

Democracy, Collective Action and Intra-elite Conflict

Sayantana Ghosal and Eugenio Proto

No 844

**WARWICK ECONOMIC RESEARCH PAPERS**

**DEPARTMENT OF ECONOMICS**

THE UNIVERSITY OF  
**WARWICK**

# Democracy, Collective Action and Intra-elite Conflict\*

Sayantana Ghosal and Eugenio Proto<sup>†</sup>

February, 2008

## Abstract

This paper studies the conditions under which intra-elite conflict leads to a democracy. There are two risk averse elites competing for the appropriation of a unit of social surplus, with an ex-ante uncertainty about their future relative bargaining power, and a large non-elite class unable to act collectively. We characterize a democracy as consisting of both franchise extension to, and lowering the cost of collective political activity for, individuals in the non-elite. In the absence of democracy, the stronger elite is always able to appropriate the entire surplus. We show that in a democracy, the newly enfranchised non-elite organize and always prefer to form a coalition with weaker elite against the stronger resulting in a more balanced surplus allocation between the two elites. Accordingly, the elites choose to democratize if they are sufficiently risk averse. Our formal analysis can account for stylized facts that emerge from a comparative analysis of Indian and Western European democracies.

Keywords: Democracy, conflict, collective action, coalition formation, party formation, bargaining, risk-sharing.

JEL Classification: D74, O12, H11.

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\*We thank Daron Acemoglu, Pranhav Bardhan, Francis Bloch, Steve Broadberry, Oded Galor, Mark Harrison, Alessandro Lizzeri, Ben Lockwood, Miltos Makris, Omer Moav, Joel Mokyr, Sharun Mukand, Andrew Newman, Jim Robinson and Juuso Valimaki for helpful comments and suggestions. The obvious disclaimer applies.

<sup>†</sup>University of Warwick, Department of Economics, Coventry CV4 7AL, UK. Corresponding author email: e.proto@warwick.ac.uk.

# 1 Introduction

Can a democracy emerge as a solution to intra-elite conflict? Moore (1964) argues that a fundamental precondition for stable democracy is a balance of power between landed upper class and urban bourgeoisie, while totalitarian regimes arise whenever one class dominates the others. Olson (1993) notes: “We can deduce (...) that autocracy is prevented and democracy permitted by the accidents of history that leave a balance of power or stalemate—a dispersion of force or resources that makes it impossible for any leader or group to overpower all of the others”. And Collier (1999) underlines the central role of political or economic elites’ bargaining in almost all processes of transition to democracy. Along similar lines, Bardhan (1984) argues that in a democracy one elite can use the threat of coalition formation with the ordinary people to stabilize the relative bargaining power with the other elite. In particular he notes:

“Populist rhetoric has been a useful weapon in clipping the wings of an over-greedy bargaining partner [...] profuse tears of commiseration with the masses [...] have drowned a rival’s extravagant claims. If the industrialists at any time overstep in their bargaining, sure enough there will be an uproar in the Parliament about the ‘anti-people conspiracy of the monopoly capitalists’; similar invectives against the ‘kulaks’ or, somewhat less frequently, against the ‘parasitic intelligentsia’ will also be aired on appropriate occasions. The competitive politics of democracy thus serves the purpose of keeping rival partners in the coalition on the defensive” (P. Bardhan 1984 pp. 77).

Two examples, drawn from the histories of Indian and French democracy, are a useful illustration of the mechanism emphasized above by Bardhan. In India, Indira Gandhi’s attempt to mount a coup (by imposing "Emergency") in 1975 culminated with the loss of the enormous popular support she had hitherto enjoyed. Even though she promised more redistribution to the non elite, this commitment was not credible and an alliance consisting of the non-elite with anti-Congress parties fiercely opposed her by organizing a large mass

mobilization (e.g. Kohli (2001)).<sup>1</sup>

In France, universal male suffrage was introduced in 1848. When a social reform agenda was passed thanks to the alliance between the working class and Republicans, a conservative government disenfranchised 2.8 million of men in 1850. However, in 1851 the Republicans and the working class supported the coup led by Louis Napoleon Bonaparte, who restored the universal suffrage, initially only formally and from 1868, under the pressure of Republicans and working classes more substantially (also by abolishing the previously imposed ban on organized political activity (Collier 1999, pp. 42-43 and Elwitt pp. 41).

Starting from the above observations and examples, we aim to study how a democracy can be an effective device to manage intra-elite conflicts.

We analyze a model where two risk averse elites compete for the appropriation of a unit of social surplus, with an ex-ante uncertainty about their future relative bargaining power, and a non-elite class, large but unable to act collectively. Ex-post, after the elites' relative bargaining power is revealed, the stronger elite can appropriate the available surplus in any bilateral bargain, hence neither of the two elites are able to make a credible ex-ante commitment on a balanced ex-post division of social surplus. We show that in a democracy, the newly enfranchised non-elite always organize collectively and always form a coalition with weaker elite in case of disenfranchisement threat. This coalition formation strategy partially balances the relative bargaining power between the two elites, hence the democratization is an ex-ante dominant choice for both the elites if they are sufficiently risk averse.

The model emphasizes that the insurance mechanism outlined above is effective only if the non elite is able to act collectively as a group to acquire non-trivial bargaining power, otherwise franchise extension on its own does not alter the balance of power between the two elites. Accordingly, we show that extending the franchise and lowering the cost of political participation (for example by legalizing political parties) for the initially disorganized non-elite are both necessary to solve the non-elite collective action problem and thus to change the democratic surplus allocation.

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<sup>1</sup>A proof of the general loss of support for Ghandi is also her defeat in the 1977 election, won by the Janata Party.

In our model, collective political activity is organized by a political party who is able to reward its own members selectively.<sup>2</sup> We assume that two elites are already organized along party lines whereas the non-elite are initially disorganized. We model party formation within the non-elite explicitly by allowing each individual in the non-elite the choice of becoming a party member. In our model, joining the party is costly and becomes a dominant strategy for an individual if and only if the number of other individuals joining the party is greater than the critical mass required for effective political activity. Therefore the party formation process has two equilibria, one where all individuals join the party and the second where no individual joins the party.

Which equilibrium do non-elite individuals coordinate on? An individual member of the non-elite contrasts the consequences of not joining the party –with the risk of losing out from the gains of party membership if a critical mass of other individuals join the party– and the consequences of joining the party –with risk of incurring a privately borne cost if the number of other individuals joining the party falls below the critical mass. The selection argument we use here picks the equilibrium with the lower risk of utility loss.<sup>3</sup>

In our model, the cost of joining the party determines the critical mass required for effective political activity. A democracy lowers the required critical mass by lowering the cost of joining the party. This ensures that individuals in the non-elite coordinate on the equilibrium that leads to party formation.

Once the non elite become organized as a group, it strictly prefers to form a coalition with weaker elite in order not to be expropriated by the stronger elite. Thus coalition formation in ex-post bargaining changes the incentives of the stronger elite to renegotiate the surplus allocation achieved by majority voting. In this sense, a democracy endogenously constrains the ability of elites to grab the available social surplus and results in a more balanced surplus allocation between the two elites. Moreover, – since agreements are never binding, even in democracy– the threat of renegotiation and coalition formation by the two

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<sup>2</sup>Such a commitment to a selective reward, as Olson (1965) originally pointed out, is a common solution to the free-riding problem involved in collective action.

<sup>3</sup>We build on the Harsanyi and Selten (1988)'s concept of risk dominance and Young (1993). One way to gain intuition about our equilibrium selection argument is by relating the party formation process to the stag-hare hunting game (Rousseau, 1754). Rousseau uses the game to contrast the gains of hunting hare, where the risk of non-cooperation is small and the reward equally small, against the gains of hunting the stag, where maximum cooperation is required and the risk of non-cooperation is greater but the reward is much greater.

elites also limits how much of the available surplus the median voter (belonging to the non elite) allocates to herself. When the degree of risk aversion of the two elites is large enough, it is ex-ante payoff dominant for both elites to choose democracy essentially for insurance motives.

In conclusion, the mechanism of conflict resolution of the democracy described by our model has two main implications that we think are new in the literature. First in a democracy the freedom of political participation is necessary as the right to vote; the enfranchisement with a high cost of political participation would not change the oligarchic equilibrium allocation. This point is consistent with the observation that all constitutions of the countries commonly considered democratic explicitly recognize freedom of collective organization as well as the universal right to vote (in the last section we provide a sample of the relevant articles concerning freedom of organization). Furthermore, political scientists have documented that in many dictatorships individuals have the right to vote (and often massively participate in elections) without having real freedom of association,<sup>4</sup> and that criteria used to define democracies must include not just the right to vote, but also the existence of effective collective political organizations.<sup>5</sup>

Second, the surplus that the median voter belonging to the non elite after the enfranchisement allocates to herself in the democratic equilibrium is bounded by the threat of renegotiation and coalition by the two elites: in fact, it can be very small and can never be too high. This point seems to find some support from Aidt, Dutta and Loukoianova (2006), who find evidence of little or no redistribution to the working classes in the post-enfranchisement experience of western European countries;<sup>6</sup> and from the Indian experience where high and widespread poverty and low level of public good provision have coexisted with the democracy– the so called Indian puzzle (e.g. *Weiner (2001)*).<sup>7</sup>

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<sup>4</sup>Przeworski et Al. (2000) classifies dictatorship with the elections as "mobilizing dictatorship". In their database, containing observation in the period 1950-90, there are 147 mobilizing over a total of 274 different dictatorships.

<sup>5</sup>E.g. Hermert (1978) and Dahl (1989).

<sup>6</sup>Also De Mello and Tiongson (2003) recently found evidence that more unequal societies tend to spend less rather than more in redistribution.

