Endogenous Political Institutions

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Abstract

Political institutions influence economic policy, but they are themselves endogenous since they are chosen, in some way, by members of the polity. An important aspect of institutional design is how much society chooses to delegate unchecked power to its leaders. If, once elected, a leader cannot be restrained, society runs the risk of a tyranny of the majority, if not the tyranny of a dictator. If a leader faces too many ex post checks and balances, legislative action is too often blocked. As our critical constitutional choice we focus upon the size of the minority needed to block legislation, or conversely the size of the (super)majority needed to govern. We analyze both "optimal" constitutional design and "positive" aspects of this process. We derive several empirical implications which we then discuss.

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1 Introduction

Political institutions contribute to determine the choice of economic policies, which, in turn, determine economic success.[1] However, institutions themselves are chosen by individuals and they evolve in response to changing politico-economic conditions. Thus, in order to fully understand and properly test empirically the economic effects of institutions on economic policies and outcomes, one has to allow for the endogenous choice of the latter. The goal of this paper is to highlight how several characteristics of a society lead to different institutional choices.

We focus on a very general feature of political institutions and we label it the degree of "insulation" of policymakers. An insulated leader[2], once appointed, can rule with little or no ex post control. A non insulated one, instead, has to form large majorities to pass legislation and many groups may have veto power ex post. Alternatively, one can view this question as the determination of the (super)majority needed to pass legislation.

Classical political theorists were well aware of the importance of this aspect of constitutional design. For instance, in *Democracy In America,* Alexis de Tocqueville stressed that "Our contemporaries are incessantly racked by two inimical passions; they feel the need to be led and the wish to remain free"[3]. The Founding Fathers well recognized this dilemma. For instance, in the Federalist paper n. 70 Hamilton writes that "Taking for granted ..that all men of sense will agree in the necessity of an energetic executive, it will only remain to inquire what are the ingredients which constitute this energy? How far can they be combined with those other ingredients which constitute safety in the Republican sense?" The theory of checks and balances, embodied in the work by Montesquieu (1748) provided the answer adopted by the framers of the American Constitution. More specifically, the question of supermajorities as a way to restrain the "tyranny of the majority" features prominently in the Constitutional theory by Hayek (1960) and in Buchanan and Tullock (1962). The latter, for instance, argue that the simple majority rule does not have any particular "superior" standing and under certain conditions may lead to excessive costs imposed on individual liberties by collective action.

We model "insulation" as the share of votes needed to block legislation to pass, or, to put it in reverse, we look at the size of the (super)majority that the leader has to command to pass legislation. The "Constitution" establishes

[1] For a broad empirical discussion on how institutions affect economic policy see Persson and Tabellini (2002) and the references cited therein. For recent empirical work on the effect of institutions on fiscal policy see Milesi-Ferretti, Perotti and Rostagno (2002). For the effect of democracy on growth see Barro (1996). Gil, Mulligan and Sala-i-Martin (2002) argue that the effect of political institutions on social security is small, contrary to arguments by Persson and Tabellini (2002).

[2] We use the terms leader, policymaker and politician interchangeably.

[3] Volume 2, part 4, Chapter 6, page 664 from the translation by Mansfield and Winthrop (2000).

the degree of insulation, and we abstract from all other institutional details. We analyze first the case of a "perfect democracy" in which all citizens are truly behind a veil of ignorance at the time of the constitutional choice and all have a vote in this choice. We show how various features of the politico-economic environment affect this choice, including: the distribution of voter preferences; the nature of uncertainty; the feasibility and costs of compensating the losers from policy reforms; the possibility for leaders to expropriate citizens; the average benefits and costs of potential policy reforms; the degree of risk aversion.

Second, we investigate the political economy of institutional design. That is, we discuss how the optimal choice of institutions would or would not be adopted in a system where the choice was not made completely behind a veil of ignorance and/or only a fraction of the population has a voice in the choice of institutions. What we have in mind is a situation in which those who choose a Constitution are also those who know who will control political office after the Constitution is ratified. In this case, what is optimal for those who choose the Constitution may not be optimal for society as a whole.

Our model delivers several results with clear empirical implications. Although the present paper is mainly theoretical, the goal of this research project is empirically motivated and in the last section of the paper we discuss some empirical implications and predictions of our model. More extensive empirical work will be the focus of future research.

Related to the present paper is a recent literature on "choosing how to choose", i.e. voting on voting rules. Aghion and Bolton (1997) introduce an incomplete contract methodology to analyze the normative choice of optimal majority rule. Maskin and Tirole (2001) provide a somewhat related discussion of government accountability. Barbera and Jackson (2001) investigate the endogenous choice of a majority voting rule, investigating conditions of existence of a self-stable voting rule, an issue that we will revisit below. Koray (2000) explores instead social choice functions and whether such functions are self-selecting. In an overlapping generations setting Polborn and Messner (2002) identify a trade off arising in the selection of voting mechanisms over a reform when only part of the population (the old) incurs the cost of the reform, but not the subsequent benefits.

The paper is organized as follows. In section 2 we describe the model and its interpretation. Section 3 solves the model and derives basic comparative statics results. Section 4 illustrates several extensions. Section 5 discusses the "political economy" of writing constitutions. Section 6 highlights several empirical implications of our model and brings about empirical support. The last section highlights plans for future research.

2 Political Insulation

2.1 The Model

Consider an economy populated by a continuum of individuals, assumed, for the moment, to be risk-neutral with respect to income. Members of this polity will differ ex post on how much they benefit from policy actions (labelled "reforms") which may be implemented. If no reform is implemented, all individuals obtain the same income, which we normalize at 1. Individual income from the policy reform is given by:[4]

$$\widetilde{y}_i = \begin{cases} \widetilde{\lambda}_i \gamma & \text{if reform occurs} \\ 1 & \text{otherwise} \end{cases} \qquad \text{with } \gamma > 0 \tag{1}$$

where

$$\widetilde{\lambda}_i = \lambda_i + a,$$

with λ_i uniformly distributed on $[\underline{\lambda}, \overline{\lambda}]$, with $\underline{\lambda} < \overline{\lambda}$ and

$$\lambda_m \equiv \frac{\overline{\lambda} + \underline{\lambda}}{2}$$

From now on, we label $l = \overline{\lambda} - \underline{\lambda}$. a is a random variable with mean zero, uniformly distributed between $[-A, A]$, where $A > 0$. We use the uniform distribution to obtain simple closed-form solutions, but below and in Appendix we show how our results generalize. Note that if $\lambda_m \gamma > 1$ the policy reform is ex ante efficient in the sense that it makes the average (and median) voter better off.

This community selects a leader to promote and implement reforms. With exogenously given probability p the selected leader is "good" and promotes the reform; with probability $(1-p)$ the leader is "bad" and expropriates (in the broad sense of the term) the polity. Next section on interpretation discusses some reasons behind our specification of the political trade off in such terms. Also for the moment we assume that all individuals are ex ante identical in terms of their wealth, so the costs of expropriation for each individual is the same and we label it bw. Since we assume that w is for the moment identical for everyone, we normalized it to 1.

Whether good or bad, a new reform can be blocked by a (super) majority M of individuals, once the aggregate shock on preferences "a" is realized. We define M the "degree of insulation": if M is high, only a large majority of voters can block the reform. On the contrary, a low M means that when in office the leader is checked by a large fraction of the electorate. Thus a leader passes a reform only if a fraction $(1-M)$ of the population favors it or can expropriate only if $(1-M)$ of the population does not object to this policy.

[4]The following specification builds upon Krusell and Rios-Rull (1996) and Aghion and Howitt (1998, Ch.9) on the political economy of vested interests.

Note that when $M < 1/2$ then supermajorities are needed to pass legislation. Also, in order to expropriate the leader has to "buy off" a fraction $(1 - M)$ of the population in order not to be blocked. Thus, ex ante each individual in the polity faces probability M of being subject to the expropriation, if the latter is not blocked.

The model, then, identifies a trade off at the constitutional stage: a more insulated leader can be less easily blocked, so the probability that a good reform passes is higher, but individuals are also more likely to suffer losses from expropriation. The choice of M occurs *ex ante*, before the realization of "a" and the size of M cannot be made contingent upon the realization of a. Thus, we assume that the corresponding events cannot be described ex ante, and we rule out social contracts contingent upon messages that voters would exchange ex post about the realization of these random variables. For the moment we assume that the $\widetilde{\lambda}_i$ are not observed by the politician and that the politician cannot compensate the losers. We analyze the case in which the constitutional choice on M is made behind a complete veil of ignorance; that is, all individuals are identical and learn their "λ_i" after the constitutional choice is made.

