thus, if there are two groups with the same total net gains, then the larger group will supply more total effort,

When we have unequal group sizes, we will assume WLOG  $v_M > v_D$ . This can be interpreted as the mobilizing coalition being better at co-ordination than the defending coalition. More concretely,  $v_M > v_D$  implies that on the average, larger groups are associated with larger gains from mobilization.

To see this, note that.

$$\begin{aligned} v_M^2 - v_D^2 &= \sum_i s_i^2 (\alpha_i - p_i) = \sum_i s_i z_i \\ &= \sum_i s_i z_i + \bar{s} \bar{z} = \sum_i (s_i - \bar{s})(z_i - \bar{z}) \end{aligned}$$

Therefore,  $v_M > v_D$  should be interpreted as positive correlation between group size and net benefit from political outcome.

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<sup>4</sup>For any given distribution of political gains, the intensity of conflict attains its maximum if  $p_j = 1$  for the group  $j$  where  $\alpha_i$  is minimum.

Now we consider comparative statics on  $v_M$  and  $v_D$ . These quantities can change in two ways.

First, keeping the distributions of gains constant, a particular coalition might simply become better or worse in co-ordination. This is captured by a group, say  $s_k$  being broken into two groups  $s_{k_1}$  and  $s_{k_2}$ , with  $s_k = s_{k_1} + s_{k_2}$ . If  $\alpha_k < p_k$ , this change will reduce  $v_D$  without affecting  $v_M$ .

Second, the distribution of gains may change. Consider for example two groups  $i$  and  $j$  with  $z_i > 0$  and  $z_j > 0$ . Now, consider a new distribution where  $z_i$  increases by  $\delta$  and  $z_j$  decreases by  $\delta$ . If  $s_i < s_j$ , this means that net gains in the defending coalition are more concentrated: the same quantum of gain is transferred to a smaller self-coordinating group. This would have the effect of reducing  $v_D$  since the coalition's overall ability to co-ordinate is weakened.

**Proposition 2.3** *Suppose  $v_M > v_D$ . We can show that*

$$\begin{aligned} \frac{de_M}{dv_M} &> 0 \\ \frac{de_M}{dv_D} &> 0 \\ \frac{de_D}{dv_D} &> 0 \\ \frac{de_D}{dv_M} &< 0 \end{aligned}$$

*An increase in its own ability to co-ordinate always makes the respective coalition more aggressive. For the group that is ahead in the contest, the rival's increased co-ordination makes it more aggressive. On the other hand, the group that is behind in the contest becomes softer if the rival co-ordinates better.*

## 3 Empirical analysis

### 3.1 Empirical hypothesis

The theory outlined above proposes a theory of identity based political mobilization. It suggests that in the event of economic shock that affects everybody's input endowment, the political mobilization will happen along the dimension in which the input (which received the shock) distribution is more unequal. Let us illustrate the point with our empirical exercise in which we analyze the the rise of caste politics. Economic liberalization was introduced in India around late 1980s-early 1990s. The rise of lower caste based parties in north India happened around the same parties. This is also

time which can be identified as the time when caste based political parties started getting electoral success. In 1989, then Janata Dal government decided to implement reservation for the disadvantaged group known as the Other Backward Classes (OBC) and following that decision, India saw a great mobilization in favour and against reservation for lower castes.

We argue that the economic change brought about by the new economic policy created more opportunity for the skilled population than the unskilled ones as India started specializing in skill based service sector. Traditionally, upper caste people in India had better access to education in general and English education in particular which were essential input to achieve higher income growth in liberalized. If we stick to the North-South region, High-Low caste, it is easy to see that the inequality created by new economic policy was much higher in the caste dimension rather than in the geographic dimension. Hence, we conjecture that low caste based parties will have greater electoral success in districts where the impact of trade liberalization was higher. In the following section we explain how we characterize the variation in trade liberalization policy across Indian states.