<sup>7</sup>A possible objection to our argument is that stable democracy is not a necessary outcome of intra-elite conflict in heterogenous societies as in many African countries. In an extension to the main model, we consider scenarios where, due to linguistic or ethnic differences, there are vertical links between one elite and a section of the non-elite. With such vertical links, we show that a vertical bias in coalition formation between elites and sections of the non-elite could indeed prevent democratization.

## 1.1 Related Literature

To the best of our knowledge the idea that a democracy represents a solution of the collective action problem faced by the large non elite has never been explicitly formalized.<sup>8</sup> A similar idea is present in the non formal political science literature. For example Epstein (1967, p. 19) already notes that “modern political parties [i.e. different from a restricted group of friends] emerged with the extension of the vote to a fairly large proportion of the populace”. Moreover, our emphasis on the effect democratic institutions, in shaping individual incentives to act collectively is similar to the notion of *political opportunity structure* in the sociology literature (see e.g. Tilly (1978), McAdam (1992), Tarrow (1998)). The latter concept is based on the idea that the state with its institution determined the opportunity of the collective action.<sup>9</sup>

The notion that for a collective action problem solution is necessary a critical mass of individuals can be traced back in the sociology literature as well (Oliver, Marwel and Teixeira 1985). Our contribution on this issue is to show how democratization can act as an equilibrium selection device by decreasing this critical mass.

Recently, Acemoglu, Egorov and Sonin (2007) addressed the problem of coalition formation and conflict in a non democratic society and analyzed the existence and the characteristic of an *ultimate ruling coalition* in a context where no binding agreement are feasible. In our paper, we assume that in a democracy (as well as in an oligarchy) agreements can be renegotiated, allowing us to emphasize the necessity in democracy of party formation with the aim of avoiding renegotiations.

The issue of how constraining are the agreements in a democratic context has been also addressed by Acemoglu and Robinson (2006), who distinguish between *de jure* and *de facto* political power and point out that franchise extension- seen as the allocation of de jure power to working class- can have little impact on economic institutions, given that elites actively invest in holding onto de facto power. In our model, we show that two de

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<sup>8</sup>Acemoglu and Robinson (2006a) p. 179 provide an informal discussion on the role of political participation in shaping real constraints for the elites in the period in the post enfranchisement period in the UK.

<sup>9</sup>For example, Tarrow (1998), p. 20, argues that: “contentious Politics emerges when ordinary citizens, (...), responds to opportunity that lowers the cost of collective action, reveal potential allies, show where elites and authorities are most vulnerable and trigger social networks and collective identities into action around common themes”.

jure agreements (i.e. enfranchisement and parties legalization) can have a real impact— via collective action— on the non elite and weaker elite de facto power. Therefore we emphasize how democratization is more than a de jure act of franchise extension.

The impossibility of exogenously binding agreements in a democratic context also differentiate our paper from the initial contributions on enfranchisement that in the economic literature started with Justman and Gradstein (1999), Acemoglu and Robinson (2000, 2001), Conley and Temini (2001), Bertocchi and Spagat (2001). These papers view the transition to democracy as consisting of franchise extension as a non renegotiable agreement,<sup>10</sup> where the elites commit to relinquish under threat of revolution some power to the non elite.

Other relevant contributions modelling the enfranchisement as an exogenous commitment are: Fleck and Hanssen (2002) and Gradstein (2006), where enfranchisement is a commitment not to expropriate the non elites; Lizzeri and Persico (2004) where elites enfranchise the non elite to commit on an efficient supply public goods, and Lagunoff and Jack (2005) where pivotal voters commit to future policy choices. Our paper differs from all above mentioned papers since the cost of renegotiating the voting outcome is endogenous and it is high when the non elite is able to act collectively.<sup>11</sup>

The rest of the paper is organized as it follows. In section 2, we present the main model and results. Section 3 analyzes some extensions of the model to analyze when the between-elites conflict does not lead to democratization. Section 4 is devoted to the discussion, using our model and its results, of comparative historical and institutional evidence relating to India and the pattern of democratization in some Western European countries. Section 5 offers some final remarks. Some of the more technical material is contained in the appendix.

## 2 The model

We study a three time period ( $t = 0, 1, 2$ ) model with three classes of homogeneous agents,  $E_1, E_2, W$ , where  $E_i$ ,  $i = 1, 2$ , denotes the two elites and  $W$  represents the numerically

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<sup>10</sup>Or it is renegotiable at an exogenously given cost like in Acemoglu and Robinson (2001).

<sup>11</sup>Llavador and Oxoby (2005) and Galor and Moav (2006) are also related. By using a macroeconomic approach, they argue that democratization is the consequence of the interest alignments between social classes, ultimately generated by factors' complementarity and economic growth.

large non-elite. The total number of individuals has a mass of  $1 + 2\lambda$ , the mass of  $W$  is equal to 1 and the mass of each elite is equal to  $\lambda$ , and  $2\lambda < 1$ . There is a measure of disposable social surplus normalized to one, and the three groups compete to appropriate the social surplus; the portion of surplus appropriated by each class is invested to provide a class-specific collective good, which is consumed at time 2. Preferences over consumption of the collective good are represented by the smooth utility function  $u : \mathfrak{R}_+ \rightarrow \mathfrak{R}$  where  $u'(\cdot) > 0 > u''(\cdot)$  i.e. agents are strictly risk averse and payoff are normalized so that  $u(0) = 0$ .

The two elites  $E_1$  and  $E_2$  are assumed to be initially organized: each individual in  $E_1$  and  $E_2$  can credibly commit to act collectively and invest the acquired surplus in the collective good for all its members. In contrast, the non-elite  $W$  is initially completely disorganized so that no individual in  $W$  can commit to act collectively. Only individuals who act collectively are able to appropriate a portion of the disposable surplus since single atomless individuals have no power of surplus extraction against organized group, formed by a positive mass. In order to act collectively, each individual has to join an organization (a party) and we assume that party membership for the non elites has a privately borne participation utility sunk-cost  $c$  for each individual.<sup>12</sup> This cost is fixed at time 0 by the elite by legalizing (or even facilitating) the political activity, in a range  $c \in (\underline{c}, \infty]$ , with  $\underline{c} \geq 0$ .

The non elite party can commit to invest in the collective good for its members (exactly like the two organized elites) and exclude the non members from the benefit of the good.<sup>13</sup> Let  $W^\pi$  denote a situation where there is a fraction  $\pi$  of individuals in  $W$  who join the party so that  $\pi$  is a measure of the level of organization in  $W$ , with higher values of  $\pi$  denoting a higher level of organization.

At  $t = 0$ , the two elites, by unanimous consent, choose whether democratize or staying in a situation of Oligarchy. In Oligarchy only  $E_1$  and  $E_2$  decide the surplus division by majority voting at time 1. By contrast, democratization implies:

- a) Enfranchisement of each individual in  $W$ , so that she has right to vote at  $t = 1$ ;

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<sup>12</sup>We can think of it as an initial cost to get in touch and establish a communication channel with the other members.

<sup>13</sup>This is a simplifying assumption. We could more realistically assume that the party can allocate some surplus privately to each member, while some other surplus can be invested in a public non excludable good for all individuals in  $W$  without affecting qualitatively our results.

- b) Legalizing collective political activity for individuals in  $W$  by lowering the privately borne cost of party membership to a minimal level  $c = \underline{c}$ .

The relative power of  $E_1$  and  $E_2$  is uncertain at  $t = 0$  and is determined at  $t = 1$  by  $\theta$ , a random variable, where

$$\theta = \begin{cases} 1 & \text{prob. } q \\ 2 & \text{prob. } 1 - q \end{cases}.$$

The interpretation is that when  $\theta = i$ , elite  $E_i$  can appropriate the entire unit of disposable surplus in any bilateral bargain with  $E_j$  and with  $W^1$ .<sup>14</sup> In the appendix, we endogenize the bargaining power by deriving it from the disagreement point that can be seen as the surplus one group can appropriate in case of civil war.<sup>15</sup>

The variable  $q$  can be interpreted as an index of power between the two elites, so that when  $q = \frac{1}{2}$ , the two elites are symmetric and neither is dominant. For expositional simplicity, we initially solve the model under the case  $q = \frac{1}{2}$ , then in section 3.2, we study the consequences of relaxing this assumption.

Some notation is now necessary. Let  $\Gamma$  denote the set of all admissible coalitions between  $E_1, E_2$  and  $W$ , excluding the grand coalition.<sup>16</sup> For each  $\gamma \in \Gamma$ , let  $\Gamma(\gamma)$  denote the set of admissible coalitions which excludes any class already contained in  $\gamma$ .<sup>17</sup> We assume that in any process of bargaining between two classes or between a class and a coalition of classes, the outcome is determined by a grabbing function  $g(\gamma, \gamma', \theta)$  measuring the share of the available surplus  $\gamma$  is able to extract in a bilateral bargain with  $\gamma' \in \Gamma(\gamma)$  given  $\theta$ . For  $\gamma \in \Gamma, \gamma' \in \Gamma(\gamma)$ , the interpretation is that in any bilateral bargain, bargaining power is equivalent to the amount of the available surplus that  $\gamma$  can grab relative to  $\gamma'$ ; clearly,  $g(\gamma, \gamma', \theta) = 1 - g(\gamma', \gamma, \theta)$ . Conditional on  $\theta = i$ ,  $E_i$  is the stronger elite therefore by definition  $g(E_i, E_j, i) = g(E_i, W^1, i) = 1$ .<sup>18</sup>

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<sup>14</sup>Our results would not change qualitatively if we partially relax this assumption by allowing both  $W^1$  and  $E_j$  to extract some surplus from the strongest elite, as long as this amount is small enough.

<sup>15</sup>Therefore, one can think at  $\theta$  as a shock increasing the value of the production factor owned by one elite (like an increase of oil price or a dramatic factor intensive technological shocks), so that the elite blessed by nature can then use this wealth to acquire guns or hire an army in order to extract the social surplus.