In summary, the timing of "events" is as follows:

i) M is chosen at the constitutional stage, by individuals behind a veil of ignorance, that is before the realization of the λ_i in the interval $\left[\underline{\lambda}, \overline{\lambda}\right]$;

ii) λ_i is realized;

iii) the politician proposes the reform or the expropriation;

iv) the uncertainty on the distribution of ex post preferences is realized;

v) blocking of the reform may occur; the reform is implemented if and only if it is not blocked by the voters; if the leader is "bad" he expropriates, up to the point that avoids blocking.

The motivation of this timing needs discussion. Stage i) represents the "constitutional level" in which decisions are made behind a veil of ignorance. Stage iii) is rather trivial. The only role of the politician is to promote a reform, that passes if not blocked, or to expropriate the citizens. Steps iv), and v) capture the post electoral "dynamics" between leader and voters. The latter implies that after the realization of the shock "a" the voters still retain a choice to block ex-post undesirable reforms. If the threshold for blocking M is set low, then the voters insure themselves that they will have a "voice" ex post. However, this makes reforms easily blocked. On the other hands, if M is high, reforms pass more easily, but a larger fraction of the population may be expropriated, thus, *ex ante*, the probability that each person is taxed is higher.

2.2 Interpretation

There are four critical elements in our model that need discussion. The first one is our notion of "reform". If $\lambda_m \gamma > 1$ the reform embodies an element of efficiency, but also may involve winners and losers. Note that the parameter γ allows us to shift the overall benefit of the reform keeping the median voter and the distribution of voters unchanged.[5] Examples of policy reforms that we have in mind include trade liberalization reforms, competition or entry-enhancing policies, deregulation, labor market reforms, reforms of the social security system or fiscal adjustment packages to eliminate deficits. These reforms may ex ante favor a majority, but create net costs for a minority. Ex post, as a consequence of aggregate uncertainty, the distribution of costs and benefits may differ from the ex ante one, and, as a result, the distribution of those in favor and against the reforms may change over time. The reforms for which $\lambda_m \gamma < 1$ favor a minority but are harmful to the majority, at least *ex ante*, although they may be not harmful ex post.

The second element is the structure of uncertainty about the realization of voter preferences. The constitutional decision is taken behind a veil of ignorance, before the realization of the parameter λ_i for all i's and with all individuals facing the same status-quo outcome in case reforms do not occur, an assumption we shall relax below. The preference shock a has to be interpreted as a change of the distribution of preferences occurring after the leader has taken office and while he is implementing his policy. This is meant to capture the idea that as a reform materializes through the effort of a leader new voters come in or the population at large "matures" definitive preferences about the reform for instance as they learn more precisely who will be a winner or loser form the reform.

The role of the political leader in the basic model is highly stylized. A leader is needed to promote the reform and to pass it (unless it is blocked). However, the leader can take advantage of his position to expropriate. Obviously, if the citizens could prompt reforms without a leader, expropriation would not occur, but we emphasize the realistic idea that a centralized entity is needed to coordinate the reform policy. Also the Constitution could prohibit expropriation, but not reforms that would be a Pareto improvement. In reality it is difficult to fully restrain the authority of the government in this respect to expropriation without restricting its ability to govern in other areas. We will return to this issue below.

The third important element is the degree of insulation, captured by the parameter M which we view as a "summary statistic" for a wide variety of institutional rules that limit the power of appointed leaders. The most direct interpretation of M refers to the question of what majority a government has to command to pass legislation. In general terms the issue of the "optimal

[5] We could achieve similar effects by setting $\gamma = 1$ and varying λ_m. However we prefer this notation, which also makes it easier to analyze infinite horizon extensions (see Section 4.4).

supermajority" rule is a widely debated question by Constitutional theorists. Those who favor supermajority rules (low insulation) worry about limiting the power of appointed leader and about the tyranny of the majority. Those who oppose them view the (simple) majority rule as the essence of democracy.

The real world example closest to the letter of the model would be a popular referendum on policy, an institution that is however, reasonably seldom used. In this case the most extreme form of non insulation would be a referendum that requires a majority of 100 per cent to pass legislation, so that any individual voter can block policy. This institutional arrangement would set expropriation to zero, but would make it impossible to pass any legislation which is not a Pareto improvement. Given that referendum is rarely used, in the majority of institutional settings blocking takes place indirectly, within the institutional structure of delegation.

In the case of Presidential regimes like the US, one can view the Presidential-Congressional relationship as a key element of the system of checks and balances[6]. In parliamentary democracies the question of "insulation" refers to the control over the power of the Prime minister and the relationship between majority and minority in parliament. For given size of the parliamentary majority the power of the executive, the agenda setter, is also determined by the voting rules within the parliament, an issue that has received much discussion in the literature[7]. Various voting rules governing procedures within legislatures can be interpreted as giving more or less insulation to the executive, i.e. in most cases the "leader" who holds a majority[8]. For example, an important distinction is one between "open rules" and "closed rules" in parliamentary voting. With open rules the legislature has a vast latitude in amending policy proposals of the agenda setter (the government); with closed rules the government can prevent amendments to its proposals and, as a result, it has a larger strategic power. One may a priori associate open rules with low insulation (low M) and closed rules with high insulation (high M), since they imply different degrees of strategic power for the executive. A vast literature on "fiscal institutions," emphasizes the different effects on fiscal policy of "hierarchical" versus "horizontal" systems. Key elements defining the former are rules that make it easier for the executive to overcome Parliamentary opposition in passing the budget. On the contrary "horizontal" institutions are those for which at every stage of the process large consensus is required to pass fiscal policy decisions. The evidence shows that "hierarchical" institutions are associated with faster and more efficient fiscal reforms and fiscal adjustments when needed[9]. Similar arguments apply to "fast

[6]This is a point already made by Hayek (1960). See Alesina and Rosenthal (1995) for an extensive formal discussion of this issue.

[7]See for instance Baron and Ferejohn (1989) and Baron (1991). On bicameralism see Diermeier and Myerson (1995).

[8]In some cases we can have minority governments, in which the executive does not command a simple majority in the legislature. See Persson and Tabellini (2000)

[9]See the volume edited by Poterba and Von Hagen (1999) for an extensive discussion of

track" legislation in trade. This procedure is viewed in the US as critical for the implementation of free trade agreements, which otherwise might be blocked by various special interests.[10]

Another important element of insulation refers to the role of the judiciary. A well functioning and truly independent judiciary system can "block" reforms when they depart from proper constitutional grounds. La Porta et al. (2002) distinguish between a British style and American style judiciary as a guarantee of freedom, as in Hayek (1960). The former restricts the power of the ruler to interfere with the administration of justice, the latter gives more power to the judiciary by allowing it to interfere more in the legislative process by checking its adherence to the will of the people sanctioned by the constitution[11]. In fact, the role of the Courts in American history has been extensive. In a famous case, in 1893 the Supreme Court blocked the introduction of a federal income tax and it took the Sixteenth amendment of the Constitution, almost 20 years later, to overcome this block. Skocpol (1992) discusses how the role of the Courts in US history influenced and shaped the evolution of its welfare state through a series of "blocks" of welfare policies in defense of property.

Finally, with regard to the role of legislative institutions, a broad interpretation of "M" could include a comparison of different electoral rules. Proportional rules tend to produce political systems in which "governing by coalition" is the norm, rather than the exception. In majoritarian systems, the majority party can govern with fewer constraints.[12] Even more broadly, one could also use "M" to compare dictatorship or oligarchy versus fuller democracy. In a sense, one can think of a dictatorship as a system in which a ruler, when in office (no matter how he gets there), is uncontrolled, while an essential element of democracy is some sort of checks and balances on the politicians, above and beyond the fact that the latter are elected.

Finally some readers may find that we simplify too much and that we ignore too many details of institutional design. There are two answer to this criticism. A more apologetic one is to say that one has to start with a simple model and further research will add complications and institutional details. We discus some of these issues in the Conclusion. The more "aggressive" response is that, in fact perhaps the details of institutional design do not matter that much and the fundamental issues of supermajorities, insulation and veto power are critical

these issues. The choice of status-quo point in case the parliamentary negotiation process fails, for example when discussing the budget, also affect the extent to which the political system insulates agenda-setters; see Aghion and Bolton (1997) for a detailed discussion on this point, with reference to the constitutional change in France in 1958.