## 3.2 Data

The dataset used for our analysis is drawn from various sources. The information on the vote share of different parties in the State Legislative Assembly elections are derived from the Lok Dhaba database of Ashoka University and Trivedi Centre for Political Data. We used the data for the following state assembly elections: Bihar (1990 and 2000), Madhya Pradesh (1990 and 1998), and Uttar Pradesh (1989 and 2002). Uttar Pradesh was bifurcated in November 2000 to create a new state Uttarakhand. So we also considered the Uttarakhand assembly election (2002) as it was part of Uttar Pradesh in the last election. Using this data, we create a panel data at the district level. As the data did not mention the districts in which the assembly constituencies are located, the data is collected from the 1976 delimitation report. The government had suspended delimitation in 1976 until after the 2001 census so that family planning programmes would not affect their political representation in the state assemblies and Parliament. Delimitation was again implemented in 2008. Our dataset is not affected by the delimitation of constituencies. We consider the total vote received by a particular political party (say, INC) across all the assemblies in a district and the total number of valid votes in the district. Then we calculate the district level vote share of the party. There is a total of 150 districts in these three states. District level measures of net tariff for the years 1989 and 1999 are provided by (Topalova, 2010). We consider this as a proxy of the impact of 1991 liberalization at the district level. The digital library of Census of India provides the data for district-level Scheduled Caste popula-

tion ratio (as a percentage of total population) and district level measures of education. Percentage of Scheduled Caste population is derived by dividing the district level SC population with the total population of the district. As there is no data for the OBC population in the 1991 census, we could not construct a similar measure for OBC. The data is available for 'Age, Sex and level of education' at the district level which presented the total number of people with different levels of education. From that, we construct two measures of education: the number of persons with education level 'Higher secondary or equivalent' and 'Graduate and above' in every thousand. We collected these data for the 1991 and 2001 census. We adjust these estimates to create a panel in the following way. We equate the 1989 tariff measures with the first set of assembly election data (1989 in Uttar Pradesh and 1990 in Bihar and Madhya Pradesh) and the 1991 census data (SC population and level of education at the district level). We use the 1999 tariff data with the second set of assembly election data (2000 in Bihar, 2002 in Uttar Pradesh and Uttarakhand, and 2003 in Madhya Pradesh and Chhattisgarh). As there was not always an assembly election and census survey on the exact year, we took the nearest election and census. However, we needed to match the data with the district level tariff measures constructed by Topalova (2010). These measures are available for the districts present in the 1991 census. But after the 1991 census, a number of new districts are formed from the older ones in all these states. This information is collected from the Statoids (Alternative Divisions of Countries) database and the website of the state governments. Even though the states are bifurcated to create new ones, districts are never divided between the older state and the newer ones. So we merged the data for the newer districts with the older ones from which they are created, and calculate the district-specific measures for the 1991 census districts from this aggregated data.

Besides INC and BJP, we have taken a different caste based parties for different states in different years. Here is the details: BSP: Bahujan Samaj Party, RJD: Rashtriya Janata Dal, JD: Janata Dal, SP: Samajwadi Party.

### 3.3 Empirical Model

In this paper, we use a district level panel to run the following regression

$$v_{td} = \beta_0 + \beta_1 \tau_{td} + \beta_2 C_{td} + \beta_3 E_{td} + \epsilon_{td} \quad (11)$$

where  $v_{td}$ : vote share of different political party/coalition in district  $d$  and time  $t$

$\tau_{td}$ : Measure of tariff in district  $d$  and time  $t$

$C_{td}$ : share of scheduled caste population in district  $d$  and time  $t$ .

Table 2: Caste based parties

State	Year	Caste based parties
Bihar	1990	BSP and JD
	2000	BSP, RJD, SP
Uttar Pradesh	1989	JD and BSP
	2002	SP and BSP
Madhya Pradesh	1990	JD and BSP
	2003	JD, BSP and SP

$E_{td}$ : Education variable. We use both number of students per 1000 population who completed graduation (also higher secondary as an alternate measure) in district  $d$  and time  $t$ .

We use district fixed effects model.

### 3.4 Results

#### 3.4.1 Baseline

In this section we report the main results. First, we report descriptive statistics on relevant variables. In period 1, some of the variables are recorded in 1991 while some are recorded in 1987 or 1989. Similarly, for period 2, some of the variables are recorded in 2000 while some in 1999. The description of the exact years for each data is already given in data section. In the table, we refer to period 1 as T1 and period 2 as T2.