<sup>16</sup>More formally:  $\Gamma = \{\{W^\pi\}, \{E_1\}, \{E_2\}, \{W^\pi, E_1\}, \{W^\pi, E_2\}, \{E_1, E_2\}\}$

<sup>17</sup>Formally, for any two classes  $i, j \in \gamma$ ,  $\Gamma(\gamma) = \{\gamma' \in \Gamma : i \notin \gamma' \text{ or } j \notin \gamma'\}$ .

<sup>18</sup>We differ from standard models of coalition formation in that the payoff to a member of a coalition is determined by a process of bargaining. In the main text, we treat the grabbing function  $g(\gamma, \gamma', \theta)$  as a

Moreover, we will assume that the more organized  $W$  is (i.e. the larger  $\pi$ ), the higher is its bargaining power against the weaker elite and the bargaining power of the coalition between weaker elite and non elite— both

$$g(\{W^\pi, E_j\}, E_i, i) \text{ and } g(W^\pi, E_j, i) \text{ are increasing in } \pi. \quad (1)$$

Moreover, note that our above assumptions implies  $\lim_{\pi \rightarrow 0} g(W^\pi, E_j, i) = 0$ .

We assume that at time  $t = 0$  it is not possible to make binding agreements over surplus division, which will then depend on the ex-post bargaining relative power between classes and coalitions.

At  $t = 1$ , the relative bargaining strength of the two elites becomes common knowledge. The pool of enfranchised individuals (everybody in democracy, only the elite in oligarchy), by majority voting, decide a surplus allocation for each of the three classes.

At  $t = 2$ , either one of the two elites on their own or any other coalition of classes may reject the voting outcome and renegotiate the surplus allocation determined by majority voting at  $t = 1$ . Consumption takes place at the end of  $t = 2$ .

In the next section, we solve this model by backward induction.

## 2.1 Renegotiation and coalition formation at $t = 2$

At  $t = 2$ , after the outcome of majority voting is rejected the renegotiation phase takes place. If no non-elite party formation took place at  $t = 1$ , i.e.  $\pi = 0$ , the payoff distribution at  $t = 2$  is trivial: the stronger elite  $E_i$  obtains 1,  $E_j$  and each member of  $W$  obtain 0.

Next we consider if at time 1 there was party formation,  $\pi > 0$ . Note that at this time, the order by which the groups or coalition of groups bargain between each other change according to the identity of the group or coalition rejecting the democratic outcome.<sup>19</sup> As

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primitive; however, in the appendix, we endogenize this grabbing function via a process of recursive Nash bargaining where the power of a class or coalition of classes is determined by the surplus each group or coalition is able to appropriate in case of civil war.

<sup>19</sup>More in details:

1. If a single class has objected, the two classes who did not object decide whether or not to form a coalition. If no coalition is formed, the objecting class bargains first with one and then with the other, and each class has an equal probability of being the first.
2. If two classes form a coalition to reject the winning proposal, first, the coalition bargains with the excluded class and then, bargain with each other over the surplus appropriated in the preceding

it will be clear in what follows, the final payoffs are independent on whom rejected the democratic outcome.

Let  $f(\pi)$  denote the final surplus  $W$  is able to appropriate after forming a coalition with  $E_j$  against  $E_i$  and then bargaining with  $E_j$  on its own, or

$$f(\pi) = g(\{W^\pi, E_j\}, E_i, i) g(W^\pi, E_j, i).$$

Given assumptions (1)  $f(\pi)$  is increasing in  $\pi$ ; note moreover that  $\lim_{\pi \rightarrow 0} f(\pi) = 0$ .

Given that  $g(E_i, W^1, i) = 1$ , no individual (whether or not a party member) in  $W^\pi$  will obtain any share of the available surplus if it joins a coalition with the stronger elite.<sup>20</sup> Therefore neither  $W$  nor  $E_j$  will form a coalition with the stronger elite  $E_i$ . On the other hand, if  $\pi > 0$ , each party member in  $W^\pi$  will have an incentive to form a coalition with  $E_j$ , and  $E_j$  will have an incentive to form a coalition with  $W^\pi$ .

It follows that when  $\pi > 0$ , the payoff to  $E_i$  is  $1 - g(\{W^\pi, E_j\}, E_i, i)$ , the payoff to  $E_j$  is  $g(\pi) = g(\{W^\pi, E_j\}, E_i, i) g(E_j, W^\pi, i)$  and the payoff each individual in  $W$  is  $f(\pi)$ . Hence, whoever objected the democratic outcome (i.e.  $\Gamma(W)$  given that  $W$  alone will never have incentive to reject his own decision), there will always be a coalition formed by  $E_j$  and  $W$ , first bargaining against  $E_i$ , and then splitting the grabbed surplus among each other in a post coalition bargaining.

As the degree of organization only affect payoffs at the renegotiation stage, at time 2, the payoff to each individual in  $W$  belonging to the party of size  $\pi$  is  $u(f(\pi)) - c$  while the payoff from not joining the organization is 0. As  $u(0) = 0$  and  $u(\cdot)$  is continuous and  $\lim_{\pi \rightarrow 0} f(\pi) = 0$ ,  $\lim_{\pi \rightarrow 0} u(f(\pi)) = 0$ . Moreover, as  $u'(\cdot) > 0$ , and  $f(\pi)$  is continuous and increasing in  $\pi$ ,  $u(f(\pi))$  is also continuous and increasing in  $\pi$ .

Therefore, assuming that  $\underline{c}$  is sufficiently small, so that

$$\underline{c} < u(f(1)), \tag{2}$$

which represents a necessary condition for the party formation in  $W$ .<sup>21</sup> There will always

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round of bargaining.

<sup>20</sup>For this reason, anticipating a coalition with the stronger elite, for each individual in  $W$  it is a dominant strategy not to join the party (and pay a participation cost  $c > 0$ ).

<sup>21</sup>Note that this condition implies that the non elite is able to extract some surplus from the weaker elite

be a function  $\hat{\pi}(c)$ , implicitly defined as  $u(f(\hat{\pi})) = c$ , such that it is a dominant action for each individual in  $W$  to join the party if and only if  $\pi > \hat{\pi}(c)$ . Let us define  $\hat{\pi}(c)$  a *critical mass* and we note that since  $\hat{\pi}'(c) > 0$ , the elites can ex-ante decrease  $c$ , and therefore the critical mass for the party formation, by legalizing the political activity.

## 2.2 Equilibrium enfranchisement

In this section, we study: (i) surplus division at  $t = 1$ , the voting stage; (ii) the ex-ante decision of individuals in  $W$  to form a party at  $t = 0$ ; (iii) the ex-ante decision of the two elites to extend democracy at  $t = 0$ .

### Voting at $t = 1$

Fix  $\theta = i$ . Let  $\tau = (\tau_{E_i}, \tau_{E_j}, \tau_{W^\pi})$  denote a surplus sharing rule where  $\tau_{E_i}$  (respectively,  $\tau_{E_j}$ ) is the portion of the surplus appropriated by  $E_i$  (respectively,  $E_j$ ) and  $\tau_{W^\pi}$  is the portion of the surplus appropriated by  $W^\pi$ . If there is no democracy,  $\pi = 0$  and the only possible surplus division is  $\tau_{E_i} = 1$ ,  $\tau_{E_j} = \tau_{W^0} = 0$  as any other division will be rejected by the strongest elite. With democracy, the median voter is in  $W$  and the winning sharing rule is  $\tau_{E_i} = 1 - g(\pi) - f(\pi)$ ,  $\tau_{E_j} = g(\pi)$  and  $\tau_{W^\pi} = f(\pi)$ : by backward induction, if  $\tau_{W^\pi} > f(\pi)$ , either of the two elites will object and following such an objection,  $W^\pi$  will form a coalition with  $E_j$  and obtain  $f(\pi)$ .

It is important to note that *both* the voting stage and the enfranchisement of  $W$  are necessary to guarantee a different surplus allocation than in the oligarchy, in spite of the fact that the democratic surplus division mirrors the renegotiation payoffs. If the two elites legalize  $W$ 's organization but do not extend franchise, there will not be party formation in equilibrium. Assume on the contrary that  $\pi > 0$ . Then, the equilibrium surplus sharing would be  $\tau_{E_i} = 1 - g(\pi)$ ,  $\tau_{E_j} = g(\pi)$  and  $\tau_{W^\pi} = 0$  as surplus division will exclude the non-elite while ensuring that the weaker elite will extract  $g(\pi)$  by threatening to form a coalition with  $W^\pi$  at the renegotiation stage but ex-ante no individual in  $W^\pi$  would ever join the organization since  $\tau_{W^\pi} = 0$ .

### Party formation at $t = 0$

Recall that any member of  $W$  can join the organization at cost  $c$ , and that (a) if an

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in the post coalition game. Since  $c$  can be chosen arbitrarily small or even 0, the amount of surplus that the non elite can extract can be arbitrarily small, but strictly positive.

individual in  $W$  believes that a fraction  $\pi > \pi(c)$  will join the party, it is dominant for him to join as well, (b) if he believes that there is fraction  $\pi < \pi(c)$  joining the party, then it is a dominant action for him not to join as well.

In a democracy, collective political organization is legal and any member of  $W$  can join the organization at cost  $\underline{c}$ , with  $\hat{\pi}(\underline{c})$  representing the critical mass in democracy. Note that in democracy there are two symmetric equilibria in the collective action game being played by individuals in  $W$ : one where no individual in  $W$  joins the party and another where every individual in  $W$  will join the party.

Which of these two equilibria prevail? We develop an equilibrium selection argument that selects the prevailing equilibrium as a function of  $\underline{c}$ , the cost collective political activity with enfranchisement. Specifically, we show that without enfranchisement, the no party equilibrium is selected while with enfranchisement, the party equilibrium is selected.