[10] See Grossman and Helpman (2001).

[11] La Porta et al. (2001) classify 71 constitution along the "British- American" dimension and find that the American system is a better predictor of political freedom, while the British system is a better predictor of economic freedom.

[12] Persson and Tabellini (2001) and Milesi-Ferretti, Perotti and Rostagno (2002) present recent studies which compare proportional versus majoritarian systems concerning fiscal policy choices.

regardless of the details of different systems. We believe that there is an element of truth in both arguments.

3 Solution of the Model

We proceed by backward induction. In stage vi) the voters with low $\widetilde{\lambda}_i$ oppose the reform; those with high $\widetilde{\lambda}_i$ favor it. A cutoff point divides these voters:

$$\widehat{\lambda} = \frac{1}{\gamma} \tag{2}$$

The realization of "a," for given M, determines whether or not the reform passes or not. The reform will pass if and only if:

$$\frac{\widehat{\lambda} - (\underline{\lambda} + a)}{l} < M$$

or $a > \widehat{\lambda} - \underline{\lambda} - lM$. Therefore, *ex ante* the expected utility of the generic voter, who is behind a veil of ignorance, is given by:

$$\max_M \left\{ p \left(\int_{-A}^{\widehat{\lambda}-\underline{\lambda}-lM} \frac{1}{2A} da + \int_{\widehat{\lambda}-\underline{\lambda}-lM}^{A} (\lambda_m + a)\gamma \frac{1}{2A} da \right) - (1-p)bM \right\} \tag{3}$$

Obviously for $\widehat{\lambda}-\underline{\lambda}-lM > A$ the reform would never pass, while for $\widehat{\lambda}-\underline{\lambda}-lM < -A$ the reform would always pass. The first two terms in (3) represent the expected benefits of the socially efficient reform (multiplied by the exogenously-given probability of such an event, p), the second the expropriation. Note that *ex ante* behind a veil of ignorance and with risk neutrality the generic voter acts as the "average" voter. Looking first for an interior solution to maximizing (3) relative to M, and remembering that $\widehat{\lambda} = 1/\gamma$, we obtain, after straightforward maximization:

$$M^* = \frac{1}{2} - \frac{2Ab\frac{1-p}{p}}{l^2\gamma} \tag{4}$$

whenever the RHS of (4) is positive. If the RHS of (4) is negative, then the optimal insulation level will be

$$M^{**} = 0.$$

One can then immediately establish:

Proposition 1

The preferences of voters are single peaked on M^* and the optimal degree of insulation is either zero or it is interior to the interval (0,1) and equal to the

expression above if positive. In the latter case, the following comparative static properties hold:

$$\frac{dM^*}{db} < 0; \quad \frac{dM^*}{d\gamma} > 0; \quad \frac{dM^*}{dp} > 0; \quad \frac{dM^*}{dl} > 0; \quad \frac{dM^*}{dA} < 0.$$

Proof: By inspection.
Several comments are in order.

1. First, note that in the absence of expropriation ($b = 0$) (or with no bad leaders, $p = 1$) we have:

   $$M^* = 1/2.$$

   This result follows from risk-neutrality and the utilitarian nature of the maximization problem in (3) but it extends to more general distributions of idiosyncratic and aggregate shocks on preferences, as we show in Appendix. The intuition is as follows[13]. Suppose there were only two alternatives, x and y to be chosen between ex post. Ex ante the individuals in the constituency (of size normalized to 1) are under the veil of ignorance and do not know whether they will prefer x or y. Suppose k is the number of individuals that prefer x to y. If an individual has ex post income α if her preferred alternative is selected and income $(-\beta)$ if the other alternative is chosen, then under risk-neutrality the ex ante total utility of choosing alternative x, is equal to:

   $$U(x) = \alpha k - \beta(1-k);$$

   similarly:

   $$U(y) = -\beta k + \alpha(1-k)$$

   if alternative y is chosen. Choosing $M = 1/2$ will then guarantee that the alternative that maximizes total ex ante utility is always chosen, namely x whenever $k > 1/2$, and y otherwise. This reasoning extends to collective decision problems like ours that boils down to a utilitarian maximization problem: if $M > 1/2$ (resp. $M < 1/2$) then reforms would take place too (resp. not sufficiently) often from the standpoint where voters expect their preferences for reform to lie ex post.

2. Insulation is decreasing in the probability $(1-p)$ of expropriation and in the loss b from it. Thus, low protection of property rights (i.e. higher scope for expropriation) would require lower insulation.

3. Insulation is increasing in γ, the average benefit of the reform. With more expected benefit from the reform, the voter behind a veil of ignorance is willing to accept a higher risk of expropriation in order to increase the probability that the reform passes.

[13] This was kindly suggested to us by Matthew Jackson and it builds on Rae (1969).

4. Insulation is decreasing in A and increasing in l. In order to gain intuition about these last two results it is useful to study the *ex ante* probability that the policy reform passes (i.e. the probability that the fraction of individuals below the threshold is less than M). This probability $\phi(M)$ is given by:

$$\begin{aligned}\phi(M) &= \Pr\left(\frac{\widehat{\lambda}-\underline{\lambda}-a}{\overline{\lambda}-\underline{\lambda}} \leq M\right) \\ &= \frac{1}{2}+\frac{1}{2A}\left(lM-\frac{1}{\gamma}+\underline{\lambda}\right). \qquad (5)\end{aligned}$$

Note, first, that $\partial\phi(M)/\partial M = l/2A$ is increasing in l. This is because M represents the required *fraction* of individuals necessary to block the reform, so that Ml is the required *number* of blocking individuals. Thus, the higher l, the more an increase in the fraction M will increase the probability that the reform is not blocked, and therefore the higher the expected gain from increasing insulation.

Second, $\partial\phi(M)/\partial M = l/2A$ is decreasing in A. This can be interpreted as a *status-quo bias effect* of uncertainty. In order to gain intuition, consider first the special case where $l = \overline{\lambda} = 1$ and $M = \frac{1}{\gamma} = 1/2$; in this case, the reform will be not blocked whenever $a > 0$, that is with probability $1/2$, for any admissible value of A. Next, suppose that $M = 1/2 > \frac{1}{\gamma}$; then, the reform will pass for all a's such that $a + 1/2 > \frac{1}{\gamma}$, that is for all positive realizations of a and also for $a \in (\frac{1}{\gamma} - 1/2, 0)$; the higher A the smaller the set $(\frac{1}{\gamma} - 1/2, A]$ relative to the overall support $[-A, A]$; in other words, higher aggregate uncertainty will increase the relative weight of blocking losers among the whole set of voters; similarly, when $M > 1/2 > \frac{1}{\gamma}$, then the reform will pass for all a's such that $a + M > \frac{1}{\gamma}$, that is for all positive realizations of a and also for $a \in (\frac{1}{\gamma} - M, 0)$; once again, the higher A, the smaller the set $(\frac{1}{\gamma} - M, A]$ relative to the overall support $[-A, A]$. So, to the extent that with no aggregate uncertainty ($A = 0$) and for given M the reform would not be blocked, then more uncertainty decreases the effect of increasing M; that is it increases a status quo bias[14]. The status-quo bias effect in turn implies that an increase in aggregate uncertainty of the reform outcome, measured by A, should reduce insulation: a higher A reduces the extent to which increasing insulation helps increasing the probability of reform while the expropriation cost of increasing insulation remains unaffected by A.

This last comparative statics result may explain why decisions such as the signing of new international treaties or changes in the Constitution often entail

[14]For a different and insightful model of status quo bias in policy reforms see Fernandez and Rodrik (1990)

lower political insulation than more routine decisions. For example, while enlargement decisions require unanimity vote within the EU council of ministers, ordinary decisions only require a qualified majority vote.