	INC	BJP	Non-INC-BJP
t1	28.77391	14.99962	24.79465
t2	15.52421	23.47296	33.89953

Table 3: Median vote share: district wise

In table (3) we show the median vote share for each party – Indian National Congress (INC), Bharatiya Janata Party (BJP) and caste based parties (Non-INC-BJP). We rank different districts in terms of vote share for each of these parties/coalition and find the median vote share for each of them. We find that between period 1 and period 2, Congress median vote share has decreased considerably while that of BJP and caste based parties it increased. Next we look at the average values of district tariff



rate, percentage of SC population, average number of people with HS per 1000 people and average number of people with graduation degree per 1000 people over period 1 and 2. We report the descriptive statistics with these variables in table 4. Next we report our main regression results. Our theory

	tariff		SC proportion		HS		Graduation	
	Average	sd	Average	sd	Average	sd	Average	sd
t1	83.1	10.4	17.3	6.6	23.7	11.7	13.3	12.3
t2	32.0	4.4	17.3	6.6	30.8	13.5	28.9	17.8

Table 4: Descriptive Statistics

suggests that reduced tariff, that ushers in skill based economic growth, puts the lower caste people in disadvantage and as a response they mobilize under the umbrella of several caste based parties. Therefore, we expect that in districts with lower tariff (i.e. with higher degree of liberalization) caste based parties' vote share must rise and that of Congress must fall. We however, treat the case of Hindu identity based Bharatiya Janata Party in a different section as they represent the Hindu population, the majority religion of India and different section of the Hindu population was affected differently by the liberalization policy.

In the table 5 we regress caste based parties' on measures of trade liberalization (tariff) and other controls. In the first column, we only include the tariff measure. As expected, the sign of coefficient of tariff variable is negative and significant. This means in districts which are more exposed to trade (so tariff is low), caste based parties get higher vote share. In column 2 and 3 we include control for the SC population proportion and educational variable as the controls. In column 2, we use number of HS pass people per 1000 population, while in column 3 we use number of graduate and above (per 1000 population) as indicators of educated people. Both education indicators turn out to be negatively significant, but tariff remains to be significant even after adding the controls.

In table 6, we look at the effect of trade protection on INC vote share. We find that in more trade protected districts, caste polarization is less and vote share of INC is high. Education, also for INC vote share, has a negative significant effect. But tariff measure remains significant even after controlling for SC proportion and education. Interestingly, SC proportion has no impact on vote share either for INC or for caste based parties.

Comparing these two tables reveals an interesting pattern. First of all, as predicted by our theory, liberalization is negatively related with Congress vote and positively related to vote share of the caste based parties. We also, caste parties' vote share is positively related with percentage of Scheduled

Table 5: dependent variable: Vote share of caste based parties

	(1)	(2)	(3)
VARIABLES	Caste	Caste	Caste
tariff	-0.0860*** (0.0259)	-0.153*** (0.0378)	-0.142*** (0.0405)
SC prop		0.868 (1.671)	0.580 (1.676)
HS		-0.488** (0.202)	
Graduation			-0.183* (0.102)
Constant	32.15*** (1.632)	34.32 (28.46)	29.16 (28.64)
Observations	300	300	300
R-squared	0.069	0.105	0.089
Number of district	150	150	150
Standard errors in parentheses			
*** $p < 0.01$ , ** $p < 0.05$ , * $p < 0.1$			

Table 6: Indian National Congress vote share

	(1)	(2)	(3)
VARIABLES	INC	INC	INC
tariff	0.158*** (0.0222)	0.0589* (0.0306)	0.0715** (0.0333)
SC prop		-1.443 (1.352)	-1.844 (1.380)
HS		-0.747*** (0.163)	
Graduation			-0.297*** (0.0843)
Constant	15.73*** (1.399)	66.81*** (23.03)	58.89** (23.58)
Observations	300	300	300
R-squared	0.255	0.361	0.327
Number of district	150	150	150

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

caste (SC) in the district and and INC vote share is negatively related with the proportion of SC population in the district. But interestingly, none of these coefficients are significant. Another interesting pattern emerges with respect to vote share's relation with education. We find that districts with higher education (as measured by proportion of Higher Secondary pass and graduates) vote less for both INC and caste based parties.