**Lemma 1** *In the party formation game played by individuals in  $W$ , the equilibrium where everybody joins the party is selected if and only if  $\hat{\pi}(\underline{c}) < \frac{1}{2}$ .*

**Proof.** See the appendix. ■

The key premise underlying the equilibrium selection argument used here (Harsanyi and Selten (1988) and Young (1993)) is that individuals in  $W$  face strategic uncertainty as there are multiple strict Nash equilibria in the party formation game. Although Young's original argument was couched in an evolutionary context, we follow Charness and Jackson (2007) in reinterpreting the equilibrium selection argument as a recursive eductive (mental) process of where each individual assesses the likelihood of other individuals choosing actions according to either equilibrium, under the assumption that other individuals make a small mistake with some small probability and choose their own actions optimally. The selected equilibrium is the one which is relatively more robust to individual mistakes namely the one with a larger basin of attraction. Therefore, when  $\hat{\pi}(\underline{c})$  is small, individuals converge on the equilibrium where all individuals join the party. In the language of Harsanyi and Selten (1988), the selected equilibrium is risk-dominant.

Finally note that  $\hat{\pi}(\underline{c})$  is an increasing function of  $\underline{c}$ , and therefore, the condition that  $\hat{\pi}(\underline{c}) < \frac{1}{2}$  can be equivalently stated as a condition that  $\underline{c}$  is low enough. The following lemma summarizes the above discussion:

**Proposition 1** . *If the cost of joining a party in democracy,  $c$ , is sufficiently low, all individuals in  $W$  will join the party anticipating coalition formation with the weaker of the two elites at the renegotiation stage and a share  $f(\pi)$  at the voting stage.*

Furthermore, always using lemma 1 and considering the above discussion we can state the following:

**Proposition 2** *Both lowering the cost of joining the party to a level  $c$  such that  $\hat{\pi}(c) < \frac{1}{2}$  and the enfranchisement are necessary to achieve a surplus sharing different than the one in oligarchy.*

**Proof.** We already argued above— during the illustration of the voting stage— the necessity of extending the franchise. Now, let us consider an hypothetical situation where two elites extend franchise but do not lower the cost of joining the organization, so that  $c : \hat{\pi}(c) > \frac{1}{2}$ . Given lemma 1  $\pi = 0$  and the surplus allocation would be  $\tau_{E_i} = 1, \tau_{E_j} = \tau_{W^0} = 0$  : the enfranchisement of  $W$ , on its own has no real effect since any decision who attribute an allocation different than the one in oligarchy would be rejected by the stronger elite and renegotiated. ■

**Democracy at  $t = 0$**

Next, we study the choice of democracy at  $t = 0$ . To simplify notation, let  $f(1) \equiv f$  and  $g(1) \equiv g$ . As the two elites are identical ex-ante, both of them will agree to a democracy if and only if the inequality holds:

$$\frac{1}{2}u(1) + \frac{1}{2}u(0) \leq \frac{1}{2}u(1 - g - f) + \frac{1}{2}u(g) . \quad (3)$$

We can therefore state

**Proposition 3** *A necessary condition for  $E_1$  and  $E_2$  to democratize is that both elites are risk-averse. When both elites are risk-averse and  $f$  is small enough (relative to the degree of risk-aversion of  $u(\cdot)$ ), the transition to democracy is Pareto efficient. .*

**Proof.** See appendix. ■

Consider the case where individuals are risk neutral. In this case, as there are no gains from risk-sharing and  $f > 0$ , the expected utility of either elite at  $t = 0$  (before their relative bargaining power is revealed) in oligarchy is higher than the expected utility in

democracy. However, when elites are risk averse, there is a net gain in having a smoother consumption pattern across the two states, therefore, when  $f$  is not too large relative to degree of risk-aversion, the expected utility in Democracy could well be strictly higher than the expected utility in Oligarchy.

Furthermore, we note that the equilibrium democratic allocation is  $\tau_{E_i} = 1 - g - f$ ,  $\tau_{E_j} = g$  and  $\tau_{W^\pi} = f$  and that the only requirement for  $f$  is to be strictly positive (by assumption 2), i.e.  $f$  can be infinitesimally small. This implies that in our model the surplus allocated to the non elite in democracy can in principle be very small.

## 2.3 Discussion

*What is the role of the timing of organization formation in obtaining our main result?*

We have assumed that individuals in  $W$  form a organization at  $t = 0$  before the elites know their own relative bargaining power. We argue that no other timing makes sense and given the choice of when to form a organization, organization formation will take place at  $t = 0$ . Suppose organization formation takes place after elites know their relative bargaining strength. Then, the stronger elite will always have an incentive to increase  $c$  in order to prevent organization formation and thus coalition formation between the weaker elite and individuals in  $W$ . In our model, the cost  $c$  of organization membership is a sunk cost and organization members pay it only once at the time the organization is formed. What in effect, we are assuming, is that the stronger elite will find too costly to break-up an existing organization already formed at  $t = 0$ : if it doesn't then, of course, the organization in  $W$  will be broken up and democratization will reversed. Therefore, given the choice of when to form a organization, organization formation will take place at  $t = 0$ .

*Is our main result robust to repeated interaction between competing elites?*

On the face of it, folk theorem type arguments suggest that repeated interaction between competing elites in Oligarchy, should lead to efficient risk sharing between elites. However, there are at least two reasons why a folk theorem type argument may not apply here. First, the discount factor may be bounded away from 1 because, for instance, the gap between successive rounds of play (in our model, in Oligarchy, a round of play would have an ex-ante stage and ex-post stage of coalition formation and bargaining) is large. Second, the strategy profiles that support risk-sharing between elites may not be renegotiation-proof. Indeed, in our paper, there is a single efficient risk-sharing allocation between the two

elites namely that at each value of  $\theta$ , each elite appropriates half the social surplus in each round of play. Notice that for a strategy profile to be renegotiation proof, it would have to result in the efficient allocation after any history of play. However, any strategy profile that supports efficient risk-sharing along the equilibrium path of play must involve some payoff loss for the stronger elite in the continuation game that follows on from the history where the stronger elite reneges on efficient risk-sharing, a contradiction.

### 3 Elite conflict without democracy

In this section, in contrast to the preceding analysis, we examine two different scenarios where intra-elite conflict doesn't necessarily lead to democratization: vertical biases in coalition formation and dominant elites.

#### 3.1 Ethnic conflict

As already argued in the introduction, intra-elite conflict doesn't necessarily lead to stable democracy, especially when decolonization generates states that are populated by different social groups characterized by strong vertical links (like ethnic and linguistic links). In what follows, we show that with vertical bias, the conditions for democracy to emerge in equilibrium, derived in the preceding two sections, need to be qualified.

We model ethnic groups and ethnic conflict as follows. Assume that  $W$  is partitioned into subgroups  $W_1$  and  $W_2$ , such that each individual in  $W_i$  gets a negative utility  $-b_i$ , where  $b_i > 0$ , whenever it forms a coalition with elite  $E_j$ ; otherwise, (for example, if it doesn't form a coalition, or if it forms a coalition with elite  $E_i, j \neq i$ ),  $b_i = 0$ . We assumed that individuals have incentive to act collectively when anticipating a coalition with the weaker elite,  $u(f) > \underline{c}$ . However, if  $u(f) < \underline{c} + b_i$ , for all  $c \in \{\underline{c}, \bar{c}\}$ , clearly no individual in  $W_i$  will form a coalition with  $E_j$ , and, assuming that the size of group  $W_i$  is greater than half, then for  $\theta = i$ , the fraction of individuals who act collectively is less than  $\frac{1}{2}$  and therefore, there will be no organization formation in  $W$ , no ex-post coalition formation and consequently, no ex-ante democracy.

## 3.2 Dominant elites

Moore (1964) observes that the presence of a dominant elite results in dictatorship, not democracy. One way to model a dominant elite in our setting is to let the ex-ante probability that  $\theta = 1$  be  $q \geq \frac{1}{2}$ . In other words, the two elites are not ex-ante symmetric in the sense that there is a bias in the probability with which one of the two elites become dominant. In such a situation, even when we maintain the assumptions under which Proposition 1 is valid, as long as  $q$  close enough to 1, there will be no unanimous agreement to extend democracy. The relevant inequality that needs to be satisfied for the dominant elite to agree to democracy is

$$qu(1) + (1 - q)u(0) \leq qu(1 - g - f) + (1 - q)u(g) \quad (4)$$

and as  $f > 0$ , when  $q = 1$ , the direction of inequality (4) will be reversed and by continuity, this reversal will persist when  $q$  is close to 1. Of course, at the other extreme, when  $q$  is close to  $\frac{1}{2}$ , by continuity if (3) holds as a strict inequality so will (4). Moreover, as the LHS of (4) is increasing in  $q$  and the RHS of (3) is monotone in  $q$ , there is a  $\bar{q} > \frac{1}{2}$  and  $\bar{q} < 1$ , such that when  $q \leq \bar{q}$ , (3) holds while when  $q > \bar{q}$ , the direction of the inequality is reversed.

## 4 Some empirical patterns

In this section we provide and discuss empirical evidence that supports the formal analysis developed here. To this end, it is useful to state four patterns that emerge from our formal analysis:

1. In the absence of ethnic bias, intra-elite conflict between equally powerful elites is a precondition for the transition to democracy;
2. Democracy lowers the cost of, and promotes, political activity;
3. The bargaining power of a fully organized non-elite is small i.e. the non-elite median voter is weak;
4. The transition to democracy doesn't rely on interest alignment between sections of the elites and non elites following on from modern capitalistic development.

Only point 4 needs more explanation. An important literature links the transition to democracy with modern industrial development as in Lizzeri and Persico (2004), Llavador and Oxoby (2005) and Galor and Moav (2006). In these papers, the transition to democracy is driven by class complementarity or interest alignment between sections of the elite and non-elite, which follows the modern capitalistic development. In contrast, in our paper, neither technological change nor a different mix of production factors are needed to generate the coalition among classes leading democracy. Therefore from our model pattern 4 emerges, in the sense that economic development in itself is neither a sufficient nor a necessary element for the emergence of democracy.<sup>22</sup> Accordingly, in this section we argue that this pattern (as well as the other 3 listed above) has some empirical anecdotal support.