4 Extensions

4.1 Polarization of Preferences

Let us now investigate the case of a non linear distribution of λ_i. In order to keep things simple we introduce a very stylized form of non linearity in the distribution, namely, we assume that a point mass $\Delta(\leq 1/2)$ is now added to the two extremes of the distribution $[\underline{\lambda}, \overline{\lambda}]$. Obviously the median and average point of the distribution, λ_m, does not change. The reform will not be blocked if and only if:

$$\frac{\widehat{\lambda} - \underline{\lambda} - a}{l}(1 - 2\Delta) + \Delta \leq M$$

At the constitutional stage the optimal choice of insulation will solve:

$$\begin{aligned} & \max_M \left\{ p \left(\int_{-A}^{\widehat{\lambda} - \underline{\lambda} - \frac{(M-\Delta)l}{(1-2\Delta)}} \frac{1}{2A} da + \int_{\widehat{\lambda} - \underline{\lambda} - \frac{(M-\Delta)l}{(1-2\Delta)}}^{A} (\lambda_m + a)\gamma \frac{1}{2A} da \right) - (1-p)bM \right\} \\ = & \max \left\{ \begin{array}{c} (\widehat{\lambda} - \underline{\lambda} - \frac{(M-\Delta)l}{(1-2\Delta)} + A) + (A - \widehat{\lambda} + \underline{\lambda} + \frac{(M-\Delta)l}{(1-2\Delta)})\lambda_m \gamma \\ + \left(\frac{A^2}{2} - \frac{\left(\widehat{\lambda} - \underline{\lambda} - \frac{(M-\Delta)l}{(1-2\Delta)}\right)^2}{2} \right) \gamma - 2A\frac{1-p}{p} bM \end{array} \right\}. \end{aligned}$$

The first order condition for this maximization implies:

$$M^* = \frac{1}{2} - \frac{2Ab\frac{1-p}{p}}{l^2\gamma}(1 - 2\Delta)^2.$$

Proposition 2

The optimal degree of insulation within a system depends positively on the polarization parameter Δ :

$$\frac{dM^*}{d\Delta} > 0.$$

Proof: By inspection.

The implication of this result is that more polarization of preferences lead to more insulation. To better understand this result, consider for a moment the alternative case where polarization only occurs at the bottom of the preference distribution, i.e. where there is a probability mass of Δ at $\lambda_i = \underline{\lambda}$ only. In this case the reform would not be blocked ex post whenever:

$$\frac{\widehat{\lambda} - \underline{\lambda} - a}{l}(1 - \Delta) + \Delta \leq M,$$

The analogous maximization as above leads to the first order condition:

$$\frac{1}{(1-\Delta)}\left(\left(\left(\lambda_m(1-\Delta)+\underline{\lambda}\Delta\right)\gamma-1\right)l+l\gamma\left(\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)\,l}{(1-\Delta)}\right)\right)-2A\frac{1-p}{p}b=0.$$

In this case an increase in the degree of polarization Δ would have an ambiguous effect on insulation. On the one hand, if we abstracted from its negative effect on the expected return from the reform $\left(\lambda_m(1-\Delta)+\underline{\lambda}\Delta\right)$, an increase in polarization would increase insulation as formally proven in Appendix. This choice would be justified to avoid opposition to reform by the lower tail of the preference distribution. On the other hand, the fact that more polarization at the bottom also reduces the expected reform outcome leads to an ambiguous overall effect of downward polarization on insulation; this latter effect is eliminated in the case analyzed above where polarization occurs symmetrically at both ends of the preference interval and individuals are risk-neutral. In the next section we shall see how polarization interacts with risk aversion.

4.2 Risk Aversion

Let us now return to the basic model, with no polarization of preferences, that is $\Delta=0$, and a uniform distribution of λ_i, but let us add a very simple form of risk aversion, with ex post individual utilities being given by:

$$u(y_i)=\begin{cases} y_i & \text{if } y_i \geq \theta, \\ -u & \text{otherwise,} \end{cases}$$

where y_i is ex post income and where $u>0$. Thus, only if income is above a threshold θ we have the same utility as in the basic model. We assume that the status quo outcome is always above such threshold (i.e. $\theta<1$) linking more tidily risk aversion and reform. Moreover, for simplicity we take the probability of a bad reform to be zero, i.e. $p=1$. Incidentally, this also shows that with risk aversion one obtains a well defined interior solution for M^* even without expropriation.

In this case the choice of M will solve the following problem:

$$\max_M\left\{\int_{-A}^{\widehat{\lambda}-\underline{\lambda}-lM}\frac{1}{2A}da+\int_{\widehat{\lambda}-\underline{\lambda}-lM}^{A}\left(-u\int_{\underline{\lambda}}^{\frac{\theta}{\gamma}-a}\frac{1}{l}d\lambda_i+\int_{\frac{\theta}{\gamma}-a}^{\overline{\lambda}}(\lambda_i+a)\frac{\gamma}{l}d\lambda_i\right)\frac{1}{2A}da\right\} \tag{6}$$

given that, in case of reform, the bad outcome occurs to every i for whom $(\lambda_i+a)\,\gamma<\theta$. To further simplify the algebra we assume the threshold θ to be 0; in this case sufficient conditions to have risk aversion operative are that $\underline{\lambda}\leq 0$ and that the reform is ex ante efficient, i.e. $\lambda_m\gamma>1$. Such restriction on the parameter space are meant to make the analysis under risk aversion meaningful.

Tedious, but straightforward maximization leads to the following:

$$M^*=\frac{1+l\gamma+u-\sqrt{(2u\gamma l+u^2+2\gamma l)}}{l\gamma}$$

Proposition 3

The optimal degree of insulation within a system depends negatively on the risk aversion parameter u :

$$\frac{dM^*}{du} < 0.$$

Proof: See Appendix.

Thus, more risk aversion leads to lower insulation: in choosing insulation, *ex ante* the voter takes into account the risk of falling below 0 ex post. Thus, more risk aversion leads to choosing a system were ex post policy reforms can be more easily blocked.

Now let us reintroduce polarization of preferences with a positive mass of individuals Δ at both ends of the interval $[\underline{\lambda}, \overline{\lambda}]$, as in the previous subsection. Also let us set for simplicity such an interval to be symmetric around zero, i.e. $\underline{\lambda} = -\overline{\lambda}$.

Proposition 4

For sufficiently large degree of risk-aversion as measured by u, more polarization reduces insulation:

$$\frac{dM^*_{\Delta,u}}{d\Delta} < 0.$$

where $M^*_{\Delta,u}$ is the optimal degree of insulation for this case which is explicitly defined in Appendix.

Proof: See Appendix.

The intuition for this result is straightforward: more polarization increases the risk of ending up at the bottom of the preference distribution, which in turn leads to a low income when the reform is implemented; reducing insulation will limit that risk.

4.3 Compensation

In general, those who are net losers from a policy reform can be compensated by transfers, even though the latter will generally induce welfare costs, such as the costs of distortionary taxation. Suppose that after M is chosen, a fixed amount of resources ω can be raised from all individuals through taxes, and assume for simplicity that taxes are raised before the idiosyncratic and aggregate shocks on preferences are realized. Note that this implicitly assumes that any increase in income obtained through the reform cannot be used to compensate, since the amount available for compensation is fixed ex ante. The maximum amount of ω is w which represents initial individual wealth. The only purpose of taxation is to compensate losers for the reform, which means that if the available resources for compensation exceed the needs they are returned lump sum at no cost and the leader does not retain any revenue for private benefits.

The operation of this transfer scheme involves a positive deadweight cost k per unit of taxed funds, and the net tax revenues are used by the politician to compensate the required number of losers in order to avoid blocking. Ex post, for

given realization of the aggregate shock a, either more than $(1-M)$ individuals are willing to support the reform even without any compensation (this will be the case whenever $\frac{\widehat{\lambda}-a-\underline{\lambda}}{\overline{\lambda}-\underline{\lambda}} < M$), in which case no compensation will take place; or passing the reform requires compensations to be made (this will be the case when $\frac{\widehat{\lambda}-a-\underline{\lambda}}{\overline{\lambda}-\underline{\lambda}} > M:$ the politician needs to compensate the fraction $\frac{\widehat{\lambda}-a-\underline{\lambda}}{\overline{\lambda}-\underline{\lambda}} - M$ of individuals for potential loss of utility due to the reform). Compensations are paid to enough individuals who would, ex post, vote against the policy reform, in order to keep them in. Obviously, the "cheaper" individuals are compensated, i.e., those closer to the cut point of indifference between having or not having the reform. This, however, requires that the preferences of individual are ex post observable, since compensations are made dependent on them. If preferences are not observable, either transfers scheme are not operational or they require some revelation mechanism. We do not explore this question here.