Next, we check the effect of same set of dependent variables on BJP vote share in table 7. The case of Bharatiya Janata Party is even more interesting. Theoretically, BJP also represents a religion based identity – Hindu. Both upper and lower castes are part of the Hindu religion even though the general perception is that they are ideologically dictated by upper caste hierarchy. When we put tariff as the main independent variable, the result is quite similar to that of caste based parties. However, when we put only education control, which is measured by proportion of people with Higher Secondary or higher qualification, tariff becomes insignificant. Interestingly, education has a positive significant sign for BJP vote share. This means that BJP vote share is higher in districts with more educated people. However, BJP specifically represents Hindu identity and it is generally believed that it represents the non-Dalit section of Hindu population. When we put control for proportion of non SC Hindu population and that of SC population separately we find that districts with more non SC Hindu population vote more for BJP. But tariff remains insignificant.

The non result for BJP provides further support for our hypothesis. In our proposed theory, liberalization creates income potential for higher educated people. The upper caste people being traditionally exposed to higher education gain while SC population lose. Hence, districts more exposed to liberalization embrace caste politics to mobilize political support for some form of redistribution in favour of the losers. If this is true, tariff should not matter for BJP vote share which represents Hindu population which has both upper and lower caste. Liberalization creates a cleavage within the support base of BJP — while upper caste Hindus benefit from liberalization, lower caste Hindus don't. The non result for BJP also shows that falling vote share for INC in more liberalized districts is simply not voters attempt to punish INC whose government initiated liberalization. If this were true, more liberalized districts would vote more for all non INC parties – caste based parties and BJP alike. But the fact that BJP vote share is unrelated to the degree of liberalization falsify this alternative hypothesis.

### **3.4.2 Educational inequality across caste and vote share**

Next we try to pin down the mechanism of the result. In our theory the identity mobilization will take place in the line of identity which embod-

Table 7: Dependent variable: BJP vote share

VARIABLES	BJP	BJP	BJP
tariff1	-0.0843*** (0.0163)	0.00716 (0.0241)	-0.0619 (0.0399)
toteduc		0.213*** (0.0437)	0.161*** (0.0487)
nonscperc			0.226** (0.114)
scperc			1.550 (0.970)
Constant	28.49*** (1.019)	12.87*** (3.336)	-23.57 (17.95)
Observations	295	295	295
R-squared	0.157	0.276	0.305
Number of district	149	149	149

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

ies maximum inequality. We argue that liberalization creates an income premium for high skilled. higher educated people in India. Because, traditionally higher caste people had better access to education, higher caste people benefited the most from liberalization. Hence, we argue that caste mobilization will happen more where the impact of trade liberalization was greater. In the above mentioned tables we proxy the impact of liberalization by Topalova's measure of tariff. But another important piece in our explanation is education inequality across castes. Let us now include that in our regression framework. We take a simple measure of the percentage of scheduled castes who are highly educated (HS and above) as a proportion of highly educated people in total population. This can be seen as measure of educational advantage for the schedules caste. Theoretically, the number can be more than 1, but in reality 1 is the maximum value that the ratio can attain. In any case, the higher the number, the better the scheduled caste people are doing compared to the general population. Unfortunately, this measure is included only from 2001 census. Therefore, we can only do this regression in the cross section of second period. Below we report the result. This shows that in districts where SCs are in relative advantageous position compared to the total population, vote share of the caste based parties go down, while that of BJP and INC go up. More importantly,

Table 8: Educational inequality across caste and vote share

	(1)	(3)	(5)
VARIABLES	INC	Caste party	BJP
tariff	-0.263 (0.214)	0.459 (0.293)	0.0560 (0.233)
scperc	-0.452*** (0.169)	1.097*** (0.231)	-0.274 (0.183)
educratio	7.374* (3.947)	-10.98** (5.411)	12.19*** (4.287)
Constant	30.32*** (8.069)	2.299 (11.06)	22.31** (8.768)
Observations	150	150	149
R-squared	0.159	0.297	0.128
Standard errors in parentheses			
*** $p < 0.01$ , ** $p < 0.05$ , * $p < 0.1$			

once we take control of education inequality, coefficient for tariff does not remain significant.