#### **4.1 Pattern 1: Intra-elite conflict and coalitions**

Collier (1999) classifies three different patterns which historically led to democratization: i) middle sector mobilization, ii) electoral support mobilization and iii) joint project. In ii), democratization is the outcome of bargaining between political elites and he considers the following cases: Switzerland 1848, Chile 1847/41, Britain 1867 and 1884, Norway 1898, Italy 1912, Uruguay 1918. In i) the democratization is an outcome of the conflict between political elite and economically rising middle-class (what we can consider as economical elites). This is the case of: Denmark 1849, Greece 1864, France 1848 and 1875, Argentina 1912, Portugal 1911 and 1918, Spain 1868, 1890 and 1931. In iii), where the working class played an active role alongside one of the two elites, Collier includes, Denmark 1915, Finland 1906 and 1919, Sweden 1907 and 1918, Netherlands 1917, Belgium 1918, Germany 1918, Britain 1918.

In what follows we analyze, in detail, some of these cases and also the establishment of democracy to India, a case that has received surprisingly little attention from the literature.

#### **European Countries**

There is some agreement among historians and political scientists that the elites in

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<sup>22</sup>This is not to say that development and democracy are completely unrelated. In our model democracy and development can be linked by the fact that economic development can be associated with the rise of strong industrial elite able to compete with traditional rural landowning aristocracy.

Britain had conflicting interests. Olson (1993) traces the origin of such fragmentation in the English civil war in the 17th century and writes. *“There were no lasting winners in the English civil wars. The different tendencies in British Protestantism and the economic and social forces with which they were linked were more or less evenly matched”*. The political environment after the Glorious Revolution led to the competition between rural aristocracy and industrial capital (Olson 1993), which paved the way for franchise extension in the mid-Nineteenth century. Moore (1966) claims instead that this division was the result of the British capitalistic evolution, where part of the landed upper class and the gentry who transformed themselves into capitalists generated a different and equally strong elite, the upper bourgeoisie.<sup>23</sup>

The British parliament prior to 1832 was dominated either directly or indirectly by the big landlords. The 1832 Reform act established the right to vote based uniformly on property and income. It extended franchise to 14% of male population, roughly the entire middle class (Smellie 1949 and Collier 1999). The 1832 act gave the de jure power to a section of the economic elite who were unrepresented under existing electoral arrangements. We may argue that it avoided the alliance between bourgeoisie and working class that 44 years before led in France to the revolution. Accordingly, the landscape after the reform of 1832 was the one described by our model with two conflicting elites, who –represented in the parliament by the Conservatives and the Liberals– agreed to extend, with the largely bipartisan reform of 1867, franchise to a large part of the working class, a task that was completed by the reform in 1888 when about 60% of male adult were enfranchised.

The turmoil of the French revolution and the restoration of monarchy following the Vienna Congress resulted, in France, in a social environment dominated by two elites with conflicting interests. One elite, supporting the Republican party, mainly consisted of industrialists and professionals, and the other elite, mainly consisting of landowners, supported the monarchist party, while the working class was weak and still not organized (Elwitt (1975) pp. 5 and Luebbert (1991) pp. 37). In this context an episode can illustrate the bargaining relationship emphasized in the model: universal male suffrage was introduced in France 1848. When a social reform agenda was passed thanks to the alliance between the working class and republicans, a conservative government disenfranchised 2.8 million

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<sup>23</sup>The political struggles related to the Corn Laws are often presented as the most evident sign of the division among industrialist and rural elites.

of men in 1850. However, in 1851 the Republicans and the working class supported the coup led by Louis Napoleon Bonaparte, who restored the universal suffrage, initially only formally and from 1868, under the pressure of Republicans and working classes more substantially by establishing the freedom of organization previously banned (Collier 1999, pp. 42-43 and Elwitt pp. 41).

Unlike France and Britain, Italy, Germany and Japan did not pass through historical episodes that weakened the traditional aristocracy and created conditions leading to intra-elite competition. In fact, the landed aristocracy was strengthened by their involvement in reunification process both in Germany and in Italy and by prestigious external military victories in Japan. Therefore, in all these three countries, the landed aristocracy was still dominant in the second half on nineteenth century. The oligarchic structure in Italy, Germany and Japan was mainly achieved through an incorporation of a weak bourgeoisie in an authoritarian state, and the landed aristocracy was still hegemonic in this alliance "...a commercial and industrial class which is too weak and dependent to take the power and rule in its own right [...] throws itself into the arms of the landed aristocracy and the royal bureaucracy". (Moore (1964), pp. 435-437).

In Germany, Bismarck's so called *revolution from above* (Moore 1962, pp. 433) was a strategy to preserve the conservative absolutist order, in his own words to "*overthrow parliaments with parliamentary means*". Popular participation in the Germany government was strongly mitigated by institutional restrictions and the voting system was controlled by the Junker landlords. Similarly, mainly rural oligarchies governed in Italy and Japan until the establishment of their respective fascist governments between the 1920s and the 1930s, and after short-lived weak democracies (the Weimar Republic, the Taishō democracy in Japan, and Giolitti's governments in Italy). All main political figures: Bismarck in Germany, Cavour in Italy and the statesmen of the Meiji era embodied the interests of the landed aristocracy, and were deep conservative loyalists themselves. Even during the subsequent dictatorships, the landed aristocracy often maintained a strong position.<sup>24</sup>

## India

India is the world's biggest and one of its more stable democracies. In the more than

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<sup>24</sup>In Italy for example, fascist leaders used to declare that fascism was "ruralizing Italy" and Mussolini promoted an strongly autarchic economic policy "la battaglia del grano" (the battle of wheat) throughout his rule.

50 years since the first election, there have been 15 general elections and over 300 state elections. Both at the state level and at the centre, governments have always been elected by people with a reasonably high level of rotation among political organizations.<sup>25</sup> As it has been extensively documented, India enjoys a free media, freedom of assembly and association.

The decision to extend the franchise was voted unanimously by the constituent assembly, which also declared India an Independent state. The constituent assembly was elected via a process of indirect elections, organized in provincial legislatures elected in early 1946, using the 1935 act of franchise, mainly based on landowning. The electors constituted about 10 percent of the entire population (Sarkar 2001). Therefore, the constituent assembly can be considered to be representative of the elites and franchise extension in India was a one-shot decision rather than a dynamic process.

At the onset of the constituent assembly, the elites were constituted by large landowners and the industrial urban class often in conflict within each other. These divisions were already present in the Mogul's era but they were further exacerbated by the English rulers, who implemented the policy of "divide and rule", trying to prevent the formation of any coalition that could represent a threat. British rulers favoured and rested mainly on the support of Indian rural upper classes: native princes and large landlords.<sup>26</sup> In contrast, British colonialism did not favour Indian commercial and industrial elites, to prevent competition with their English counterparts who, for long time, sought protection, subsidy, and opportunities for monopolistic exploitation of the Indian market (Moore 1966, pp 371). This bias toward rural elites alienated the commercial and professional class generated a clear split between rural and urban elites in India. Accordingly, the British strategy resulted in the fact that the urban elite did not form a coalition with the powerful landed aristocracy, in a fashion which generated the dictatorial drift in Japan, Italy and Germany. The conflict between urban intellectual elites and rural big and medium farmers is a common element present in the history of Indian Democracy.

In this respect India differed from Pakistan. Geographically, Pakistan consists of regions

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<sup>25</sup>Although the Congress has traditionally been the dominating force, in 1977 it is thrown out. In 1980 it was voted back and in 1989 elections it was voted out again. In 1991, the Congress came back to power again.

<sup>26</sup>In the most important court there was a British resident advisor.

which- during British colonialism- were characterized by mainly rural economy, dominated by Muslim Punjabi landlords.<sup>27</sup> The Punjabi elites, consisting mainly of the landed aristocracy (e.g. Kohli, 2001, pp. 5) were the core of the Muslim League who decided the constitutional design of the country, and obtained partition from the rest of India. Although the creation of Pakistani democracy was contemporaneous with Indian democracy, it has never been stable with four major military coups (1958, 1969, 1977, 1999).

The following episode is a useful illustration of the coalition dynamics underlined in our model. Indira Gandhi's attempt to mount a coup (by imposing "Emergency") in 1975 culminated with the loss of the enormous popular support she had hitherto enjoyed and indeed, she called and lost elections in 1977. Even though she promised more redistribution to the non elite, this commitment was not credible and an alliance consisting of the non-elite with anti-Congress parties opposed her.<sup>28</sup>

The degree of ethnic conflict in India has always been less serious than for example in African countries. The fact that the Congress organization and the coalition of organizations in power at the central government during the different legislatures are not organized on an ethnic basis supports this claim (Horowitz 1985). Indeed, we showed that if part of non elites say  $W_i$ , have ethnic linkages with part of the elites  $E_i$ , and for these reasons  $W_i$  has some non monetary disutility  $b_i$  in allying with  $E_j$ ,  $j \neq i$ , democracy will not emerge in equilibrium when  $b_i$  is large. The lower level of inter-ethnic conflict in Indian society is perhaps due to the geographic dispersion of Indian ethnic groups, which made them economically complementary and lower the level of  $b$ . And perhaps due to sanskritisation and castes institutions, which to a certain extent reflect horizontal divisions rather than vertical ethnic-type division. On the contrary, when different ethnic groups are concentrated in different regions of the country, it is more likely that non-elites will not ally horizontally with each other, but prefer to ally vertically with the elites of the same ethnic group.