Thus the total amount of compensation needed to pass a reform is given by:

$$c(a) = \int_{\underline{\lambda}+lM}^{\widehat{\lambda}-a} (\widehat{\lambda} - \lambda_i - a)\frac{1}{l}d\lambda_i$$

Obviously if $\underline{\lambda} + lM > \widehat{\lambda} - a$, no compensation is needed. Straightforward manipulation leads to:

$$c(a) = \frac{(\widehat{\lambda} - \underline{\lambda} - lM - a)^2}{2l}$$

A policy reform will pass with compensation paid if and only if:

$$(1+k)c(a) \leq \omega$$

Two cases must be considered:

(1) $\widehat{\lambda} - \underline{\lambda} - lM^* + A < \left(\frac{2l\omega}{1+k}\right)^{\frac{1}{2}}$, which will be true whenever ω is sufficiently large (i.e. enough funds have been raised); in this case reform will always take place (as it will be always affordable) and, at the constitutional stage behind a veil of ignorance, the generic individual will choose M^*in order to maximize:

$$\max \{p\left(\lambda_m \gamma - kE_a c(a)\right) - (1-p)bM\}$$

where $E_a c(a)$ the expected compensation costs are given by:

$$\begin{aligned} E_a c(a) &= \int_{-A}^{\widehat{\lambda}-\underline{\lambda}-lM} \frac{\left(\widehat{\lambda} - \underline{\lambda} - lM - a\right)^2}{2l}\frac{1}{2A}da \\ &= \frac{(\widehat{\lambda} - \underline{\lambda} - lM + A)^3}{12Al} \end{aligned}$$

The solution of this problem leads to

$$M^*_{(1)} = \frac{\widehat{\lambda} - \underline{\lambda} + A - 2\sqrt{\frac{Ab\frac{1-p}{p}}{k}}}{l}$$

(2) $\widehat{\lambda} - \underline{\lambda} - lM^* + A > \left(\frac{2l\omega}{1+k}\right)^{\frac{1}{2}}$, in which case the problem for the voter becomes[15]:

$$\max_M \left\{ \begin{array}{c} p\left(\int_{-A}^{\widehat{\lambda}-\underline{\lambda}-lM-\left(\frac{2l\omega}{1+k}\right)^{\frac{1}{2}}} \frac{1}{2A}da + \int_{\widehat{\lambda}-\underline{\lambda}-lM-\left(\frac{2l\omega}{1+k}\right)^{\frac{1}{2}}}^{A} (\lambda_m + a)\gamma\frac{1}{2A}da - k\frac{1}{12Al}\left(\frac{2l\omega}{1+k}\right)^{\frac{3}{2}}\right) \\ -(1-p)\,bM \end{array} \right\} \tag{7}$$

and, similarly as before, the maximization problem implies:

$$M^*_{(2)} = \frac{1}{2} - \frac{2Ab\frac{1-p}{p}}{l^2\gamma} - \left(\frac{2\omega}{l\,(1+k)}\right)^{\frac{1}{2}} \tag{8}$$

Therefore, from the results in cases (1) and (2), the following result holds[16]:

[15]The third term in the parentheses multiplied by p is the expected deadweight loss from compensation, calculated as:

$$\begin{aligned} E_a c(a) &= \frac{1}{2l}\int_{\widehat{\lambda}-\underline{\lambda}-\left(\frac{2l\omega}{1+k}\right)^{\frac{1}{2}}}^{\widehat{\lambda}-\underline{\lambda}-lM} \left(\widehat{\lambda} - \underline{\lambda} - lM - a\right)^2 \frac{1}{2A}da \\ &= \frac{1}{12Al}\left(\frac{2l\omega}{1+k}\right)^{\frac{3}{2}}, \end{aligned}$$

while the first two terms represent the usual expected value of income.

[16]In case (1) a sufficient condition for individuals to opt for compensations at the constitutional state instead of the no-compensation solution analyzed in the previous section, is:

$$\lambda_m\gamma - \frac{1-p}{p}\frac{b}{l}\left(\widehat{\lambda} - \underline{\lambda} + A - \frac{4}{3}\sqrt{\frac{Ab\frac{1-p}{p}}{k}}\right) > \psi\left(\overline{\lambda}, \underline{\lambda}, A, \gamma, p, b\right)$$

where

$$\begin{aligned} \psi\left(\overline{\lambda}, \underline{\lambda}, A, \gamma, p, b\right) &= \left(\widehat{\lambda} - \underline{\lambda} - l\left(\frac{1}{2} - \frac{2Ab\frac{1-p}{p}}{l^2\gamma}\right) + A\right) + \left(A - \widehat{\lambda} + \underline{\lambda} + l\left(\frac{1}{2} - \frac{2Ab\frac{1-p}{p}}{l^2\gamma}\right)\right)\lambda_m\gamma \\ &+ \left(\frac{A^2}{2} - \frac{\left(\widehat{\lambda} - \underline{\lambda} - l\left(\frac{1}{2} - \frac{2Ab\frac{1-p}{p}}{l^2\gamma}\right)\right)^2}{2}\right)\gamma - 2Ab\frac{1-p}{p}\left(\frac{1}{2} - \frac{2Ab\frac{1-p}{p}}{l^2\gamma}\right) < \infty \end{aligned}$$

Let us note that the LHS is not defined in $k = 0$, but it is continuous in k for any $k > 0$. If we consider the limit $k \to 0$, it is possible to show that LHS diverges to $+\infty$. Hence, by

Proposition 5

When the compensation scheme is available and k is not too large, the optimal degree of insulation M^* (either $M^*_{(1)}$ or $M^*_{(2)}$) increases with the taxation cost k; otherwise it satisfies the same comparative statics properties as in Proposition 1.

Proof: By inspection.

The basic message of this proposition is that a less efficient system of transfers should lead to a choice of more insulation (higher M) in order to reduce the need for compensation ex post.

4.4 A sequence of reforms

Consider a simple infinite horizon extension of our model in which the economy is populated by a continuum of non-overlapping dynasties of one-period lived individuals. Each individual maximizes his current utility, and the game analyzed above is played repeatedly over time; in particular elections are held every period and there is a countably infinite set of reforms of vintage v, $v+1$, $v+2$,... that can be implemented sequentially. So, income of individual i is as follows:

$$\widetilde{y}_i = \begin{cases} \widetilde{\lambda}_i \gamma^{\nu} & \text{if } v \text{ reform occurs} \\ \gamma^{v-1} & \text{otherwise} \end{cases} \qquad \text{with } \gamma > 0 \tag{9}$$

Since in each period all players face the same choices and the same objective functions, except for a multiplicative constant, the optimal choice of M in this dynamic environment will be the same M^* as above in each period, as long as it is taken before the realization of the shock. The average innovation rate of our infinite horizon economy is then simply equal to the average frequency of innovations $\phi(M^*)$, where M^* is given by (4), namely:

$$g = \frac{1}{2} + \frac{1}{2A}(\lambda_m - \frac{1}{\gamma}) - \frac{b\frac{1-p}{p}}{l\gamma}.$$

In particular, we see that the equilibrium rate of reform g decreases with the probability and the cost of expropriation, with the degree of aggregate uncertainty, A, (in the case of ex ante efficient reforms) and it increases with the average value added of a good reform as measured by γ. It is also possible to

continuity and the algebraic result that LHS is decreasing in k, it follows that there exists a $\overline{k}$ such that compensation will be a viable alternative $\forall k \in (0, \overline{k}]$.

In case (2) a sufficient condition for individuals to opt for compensations at the constitutional state instead of the no-compensation solution analyzed in the previous section, is:

$$(1 - \lambda_m \gamma)\, l + \frac{l^2 \gamma}{4}\sqrt{\frac{2\omega}{l}} + 2Ab\frac{1-p}{p} > 0$$

obtained by substituting into (3) and (7) the optimal level degree of insulation in both cases, respectively (4) and (8).

compute the reform rate for the cases of polarization, risk aversion, and compensation, and to derive the comparative statics properties. One interesting result is that in the presence of a sufficiently high degree of risk aversion (u) the effect of polarization is negative on the degree of policy reform.

5 Remarks on the Political Economy of Constitutions

Thus far we have examined the case of a "perfect veil of ignorance", behind which everybody is identical. This, in a sense, is equivalent to a normative model of constitutional writing. In reality, Constitutions are not written by social planners, and veils of ignorance have holes in them. In fact, in virtually every instance of Constitutional reform, a large amount of bargaining and conflict occurs at the Constitutional table. One simple way of capturing the complexity of the political economy of writing Constitutions is to generalize our model by assuming that not everybody derives the same (known) utility from the reform.