## 4 Conclusion

In this paper we provide an explanation why one of the several cultural marker of an individual becomes her main identity which is characterized by political mobilization. In our theory, one cultural marker emerges as one's identity in response to large technological or institutional shocks. Our theory predicts that political mobilization will take place in the dimension along which this shock creates maximum inequality. We test our theory using Indian scenario of liberalization which resulted into a service sector led growth and created a very high education premium for for English educated workers. Given that Indian upper caste people traditionally had better access to higher education, they tend to benefit most from liberalization. In terms of our theory this means that liberalization created maximum inequality along the caste line rather than any other possible dimension such as religion or geographical region. We then test our theory using data from Indian states which saw the rise of caste politics viz. Uttar Pradesh, Bihar and Madhya Pradesh. Using Topalova's measure of district level tariff (which is inversely proportional to the degree of trade liberalization) we find that districts which are more exposed to trade liberalization,

vote more for caste based parties. This supports our theoretical prediction.

## References

- Ahlerup, P. and Olsson, O. (2012). The roots of ethnic diversity. *Journal of Economic Growth*, 17(2):71–102.
- Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S., and Wacziarg, R. (2003). Fractionalization. *Journal of Economic growth*, 8(2):155–194.
- Banerjee, A. and Somanathan, R. (2007). The political economy of public goods: Some evidence from india. *Journal of development Economics*, 82(2):287–314.
- Bazzi, S. and Blattman, C. (2014). Economic shocks and conflict: Evidence from commodity prices. *American Economic Journal: Macroeconomics*, 6(4):1–38.
- Becker, S. O. and Woessmann, L. (2009). Was weber wrong? a human capital theory of protestant economic history. *The Quarterly Journal of Economics*, 124(2):531–596.
- Bhattacharya, S., Deb, J., and Kundu, T. (2015). Mobility and conflict. *American Economic Journal: Microeconomics*, 7(1):281–319.
- Binzel, C. and Carvalho, J.-P. (2017). Education, social mobility and religious movements: The islamic revival in egypt. *The Economic Journal*, 127(607):2553–2580.
- Clark, G. (2008). *A farewell to alms: a brief economic history of the world*, volume 25. Princeton University Press.
- Dube, O. and Vargas, J. F. (2013). Commodity price shocks and civil conflict: Evidence from colombia. *The Review of Economic Studies*, 80(4):1384–1421.
- Easterly, W. and Levine, R. (1997). Africa’s growth tragedy: policies and ethnic divisions. *The quarterly journal of economics*, 112(4):1203–1250.
- Esteban, J. and Ray, D. (2008). On the salience of ethnic conflict. *American Economic Review*, 98(5):2185–2202.
- Feddersen, T. and Sandroni, A. (2006). A theory of participation in elections. *American Economic Review*, 96(4):1271–1282.
- Greif, A. (1993). Contract enforceability and economic institutions in early trade: The maghribi traders’ coalition. *The American economic review*, pages 525–548.



- Harsanyi, J. (1978). Rule utilitarianism and decision theory”, in: Göttinger, H. & W. Leinfellner (eds.), *Decision Theory and Social Ethics. Issues in Social Choice*, Dordrecht-Holland: D. Reidel Publishing Company.
- Michalopoulos, S. (2012). The origins of ethnolinguistic diversity. *American Economic Review*, 102(4):1508–39.
- Topalova, P. (2010). Factor immobility and regional impacts of trade liberalization: Evidence on poverty from India. *American Economic Journal: Applied Economics*, 2(4):1–41.
- Weber, M. (2005). *The Protestant Ethic and the Spirit of Capitalism*. Routledge Classics. Taylor & Francis.