In Nigeria after independence three essentially ethnic organizations had emerged: the Northern People's Congress (NPC) drawing its support from the Hausa and Fulani tribes of the North, the Action Group (AG), drawing its support from the Yoruba tribes of West-

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<sup>27</sup>Until 1971, the presence of a Bengali-muslim population in Pakistan generated a conflict with the west Pakistani majority, but their political power has always been small (Rashiduzzaman 1982). In 1971, the Bengali minority, with the help of India, obtained their independence with the formation of Bangladesh.

<sup>28</sup>Kohli (2001) notes: "The fact that she was voted out of power following the emergency only confirm the efficacy of Indian democracy".

ern Nigeria, and the National Council of Nigeria and the Cameroons (NCNC) relying on the support of the Igbo of Eastern Nigeria. This clear regional divide was inherited from the British colonial period, where the South East, the South West and the North administrations were in practice ruled as fully independent units.<sup>29</sup> Interestingly, community identities were so strong in shaping economic participation and social differentiation that a clear divide between classes did not emerge (Forrest pp. 24, 1993). Furthermore, we note that these three macro-regions are still today economically autonomous entities, predominantly agrarian in terms of employed labor force (more than 70 percent). The two rainy southern regions is where, historically, the production of staple tree and root crops is concentrated while the drier north is where the production of grains is concentrated (Olaloku et al. 1979).

The vertical ethnical division resulted, in Nigeria, in a series unstable democratic regimes. The first elections held in Nigeria in 1959 saw the victory of the NPC, which after one year declared the state of emergency in the western region whose local government, leaded by the AG, was proscribed and its leader arrested. The non elites, did not reject this outcome and instead of turning compact against the elites who disenfranchised them, they split along the ethnic and geographic lines, which lead the country to a long civil war that lasted until 1970 (Ake 1985).

## 4.2 Pattern 2: The cost and organization of political activity

It is quite incontrovertial that democracy does not prevent and, on the contrary, encourages collective political activity. The constitutions of all main democracies dedicate one important article to the freedom of association or (/and) organization formation. In what follows we provide a sample consisting of the oldest and largest democracies.

- Canada: constitution act article 2 point d, guarantees freedom of association.
- France: article 4 (Title I) states “Political organizations and groups shall contribute to the exercise of suffrage. They shall be formed and carry on their activities freely (...)”.

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<sup>29</sup>The nationalistic party that after the independence forced the creation of a single state.

- Germany, article 9 (freedom of association) states “All Germans have the right to form associations and societies”.
- Japan, article 21, (...) Freedom of assembly and association as well as speech, press and all other forms of expression are guaranteed (...).
- India, article 19 point c , “freedom to form associations or unions”;
- Italy, article 18 (freedom of association) “Citizens have the right freely and without authorization to form associations for those aims not forbidden by criminal law.”
- Turkey, article 33, “Everyone has the right to form associations, or become a member of an association, or withdraw from membership without prior permission.”.
- US: 1st amendment, “(...) the right of the people peaceably to assemble (...)”.

On the other side, Dahl (1989, p. 241) for the period 1981-85 classifies 85 countries (out of 168) as completely non democratic and notice that 70 among them have a total control of non-state collective organizations.

### **European Countries**

In Great Britain, after the 1867 Reform Act, parties began to organize themselves as mass organizations and create institutions needed to compete at a national level (Acemoglu and Robinson, 2006, p. 179). Several small socialist groups had formed around this time with the intention of linking the movement to political policies. Among these were the Independent Labour Party, the intellectual and largely middle-class Fabian Society, the Social Democratic Federation and the Scottish Labour Party, this leads in 1900 to the formation of the Labour Representation Committee a centralized parties representing the working class. Furthermore, mass mobilization was achieved also through the creation of the national Union of Conservative Associations in 1867, and the National Liberal Federation in 1877, with the aim of coordinating and organizing local associations constituted mainly by workmen’s classes (Beattie 1970, pp. 138-144).<sup>30</sup>

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<sup>30</sup>Taken literally, our model explains the formation of a single party for the non elites, but this is only the result of simplifying assumptions. In principle, non-elite can organize themselves in different bodies and also by joining preexisting parties, this would not change the nature of our results to the extent that the resulting organizations successfully coordinate to mobilize the non-elites in case of disenfranchisement threats.

In France, the elections in 1848 under manhood universal suffrage, prompted the formation of the first mass organization, Republican Solidarity. This organization established branches in sixty-two of France's eighty-six departments and rapidly acquired about thirty-thousand members in 353 branches and it was formed by bourgeois, petty bourgeois and working class (Aminzade .1993, pp. 29-32).<sup>31</sup> Interestingly, Louis Napoleon during the initial repressive years of his regime declared Republican Solidarity illegal, but he never restricted suffrage. Republican Solidarity then almost disappeared, but it was revived with success in 1868, when Napoleon restored the formal democracy by removing the ban to any form of collective political activity.

## **India**

The mass mobilization in India is a more complicated phenomenon than in the western European countries since it is inherently linked with the nationalistic and anticolonial movement. The Congress party, founded at the end of the nineteenth century became a mass organization after the first World War, in large part due to Gandhi. It is also interesting to notice that the Lahore demand for independence in 1929 was accompanied by a sharpening of the notion of democracy. The Nehru Report of 1928 suggested adult franchise and from the Faizpur session of 1936 onwards the Congress made a Constituent assembly elected by universal suffrage one of its central demands (Sarkar 2001, p. 29).

## **4.3 Pattern 3: The weak median voter**

### **European Countries**

A necessary condition for the democratization is that the ability of the working class to extract surplus is limited and that the organized working class on its own is weak (and becomes powerful only if allied with one elite). This is clearly consistent with Przeworski (1997) who notes:

“Here it may be worth noting that democratic system was solidified in Belgium, Sweden, France and Great Britain only after organized workers were badly defeated in mass strikes and adopted a docile posture as a result.” (Przeworski (1997, p. 133)

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<sup>31</sup>For example in the city of Toulouse the most outspoken republican militants were: 55% belonging to the working class, 21% bourgeois and 21% petty bourgeois.

In the UK, the enfranchised classes represented in the parliament by the Conservatives and the Liberals agreed to extend, with the reform of 1867, franchise to a large part of the working class, a task that was completed by the reform in 1888 when about 60% of male adult were enfranchised. In general this second wave of enfranchisement does not seem to be due to the strength of the working class. On the contrary, there is some agreement that the working class in England was too weak to represent a serious threat as Lizzeri and Persico (2004) argue. The democratic demand from the lower class was represented by the Chartist movement, whose revolutionary power had its peak in the demonstration of 1848 that was brutally crushed. Therefore, one can argue that the Chartist movement did not necessarily entail a real chance of revolution in Britain (Wende 1999, pp. 147).

Similarly in France during the Paris' commune, where the urban working class— without the alliance of the Republicans— seized the power and governed Paris for few months was crushed by the troops of the Third Republic, which supports the claim, also put forward by Elwitt (1975) and Luebbert (1991), on the weakness of the working class as an autonomous force in France.

What about the ex-post capacity (the political power) of surplus extraction of the median voter in the European countries in the period immediately after the democratization? Democracy spreads in most of the Western Europe in the period 1830-1920. Aidt, Dutta and Loukoianova (2006) analyze 12 European countries in this period and find that enfranchisement generated low increases in welfare expenditure and a shift of the government expenditure from justice and police to infrastructure provision. The low increase in welfare expenditure seems consistent with claim that the de facto power of the working class remained low after enfranchisement.

## **India**

Indian democracy has done very little to increase the living standard of the majority of Indian citizens. As Weiner notes:

“The incorporation into the political system of backward caste elites and members of scheduled castes has apparently done little to reduce the enormous social and economic disparities that persist in India’s hierarchical and inegalitarian social order. That raises the fundamental question: if there are now so many OBC and scheduled castes bureaucrats and politicians, why is not reflected in state policies to promote the well being of their communities? (...)

Why has the increase in political power for members of the lower castes done so little to raise these communities?" (*Weiner (2001) pp 211*).

Weiner's observations are supported by Figure 4, depicting the index of wealth concentration and relative poverty in India from 1946- the date of the constituent assembly, which allowed for universal suffrage- to the early 1990s.<sup>32</sup> We can observe that income inequality and relative poverty has no downward trend- little or no redistribution has taken place.<sup>33</sup> Altogether, the funds allocated for the three main antipoverty programs constituted only the 4% of the total allocation in the plan where this project took place.<sup>34</sup>

Furthermore, we can observe very little evidence of extensive education provision; the share of individuals above 25 years that completed the first level is very low, 6.3% in 1960, 11 years after the first election. And it does not appear to be much higher in 1990, 8.5%, after 41 years of democracy.<sup>35</sup> Moreover there is a widespread consensus that level of health care is persistently neglected in many part of India. For example, Sen (1995) states:

"If we were to look back at what has happened in India in the first four decades of planned development, two general failures appear particularly glaring. First, in contrast with what was promised by the political leadership which took India to independence, very little has been achieved in "the ending of poverty and ignorance and disease and inequality of opportunity" [...]. Four decades of allegedly "interventionist" planning did little to make the country literate, provide a wide-based health service, achieve comprehensive land reforms, or end the rampant social inequalities that blight the material prospects of the underprivileged."

INSERT FIGURE 1 HERE

The policy after independence mainly favoured agrarian, industrial and professional urban elites. The agrarian reform was not redistributive; there was a transfer of ownership from absentee landlords to enterprising rich farmers, who benefited also from policy of price

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<sup>32</sup>Gini index and last income quintile: Deininger and Squire, High quality Dataset. GDP per capita growth: Penn Table.

<sup>33</sup>Deininger and Squire, High quality Dataset.

<sup>34</sup>Brass 1990.