For example, assume that individuals differ ex ante with regard to their expropriable wealth, namely a "b_i -individual" expects to be expropriated by an amount equal to $(1-p)b_iM$ on average. We have already seen in Proposition 1 that the optimal degree of insulation is negatively correlated with the scope for expropriation, b_i. It then immediately follows that an individual i with higher b_i at the Constitutional stage will optimally choose a lower level of insulation, with:

$$M^*(b_i) = \frac{1}{2} - 2Ab_i\frac{(1-p)}{p},$$

and that individual i's preference for insulation is single peaked around this maximum.

This in turn has interesting implications for the political economy of Constitutional writing. Consider a symmetric distribution of expropriation losses b_i between $\underline{b}$ and $\overline{b}$ and suppose that the Constitution is decided by majority rule. In this case, the median voter, $b_m = \frac{\overline{b}+\underline{b}}{2}$, will prevail and impose her most preferred level of insulation, namely:

$$M^*(b_m) = \frac{1}{2} - 2Ab_m\frac{(1-p)}{p}.$$

Alternatively, if M had to be chosen by unanimity, any $M > M^*(\overline{b})$ would be vetoed by high-b individuals. But individuals with low b, those who benefit more from the reform (since they expect lower expropriation) may want to compensate the high b-types to impose their preferred level of insulation. More generally, the outcome of the bargaining process at the Constitutional table will depend on the bargaining rules, the support of the b_i distribution, and the voting rule on M^*.

Another example of interest concerns the writing of Constitutions by a minority of wealthy individuals who might worry about the possibility that new redistributive policies be introduced by future majorities as the extension of voting rights progresses. In the language of our model this can be interpreted as follows. Suppose that individual wealth is heterogeneous across individuals and distributed between $\underline{w}$ and $\overline{w}$ with density $f(w)$. Suppose also that the expropriation rate is the same b for all individuals, and that those who decide on the Constitution lie in the upper part of the wealth distribution, say between some w^m and $\overline{w}$, with $w^m > \underline{w}$. Assuming that all individuals with wealth $w \in [\underline{w}, \overline{w}]$ vote ex post, clearly the Constitution designers will choose a lower degree of insulation than if the franchise was not to be extended, because they expect more expropriation as a result of the franchise being extended. In other words, Constitutions written with an eye on defending property rights against future redistribution of expropriation will include a number of checks and balances and require supermajorities, i.e. low insulation to pass legislation.

How should the voting rule on M be chosen when Constitution designers are ex ante heterogeneous? One could also think of some sort of "fixed point" argument in voting rules, that is, one may want to argue that a choice of M^* has to be approved itself with a blocking rule M^*. That is, a Constitutional choice of M^* can be vetoed only by a M^* (super) majority. This is exactly the approach taken in models by Barbera and Jackson (2001) and Polborn and Messner (2002). While this self-stable solution is very elegant, its realism may be called into question. In fact, voting rules and procedures to select or change the Constitution are generally different from the rules regulating the passage of "normal" legislation. In general, the blocking coalitions needed to prevent changes in the Constitution are lower than those required to block "normal" legislation. In fact, our model, and more specifically Section 4.2 on risk-aversion, suggest one possible reason why changing the Constitution would require smaller blocking coalition (larger majorities): Constitutional change may bring about a more uncertain distribution of winners and losers and voters may be especially risk averse concerning radical changes of the rules of the game. Another reason might be the need to prevent an elected leader from "easily" changing the rules of the game restricting entry of competitors.

6 Empirical Implications and Discussion

In what follows we discuss several empirical implications of our theoretical analysis. Rather than a formal "test" of the model we highlight several of its implications that seem to shed light on some aspects of institutional choices and economic development.

6.1 Economic Development and Institutions

A well known feature of developing countries is that they have not well functioning fiscal systems. The share of transfers of GDP is larger in OECD countries than in developing countries, and more generally, the role of government in transferring resources across individuals, the welfare state, is much more widespread in richer countries. In the nineties the average for subsidies and other current transfers as percentage of the current expenditure in the high-income countries sample (World Development Report 2000-2001, Word Bank) was about 60 percent. In the lower middle income countries it was 18 percent cent in 1990 and 26 percent in 1997. Part of the reason is that it is easier to collect taxes in more advanced industrial countries and also targeting towards the truly deserving is especially difficult. These considerations suggest that developing countries should adopt more insulated systems of government, since, in the language of our model they have a high k.

On the other hand, property rights tend to be less protected in developing countries, and insulated leaders may have more latitude to pursue policies which favor the leader himself and its close allies. The potential for "expropriation," broadly defined, is larger in developing countries. This is captured by a higher b in our model. One may argue that the technology of expropriation and of taxing for compensation go hand in hand, to the extent that they both involve collecting fiscal revenues. However, a compensation scheme involves a fairly sophisticated system of targeting, while expropriation, especially in its more brutal form, can be rather easy to accomplish to the extent that the government has the monopoly of coercion, a monopoly which will itself increase with more insulation.

These features put developing countries between an institutional rock and a hard place. High insulation leads to high expropriation. Low insulation means that policy reform are not implemented. In fact, we believe that this "steep" trade-off between the possibility to implement reforms with winners and losers and the likelihood that insulated leaders turn into dictators, may be one of the key reasons for institutional failures in developing countries.

6.2 Polarization, fragmentation and Institutional Choice

Our analysis of the effects of polarization on political insulation in Section 4 shows that, when constitutional designers are not too risk averse, an increase in polarization would lead them to increase insulation. This would happen in order to limit the scope for ex post blocking by the lower tail of the distribution of preferences over the reform. In addition, our discussion of the political economy of Constitutional choice with an imperfect veil of ignorance in Section 5, suggests that if a group which is not behind a veil of ignorance, knows that the chosen policies will be in its favor (for instance because it is politically dominant), then

again it will choose more insulated systems.[17] This subsection briefly explores these two points empirically.

Measurement issues are difficult. With regard to the main explanatory variable, a particularly relevant, and reasonably exogenous, measure of political polarization is an index of racial fragmentation, widely used in the literature to explain economic performance.[18] We use three indices. Two are the "traditional ones" used originally by Easterly and Levine (1997) and by many others after them. One is an index based on an historical Russian classification of languages; the second one (which we label AVELF) is an index proposed by Easterly and Levine which is a average of five related linguistic indices. The third index is new and recently constructed by Alesina et al. (2002) by combining linguistic measures with other ethnic variables, like racial origin. In many ways we feel that this new index improves over the linguistic ones, although, in any case, our results are robust to the use of all three indexes. In all cases the index of fractionalization is computed (as it is standard in the literature) as the probability that two randomly drawn individuals form the population of the country belong to two different groups.

It is almost impossible to come up with an undisputable measure of "insulation" for a sample of more than a hundred countries in which institutional arrangements vary on many dimensions. In Table 1[19] we choose two approximations of insulation. The first one is a simple dichotomy democracy vs. autocracy as the most general approximation for the separation between not insulated and insulated countries. The second one refers to democratic forms of government and we assign to presidential systems the role of "most insulated" form of government, Semi-presidential the middle level, and parliamentary systems the least insulated. This choice is justified by the substantial reduction in the number of veto players within presidential systems and their intrinsic winner-take-all nature, which distinguishes them from parliamentary systems[20]. In fact we checked that the unconditional correlation between the form of government from Presidential to Semi-presidential to parliamentary and the Freedom House index of political freedom is -.51, significant at the 1 per cent level, for the sample of countries used in Table 1 and 3 below. That is more presidential regimes are associated with lower political rights, which we interpret as a proxy for more insulation.[21] Results by Persson and Tabellini (2001) and Fatas and Mihov (2002) suggest that fiscal policy in presidential regimes has a more

[17] This effect may be moderated by risk aversion as discussed in section 4.2.

[18] See for instance, Easterly and Levine (1997), La Porta et al. (1998), Alesina et al. (2002).

[19] A full description of data sources is given in the Appendix.

[20] For example, there is a relevant, negative (-0.501), and significant (at 1 percent level) correlation between presidentialism and a measure of political constraints within the political arena (as presented in Henisz, 2002). For more discussion on insulation and presidentialism, see Shugart and Carey (1992).

[21] Further analysis available upon request shows that this correlation holds up even when controlling for a battery of other variables, including log of per capita GDP, school enrollment ratios, regional dummies, openness.

top-bottom discretionary nature than in parliamentary regimes, suggesting that in presidential regimes policy is less constrained by various veto points in the process.

Table 1 confirms a positive correlation between the degree of polarization and the degree of insulation using both indices of ethnolinguistic fractionalization. More fractionalized systems are less democratic and more presidential. Table 2 presents some regressions where the dependent variable is the democracy index which, remember is defined as *decreasing* in democracy , confirming that the correlations indicated in Table 1 survive after controlling for several other economic and institutional variables. Without controlling for GDP per capita the two ethnic fractionalization variables are statistically significant at the 1 percent level. GDP per capita may be endogenous, but, in any case in two out of three cases the fractionalization variable remains significant at standard levels. [22]In the first four columns we control for colonial origin, in the last two for legal origin.[23] Notably, French legal origin and Socialist legal origin are associated with less democracy relative to the Anglo-Saxon system, which is the omitted category. Finally, note that, with reference to the potential endogeneity of ethnic fragmentation, note that the bias should go against finding these correlations. In fact, more insulated and less democratic systems should be those more likely to engage in active policies toward reducing fractionalization, such as expulsion of minorities, genocide, etc. [24]

From the coefficients reported in Table 2 one can compute the marginal effects on the probability of a political system of being less democratic. The impact of a 1 percent change in ethnic fractionalization on the probability of being in the less democratic group increases by about 0.14, using both measures of fractionalization. Including income, the size of the marginal effect is halved.

Table 3 repeats a similar analysis for presidential regimes. If we do not control for income, the effect of all measures of fragmentation is strong and highly significant. When we control for income the effect of fractionalization becomes weaker and in some specification looses significance at standard confidence levels. Note how former colonies, relative to non colonies tend to be more presidential and how French and Socialist legal origin are associated with more presidentialism than the omitted variable, Anglo Saxon legal origin.[25]

[22]Our results are similar if we use the index AVELF. The results in Table 2 differ a bit from those reported by Barro (1996). Using a different sample and a different set of controls he finds that his measure of ethnic fractionalization has the same sign as ours in a regression explaining a democracy index but it is not significant. In fact this author finds that almost nothing except level of per capita GDP affects his democracy index. However, many of his controls are arguably endogenous.

[23]When we control for both sets of variable, which are highly collinear, results on ethnic fractionalization remain unchanged.

[24]A more subtle problem of endogeneity concerns the case in which individuals self-classify themselves in certain ethnic or racial groups as a function of the feature of the institutional system, for instance because certain groups or others are more or less favored.

[25]Both for the case of democracy vs. non democracy and of presidentialism we also looked at other indices of fragmentation, in particular religious fragmentation. Results were

In summary, there is some evidence, although not overly strong if one controls for GDP per capita, that in more ethically fragmented societies, political systems are less democratic. We find this result interesting because two strand of cross country empirical literature have independently emphasized the effect of ethnic fragmentation on economic outcomes and the effect of presidentialism and democratic status on politico-economic outcomes. These results seem to suggest that the two sets of variables, institutions and racial fragmentation are not independent form each other. Our interpretation, consistent with our model, is that in more fragmented systems, political systems are chosen to insulate certain groups and prevent others to have a voice.

6.3 Why Richer Countries Are More Democratic?

It is well known and it is also highlighted in Table 2, that richer countries tend to be more democratic. Note that richer countries have better functioning fiscal systems, which allows for transfers and social insurance, features that can be interpreted as a lower k in our model, that is, lower costs of compensation. This reduces the need for insulation and allows for better protection against socially inefficient reforms. A more stringent implication is that countries with lower costs of taxation or better functioning welfare state should have lower insulation. Interestingly Milesi Ferretti Perotti and Rostagno (2002) and Persson and Tabellini (2001) find that more proportional electoral systems are associated with a larger share of transfer payments. Proportional electoral systems (as opposed to majoritarian) can be thought of as systems with low insulation since they often require large coalition government to govern. These authors interpret causality from the electoral systems to the welfare state; in this paper we suggest that the alternative direction of causation may also be present.

One may also argue that in richer countries the benefit of further "reform," captured by γ declines, almost by definition of being "rich." This also leads to a choice towards less insulation. Thus, one can argue that, as an economy grows richer, the need for large reforms becomes smaller and, when necessary, the losers can be compensated at low costs. Both factors lead to choosing lower insulation. Also lower insulation helps protecting property rights against expropriation.

Incidentally, low insulation may actually lead into some problems in advanced democracies. For instance, a vast literature surveyed in Alesina and Perotti (1994) show that low insulation, as measured by electoral laws, systems of government etc., may delay the implementation of fiscal reforms. In a sense, this is the cost of insurance against undesirable (by some) fiscal reforms.[26]

inconclusive.

[26] See also Spolaore (1995) for a discussion of the trade-offs between majoritarian and proportional systems with reference to fiscal policy.

6.4 Insulation, Inequality and Voting Rights

An important aspect of insulation concerns the protection of property rights against expropriation, an issue heavily emphasized by Buchanan and Tullock (1962). One can think of this issues in two ways. The rich (or, say, a racially defined fraction of the rich) can guarantee themselves favorable treatment by choosing insulated constitutions knowing that they would always hold control of political offices.

A different way of looking at it is related to the extension of voting rights. Consider a minority of wealthy men writing a Constitution, knowing that voting right would be entered or that, more generally, a majority of voters may later on choose taxation. If those at the constitutional table are a minority of the wealthy, who may face, later on, the risk of being governed by the majority of non wealthy, they may choose to constrain the majority when it comes to voting on property rights. That is they would choose low insulation. This is the case of an unequal distribution of wealth in which the rich choose the Constitution but everybody votes on policy. Obviously, this would imply also low insulation in terms of policy reforms, but to the extent that the rich cares mostly about protecting property rights, in a period of extension of property rights, they would choose to have more checks on the majority.

Hayek (1960) for instance, discusses how a "constitution of liberty" has to be based on limits on what the majority can do on the minority and he advocates supermajority rules and judicial control to prevent redistributive policies. The blocking by the Supreme Court of the income tax in 1894 in the US can be viewed in this light: an institution representing a relatively small minority of the wealthy, and set up by the same constituency for that reason, was able to impose (for 20 years) a certain fiscal policy in defense of the upper part of the income distribution. F.D. Roosevelt's struggle against the Supreme Court in the thirties in an attempt to extend social protection is another famous example. Roosevelt tried to undermine the Supreme Court and, in the language of our model, to increase executive insulation in a variety of ways. His struggle was partially successful, given that the Court felt threatened and started be more malleable of social policies.[27]

Empirically, this implies that older Constitutions, chosen when voting rights were restricted to a fraction of wealthy men, should prescribe larger majorities (i.e. be less insulated) when it comes to taxation and protection of property against redistributional reforms. To put it differently, older Constitutions would make it easier to pass legislation that protects property rights, or, to put it differently to block legislation that threaten property. Alesina, Glaeser and Sacerdote (2001) argue that one reason why the welfare state in the US is much less generous than in Continental Europe is precisely because the US Constitution is an "old" one and was written by wealthy white men, keen to protect property. More recent European Constitution, written when voting

[27] For an excellent discussion along these lines see Brinkley (1996)

rights were much more widespread, are much less concerned about protecting property rights against redistribution, especially when it comes to protection of property. Alesina, Glaeser and Sacerdote (2001) note that "in a sample of 16 OECD countries, the correlation between social spending and the year of the most recent constitution is 0.52".

6.5 Insulation in Times of Crisis

A "crisis" can be defined as a situation in which a policy action is especially desirable, even though not everybody may benefit equally from such action. In our model, then, we can interpret a "crisis" as a situation where γ is especially high. The implication is, then, that one should observe a movement toward more insulation in times of emergency. One extreme example is war time, when, often, democratic rule is limited and even democratic countries adopt a more hierarchical structure of power. In the terminology of our model, one can think of "winning a war" as a policy with a very high γ requiring a very high degree of insulation of leaders.

Less extreme examples involve reforms of economic institutions. For instance, often Central Banks have been made more independent, in order to "insulate" monetary policy, in periods of very high inflation, that is in periods where anti-inflationary policies have an especially high γ. The most famous example involves the Bundesbank and the German hyperinflation. The recent adoption of fiscal rules with the European Union that limit the discretion of fiscal decisions on budget deficits can also be seen as a response to the fiscal crises of the eighties and nineties. In Latin America several institutional reforms leading to more "insulation" of monetary and fiscal police from the ebb and flows of changing poetical majorities have followed the "lost decade" of the eighties.