<sup>35</sup>Barro and Lee Dataset.

support, subsidized inputs and institutional credits (Bardhan pp. 46 1988).<sup>36</sup> Substantial help was also addressed to industrialists, mainly from a few top Western Indian business families, with strong protectionist policies of import substitution, trade restriction, and large public provision of capital goods, intermediate goods, infrastructural facilities for private firms often at artificially low prices (Bardhan pp. 41-47). Also the professionals and high level bureaucrats were favoured by the government policy. In a country where the illiteracy is so widespread, this class benefited from educational expenditure. In India, total expenditure on education has been generally lower than comparable developing countries and a disproportionate share of the education budget has gone into higher education and to provide grants-in-aid to private schools with very little left for primary education (Weiner 1999, pp. 214). This policy favoured the educated urban classes by helping their children for secondary education and maintaining their monopoly as human capital owners (Bardhan, 1988 pp. 52).

There is a high level of fragmentation of lower castes. The caste system was an institutional way to organize this fragmentation, but at the same time, it perpetrated these divisions. A proof of this political weakness is represented by the general weakness of the Communist organizations in India. They have never been strong at a central level, and, when they gained power at the state level, as in West Bengal, they have always supported moderate policies of redistribution rather than dramatic change in the economic system. Therefore, we can argue that Indian lower classes would never be able to have an high level of bargaining power on its own (*i.e.*  $f$  is sufficiently small).

#### **4.4 Pattern 4: Growth and democracy**

Is democracy linked to industrial development? The evidence on this issue is moot. There is a relatively old debate on the so-called "modernization theory" that democratization naturally follows the development process. This was initially fuelled by an article of Lipset (1959) subsequently criticized by Luebbert (1991) and O' Donnell (1973) among others. O' Donnell, in particular, argues that the collapse of democracy in Latin-America in the 1960s and 1970s undermined the confidence in the modernization-promoted democracy. The In-

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<sup>36</sup>By 1975 the big farmers (more than 4 hec) constituting 19 percent of the rural population accounted for 60 percent of cultivated area.

dian experience (at least till the late 1980's) provides an example of a reasonably stable democracy in an stagnating economy (in figure 1 we show the Indian GDP growth rate until 1990). Furthermore, if it is true that in some western countries like Britain, Sweden and France, the process of industrialization was closely associated with a process of democratization, it is also true that in some other countries like Germany, Italy and Japan equally impressive episodes of industrialization led to totalitarian regimes. Consistently with this observation, recent empirical evidence casts serious doubt on the causality from economic development to democratization (Przeworski et. al. (2000), Acemoglu, Johnson, Robinson, Yared (2005), and Persson and Tabellini (2006)).<sup>37</sup>

## 5 Final Remarks

The following quote is a good way of summarizing our main result:

*“In a country where the elements in the dominant coalition are diverse, and each sufficiently strong to exert pressures and pulls in different directions, political democracy may have slightly better chance, than in other developing countries,(...). This is based not so much on the strength of the liberal value system in its political culture as on the procedural usefulness of democracy as an impersonal (at least arbitrary) rule of negotiation, demand articulation and bargaining within coalition, and as a device by which one partner may keep the other partners at the bargaining table within some moderate bounds”* Bardhan (1984, p.77).

In particular, our model clarifies how democracy can be seen as a negotiation device by which competing elites ensure a mutually fair share of the surplus by handing formal power to a weak non-elite median voter.

Possible directions for future research include investigating, more generally, voting models with an endogenously weak median voter, understanding the provision of and funding of public goods with a weak median voter and studying the link between secessionist movements and democratic institutions.

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<sup>37</sup>Other contributions such as Barro (1999), Boix and Stokes (2003), Bueno De Mesquita et al.(2003), Glaeser, Ponzetto and Shleifer (2005), reach contradictory conclusions.

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## 6 Appendix

### 6.1 Proof of lemma 1

We use the idea of a stochastically stable equilibrium developed by Young (1993) (see also Charness and Jackson (2007)). Let  $g$  be an arbitrary finite normal form game with a set of  $N$  players, an action set  $A^i$  for each player and a payoff function  $u^i : \times_{i=1}^N A^i \rightarrow \mathfrak{R}$ . Suppose each player believes that whenever any other player chooses to play a specific action, with probability  $\varepsilon$ ,  $0 < \varepsilon < 1$ , she ends up choosing some other action in  $A^i$ . Let  $g(\varepsilon)$  denote the perturbed game. A state in  $g(\varepsilon)$  is a profile of actions. For each state, let each player pick a best response to that state in  $g(\varepsilon)$ . Associated with each best-response is a function  $\alpha$  from the set of states to itself. When  $\varepsilon$  is small enough, let the set of  $\alpha$ 's that remain best responses for all smaller  $\varepsilon$  be denoted by  $A(g)$ . Any  $\alpha \in A(g)$ , together with  $\varepsilon$  defines a Markov process over the set of states that is both irreducible and aperiodic and therefore has a unique steady-state distribution. A stochastically stable state is one which has positive probability under the limit of the steady state distribution of the preceding Markov process as  $\varepsilon$  goes to zero for any selection  $\alpha \in A(g)$ . If a state is both a Nash equilibrium of  $g$  and a stochastically stable, then it is said to be a stochastically stable equilibrium of  $g$ .

As matters stand, we can't apply, in a straightforward way, the definition of a stochastically stable equilibrium to select between the two equilibria in the coordination game played by non-party members in  $W$ . The reason for this is that there is a continuum of individuals, of unit measure, in  $W$  while the definition of stochastic stability presupposes a game with a finite number of players. Instead, we take a sequence of finite subsets of players in  $W$  (equivalently, a finite grid contained in the unit interval) whose limit is  $W$  (equivalently, whose limit is the unit interval). Let  $\tilde{N}_j$ ,  $j \geq 1$ , be a sequence of finite grids contained in the unit interval so that  $\lim_{j \rightarrow \infty} \tilde{N}_j = [0, 1]$ . Let  $N_j = \#\tilde{N}_j$ . We call a sequence of finite grids admissible if (i) there is a threshold  $\bar{N}_j$  for each  $j$  such that  $\lim_{j \rightarrow \infty} \frac{\bar{N}_j}{N_j} = \hat{\pi}(\underline{c})$ , (ii) the payoff to a party member is  $u(f) - c$  if the number party members is greater than or equal to  $\bar{N}_j$  and is  $-c$  otherwise, (iii) the payoff to a non-party member is zero. For an equilibrium to be stochastically stable in the coordination game played by individuals in  $W$ , it must be the limit of the sequence of stochastically stable equilibria of all admissible sequences of finite grids converging to the unit interval.

Fix  $j$  and consider  $\tilde{N}_j$ . For  $\tilde{\varepsilon}$  small enough, if at least  $\bar{N}_j$  individuals join the party, then the best response of each non-party member must be to choose join the party as well. Similarly, if at most  $\bar{N} - 1$  join the party, then the best response of each non-party member must be to join the party. Let  $\#N_j^p$  be the number of party members. In states where  $\#N_j^p = \bar{N}_j - 1$ , choosing either of the two options, join the party or not join the party, are possible best responses for an individual. It follows that that best responses differ only in states where  $\#N_j^p = \bar{N}_j - 1$ . Now, consider the associated Markov process for small  $\tilde{\varepsilon}$ . There are two recurrent communication classes<sup>38</sup>, one where all individuals choose to join the party (labelled  $a_1$ ) and one in which all individuals choose not to join the party (labelled  $a_2$ ). By Theorem 4 in Young (1993), only states in a recurrent communication class with least resistance will have positive probability weight in the limit of the steady state distribution of the Markov process as  $\tilde{\varepsilon}$  goes to zero. Consider the state  $a_2$ . Then, (i) there is a best response selection such that given  $N_j - \bar{N}_j + 2$  errors, the best response of each individual is to be in  $a_1$  and (ii) there is a best response selection such that given  $N_j - \bar{N}_j + 1$  errors, the best response of each individual is to be in  $a_1$ . Therefore, the minimum resistance of leaving the state  $a_2$ , depending on the selection made, is either  $N - \bar{N} + 1$  or  $N - \bar{N} + 2$ . It follows that the minimum resistance of a tree oriented from the state  $a_2$  to the state  $a_1$ , depending on the best response selection made, is either  $N_j - \bar{N}_j + 1$  or  $N_j - \bar{N}_j + 2$ . Next, consider the state  $a_1$ . Then, (i) there is a best response selection such that given  $\bar{N}_j - 1$  errors, the best response of each individual is to be in  $a_2$  and (ii) there is a best response selection such that given  $\bar{N}_j - 2$  errors, the best response of each individual is to be in  $a_2$ . Therefore, the minimum resistance of leaving the state  $a_1$ , depending on the best response selection is either  $\bar{N}_j - 1$  or  $\bar{N}_j - 2$ . It follows that the minimum resistance of a tree oriented from the state  $a_1$  to the state  $a_2$ , depending on the best response selection made, is also either  $\bar{N}_j - 1$  or  $\bar{N}_j - 2$ . The state  $a_1$  is the unique stochastically stable equilibrium if and only if both  $N_j - \bar{N}_j + 1 < \bar{N}_j - 1$  and  $N_j - \bar{N}_j + 2 < \bar{N}_j - 2$  or equivalently, both  $\bar{N}_j > \frac{N_j+2}{2}$  and  $\bar{N}_j > \frac{N_j+4}{2}$ . As  $\frac{N_j+2}{2} > \frac{N_j+4}{2}$ , if  $\bar{N}_j - 2 > \frac{N_j}{2}$ , the state  $a_1$  is the unique stochastically stable equilibrium. Rewriting these inequalities, it follows that state  $a_1$  is the unique stochastically stable equilibrium if and only if  $\frac{\bar{N}_j-2}{N_j} > \frac{1}{2}$ . As  $j \rightarrow \infty$ , for any admissible sequence of finite grids,  $\frac{\bar{N}_j-2}{N_j} \rightarrow \hat{\pi}(\underline{c})$ . and therefore, when  $\hat{\pi}(\underline{c}) > \frac{1}{2}$ , the

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<sup>38</sup>For the definition of the terms "recurrent communication classes", "resistance" and "minimum stochastic potential" in this proof, see Young (1993).

unique stochastically stable equilibrium is one where all non-party members do not join the party or equivalently, when  $\hat{\pi}(\underline{c}) < \frac{1}{2}$ , the unique stochastically stable equilibrium is one where all non-party members join the party.

## 6.2 Proof of Proposition 3

Inequality (3) is equivalent to

$$\int_{1-g-f}^1 u'(x)dx \leq \int_0^g u'(x)dx. \quad (5)$$

When both elites are risk-neutral i.e.  $u''(\cdot) = 0$ , by computation, it follows that as  $1 - (1 - g - f) = g + f > g$ , the direction of the inequality (3) is always reversed. Therefore, risk-aversion is a necessary condition for equilibrium enfranchisement. However, when  $u''(\cdot) < 0$ , as  $1 - (1 - g) = g$  and  $0 < g$ ,

$$\int_0^g u'(x)dx > \int_{1-g}^1 u'(x)dx$$

and therefore, as long as  $f$  is small enough, (3) will hold.

## 6.3 Endogenising the grabbing function

We show how the grabbing function can be endogenously derived as the outcomes of a process of sequential bilateral Nash bargains, where first, a coalition of two classes bargains with a class and second, given the surplus appropriated at the proceeding stage, each class in the coalition bargains with each other.

For each pair of coalitions  $\gamma, \gamma', \gamma' \in \Gamma(\gamma)$ , we model the raw force of a coalition by its disagreement function  $d_{\gamma, \gamma'}(\theta)$ . Measuring the surplus  $\gamma$  is able to appropriate in the event of civil war against  $\gamma'$ . Moreover, for each  $\gamma \in \Gamma$  and  $\gamma' \in \Gamma(\gamma)$ , there is a continuous function  $c : [0, 1] \rightarrow [0, 1]$  with  $d_{\gamma', \gamma}(\theta) = c(d_{\gamma, \gamma'}(\theta))$  such that whenever  $0 < d_{\gamma, \gamma'}(\theta) < 1$ ,  $d_{\gamma, \gamma'}(\theta) + c(d_{\gamma, \gamma'}(\theta)) < 1$  but  $\lim_{d_{\gamma, \gamma'}(\theta) \rightarrow 1} c(d_{\gamma, \gamma'}(\theta)) = 0$  and  $\lim_{d_{\gamma, \gamma'}(\theta) \rightarrow 0} c(d_{\gamma, \gamma'}(\theta)) = 1$  so that there is surplus destruction after the civil war but the surplus destruction is minimal when one coalition or class completely overwhelms the other. Finally, we assume that both  $d_{\{W^\pi, E_j\}, \{E_i\}}(i)$  and  $d_{\{W^\pi\}, \{E_i\}}(\theta)$  are continuous and increasing in  $\pi$  with  $\lim_{\pi \rightarrow 0} d_{\{W^\pi\}, \{E_j\}}(i) = 0$  and  $\lim_{\pi \rightarrow 0} d_{\{W^\pi, E_j\}, \{E_i\}}(i) = d_{\{E_j\}, \{E_i\}}(i)$ .

Our analysis of sequential Nash bargaining proceeds by backward induction. First, when both  $\gamma, \gamma'$  each consists of a single class (labelled as  $k, l$ ), and the available social surplus is  $s > 0$ , the Nash bargaining outcome is the solution to the maximization problem:

$$\max_{c_k, c_l} (u(g_k s) - u(d_{\{k\}, \{l\}} s)) (u(g_l s) - u(d_{\{l\}, \{k\}} s))$$

At an interior solution, the first-order conditions characterizing the solution to this maximization problem is:

$$\frac{u'(g_k s)}{(u(g_k s) - u(d_{\{k\}, \{l\}} s))} = \frac{u'((1 - g_k) s)}{(u((1 - g_k) s) - u(d_{\{l\}, \{k\}} s))}$$

Note that when  $d_{\{k\}, \{l\}}$  increases the LHS of the proceeding equality increases and therefore, as  $u''(\cdot) < 0$ ,  $g_k$  must increase to maintain equality. Therefore,  $g_k$ , viewed as function of  $d_{\{k\}, \{l\}}$  and  $d_{\{l\}, \{k\}}$ , is continuous in both arguments, increasing in  $d_{\{k\}, \{l\}}$  but decreasing in  $d_{\{l\}, \{k\}}$ . Moreover, if  $d_{\{k\}, \{l\}} > d_{\{l\}, \{k\}}$ ,  $g_k > g_l$ . As  $d_{\{k\}, \{l\}} \rightarrow 0$ , by assumption,  $\lim_{d_{l,k}(\theta) \rightarrow 0} c(d_{l,k}(\theta)) = 1$  and therefore, in the limit,  $g_k \rightarrow 0$  and  $g_l \rightarrow 1$ .

Next, we define the "utility function" of a coalition of classes  $\{k, l\}$  as the value function  $V_{\{k,l\}}(s)$  derived from the solution to the Nash Bargaining maximization problem between  $k, l$  for a fixed  $s$ . Note that by standard results in duality,  $V_{\{k,l\}}(s)$  is an increasing, concave function of  $s$ . When the coalition  $\{k, l\}$  bargains with the class  $\{m\}$ , then the Nash bargaining outcome is the solution to the following maximization problem:

$$\max_{c_i} (u(g_m) - u(d_{\{m\}, \{k,l\}})) (V_{\{k,l\}}(g_{\{k,l\}}) - V_{\gamma}(d_{\{k,l\}, \{m\}}))$$

At an interior solution, the FOC is:

$$\frac{u'(g_m)}{(u(g_m) - u(d_{\{m\}, \{k,l\}}))} = \frac{V'_{\{k,l\}}(1 - g_m)}{(V_{\{k,l\}}(1 - g_m) - V_{\gamma}(d_{\{k,l\}, \{m\}}))}$$

Using arguments identical to those used before,  $g_m$ , viewed as function of  $d_{\{m\}, \{k,l\}}$  and  $d_{\{k,l\}, \{m\}}$ , is continuous in both arguments, increasing in  $d_{\{m\}, \{k,l\}}$  but decreasing in  $d_{\{k,l\}, \{m\}}$  and if  $d_{\{m\}, \{k,l\}} > d_{\{k,l\}, \{m\}}$ ,  $g_m > \frac{1}{2}$  and whenever  $d_{\{k,l\}, \{m\}} \rightarrow 0$ ,  $g_{\{k,l\}} \rightarrow 0$  and  $g_m \rightarrow 1$ .

By an appropriate change of notation, define

$$g(\{k\}, \{l\}, \theta) = g_k(d_{\{k\}, \{l\}}(\theta), d_{\{l\}, \{k\}}(\theta))$$

and

$$g(\{m\}, \{k, l\}, \theta) = g_m(d_{\{m\}, \{k, l\}}(\theta), d_{\{k, l\}, \{m\}}(\theta)).$$

It follows that under the assumptions made  $d_{\gamma, \gamma'}(\theta)$  so far, we have that (i)  $g(\gamma, \gamma', \theta) = 1 - g(\gamma', \gamma, \theta)$ , (ii)  $g(E_j, E_i, i) < g(E_i, E_j, i)$ , (iii)  $\lim_{\pi \rightarrow 0} g(W^\pi, E_i, \theta) = 0$  and  $\lim_{\pi \rightarrow 0} g(\{W^\pi, E_j\}, E_i, i) = g(E_j, E_i, i)$ , (iv) both  $g(\{W^\pi, E_i\}, E_j, \theta)$  and  $g(W^\pi, E_i, \theta)$  are increasing in  $\pi$  and finally, (v)  $f(\pi)$  is continuous in  $\pi$ .

Therefore, all the properties of the  $g(\gamma, \gamma', \theta)$  used in the text can be derived by a process of sequential Nash bargaining. ■

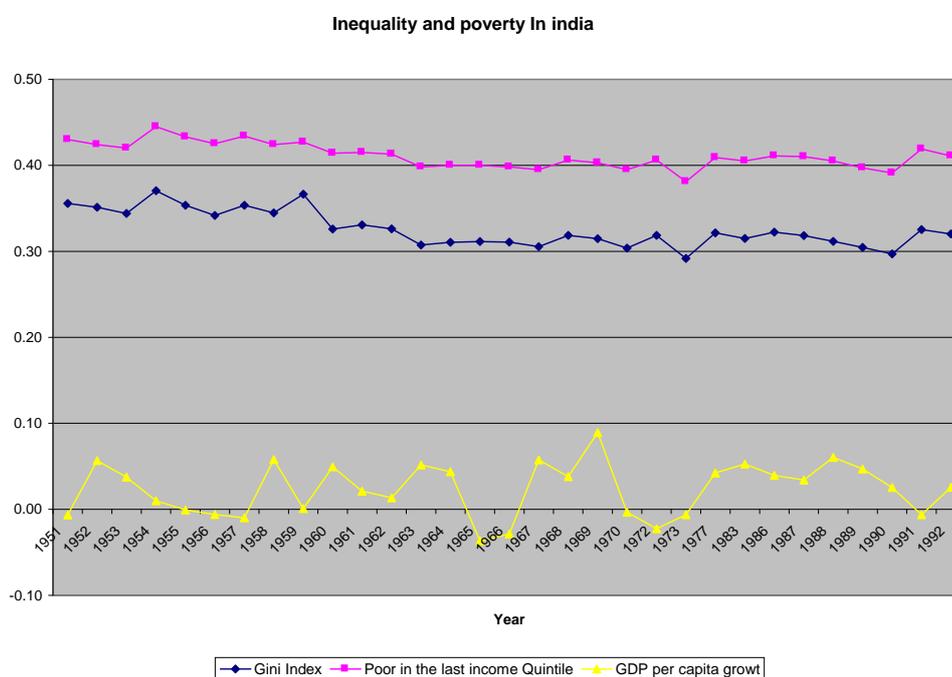


Figure 1