7 Conclusions

This paper has moved some steps forward in analyzing the "endogenous choice of institutions." We have focused on one important, and general question of institution design, namely how insulated political leaders can be ex-post, or to put in reverse, how large the (super) majority should be to pass legislation.

Rather than reviewing our results, we highlight a few avenues of ongoing research. One involves a more developed model of elected leader. For instance, one could make the likelihood of success of a policy reform a function of how much "effort" the leader denotes into reform activity versus expropriation. The choice of more or less insulation would then influence the incentives of leaders and make their choice more interesting. For instance, a non-insulated policy-maker may have very little interest in trying to "push through" reform if he knows that ex-post can easily be blocked. On the other hand, a very insulated

leader may have stronger incentives to produce reform and legislative activity, but he would also have more leverage to expropriate his citizens and even restrict democratic rule. With a richer modelling of policy makers' incentives one can also study how the choice of policymakers and institutional rules interact; that is the voters would choose different leaders, more or less pro-reform, depending on the institutional rules about ex post insulation.

A second direction of research is to model more precisely the electoral rule; majoritarian (winner-take-all) or proportional. The composition of the elected legislature would generate, in this framework, a collective level of "reform producing" effort, which would depend upon the composition of the legislature, which in turn would depend on the voting rules. In this context one could analyze how different electoral rule lead to more or less legislative activity.

A third line of research is to analyze term limits as another form of insulation. A leader facing short term limits may not feel particularly interested in putting effort in policy reform, especially if they require "time to build." On the other hand, without term limits incumbents may achieve an entrenched power structure and restrict political competition. Once again the Founding Fathers had captured the essence of the problem of term duration. In *The Federalist* Paper n. 71, in fact, Hamilton puts it beautifully by writing that "It may be asked also whether a duration of four years would answer the end proposed; and if it would not, whether a less period, which would at least be recommended by greater security against ambitious design would be too short for the purpose of inspiring the desired fairness and independence of the magistrate." Good question.

8 Appendix

8.1 Data description and sources.

Political data are from Beck et al. (2001), World Bank, Database of Political Institutions, provided through DATAVINE by the Center for International Development at Harvard University. Data on form of government are from the variable SYSTEM, which in the original data set is oriented with higher values for parliamentary systems, assigning to Direct Presidential 0; to strong president elected by assembly 1; to Parliamentary 2. We reverse the order to make our results more readable in the variable PRES. So, for example, Peru will be assigned a 2 in PRES, being a Direct Presidential Regime. All political variables are considered for the years 1989-1990. For more detailed information about sources and definition we refer to the original data set's description of the variables available by the World Bank.

For data on democracy (political rights), Freedom House (2001), we refer to Easterly and Levine (1997). Easterly and Levine are also the source for level of GDP in 1960, ELF60, AVELF (the average of the indexes proposed in the original paper). Anyway, with regard to the definition of Democracy in Table 1 we employ data from Persson and Tabellini (2001) and consider their sample of pure democracies. With regard to fractionalization, ELF60 is

the soviet ethno-linguistic fractionalization index introduced in the empirical literature on corruption. AVELF is the average employed by Easterly and Levine (1997) in the robustness checks that maximize the sample size. We also use a third variable for ethnic fractionalization, which is constructed by Alesina, Devleeshauer, Easterly and Wacziarg (2002). Data on colonial and legal origin are from the CIA World Fact Book (2001 edition). Note that "Other" legal origin includes countries with legal origin different from Socialist, French, and British, which represent the benchmark to explain the coefficients. Data on religious variables CATH, MUSL, PROT plus on French, Soviet, and British legal origins are taken from La Porta, Lopez de Silanes, Shleifer, and Vishny (1999).

8.2 Proofs of propositions

Generalization of Proposition 1.

Let us consider $a \sim g(-A, A)$, where $g(a) = dG(a)/da$,and $\lambda_i \sim f(\underline{\lambda}, \overline{\lambda})$ and $A > 0, \overline{\lambda} > \underline{\lambda}, \gamma > 0$. For simplicity we fix $p = 1$ in this analysis.

$$\begin{aligned}
& \max\left\{\int_{-A}^{\widehat{\lambda}-\underline{\lambda}-lM}\int_{\underline{\lambda}}^{\overline{\lambda}} 1f(\lambda_i)d\lambda_i g(a)da + \int_{\widehat{\lambda}-\underline{\lambda}-lM}^{A}\int_{\underline{\lambda}}^{\overline{\lambda}} \gamma(\lambda_i+a)f(\lambda_i)d\lambda_i g(a)da\right\} \\
= & \max\left\{\int_{-A}^{\widehat{\lambda}-\underline{\lambda}-lM} 1dG(a) + \int_{\widehat{\lambda}-\underline{\lambda}-lM}^{A}(\lambda_m+a)\gamma g(a)da\right\} \\
= & \max\left\{G\left(\widehat{\lambda}-\underline{\lambda}-lM\right) - G(-A) + \left(G(A) - G\left(\widehat{\lambda}-\underline{\lambda}-lM\right)\right)\lambda_m\gamma + \gamma\int_{\widehat{\lambda}-\underline{\lambda}-lM}^{A} ag(a)da\right\} \\
= & \max\left\{\begin{array}{c} G\left(\widehat{\lambda}-\underline{\lambda}-lM\right) - G(-A) + \left(G(A) - G\left(\widehat{\lambda}-\underline{\lambda}-lM\right)\right)\lambda_m\gamma + \\ \gamma\left(AG(A) - \left(\widehat{\lambda}-\underline{\lambda}-lM\right)G\left(\widehat{\lambda}-\underline{\lambda}-lM\right)\right) - \gamma\int_{\widehat{\lambda}-\underline{\lambda}-lM}^{A} G(a)da \end{array}\right\}
\end{aligned}$$

where we make straightforward use of integration by parts.

Now, by imposing the first order conditions, we obtain:

$$\begin{aligned}
-lg\left(\widehat{\lambda}-\underline{\lambda}-lM\right) + lg\left(\widehat{\lambda}-\underline{\lambda}-lM\right)\lambda_m\gamma + \gamma(-l)G(\widehat{\lambda}-\underline{\lambda}-lM) &= \\
\gamma\left(-lG\left(\widehat{\lambda}-\underline{\lambda}-lM\right) - l\left(\widehat{\lambda}-\underline{\lambda}-lM\right)g\left(\widehat{\lambda}-\underline{\lambda}-lM\right)\right) &\iff \\
-1 + \lambda_m\gamma + \gamma\left(\frac{1}{\gamma} - \lambda_m + \frac{l}{2} - lM\right) &= 0 \iff \\
M^* &= 1/2
\end{aligned}$$

Proof of Proposition 2-related results.

- Case with symmetric polarization (probability mass of Δ on both extremes in the distribution of λ_i)

To pass the reform it has to hold that

$$\begin{aligned}\frac{\widehat{\lambda}-\underline{\lambda}-a}{l}(1-2\Delta)+\Delta &\leq M \\ &\iff \widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)\,l}{(1-2\Delta)}\leq a\end{aligned}$$

So the maximization problem becomes in this case:

$$\begin{aligned}&\max\left\{\int_{-A}^{\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)l}{(1-2\Delta)}} 1\frac{1}{2A}da+\int_{\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)l}{(1-2\Delta)}}^{A}(\lambda_m+a)\gamma\frac{1}{2A}da-b\frac{1-p}{p}M\right\} \\ = \quad &\max\left\{\begin{array}{c}\left(\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)l}{(1-2\Delta)}+A\right)+\left(A-\widehat{\lambda}+\underline{\lambda}+\frac{(M-\Delta)l}{(1-2\Delta)}\right)\lambda_m\gamma \\ +\left(\frac{A^2}{2}-\frac{\left(\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)l}{(1-2\Delta)}\right)^2}{2}\right)\gamma-2Ab\frac{1-p}{p}M\end{array}\right\}\end{aligned}$$

Now, by imposing the first order conditions, we obtain:

$$\frac{1}{(1-2\Delta)}\left((\lambda_m\gamma-1)l+l\gamma\left(\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)\,l}{(1-2\Delta)}\right)\right)=2Ab\frac{1-p}{p}$$

and so

$$M^*=\frac{1}{2}+\frac{8Ab\Delta-2Ab-8Ab\Delta^2}{l^2\gamma}\frac{1-p}{p}$$

From this we can verify that

$$\frac{dM^*}{d\Delta}=8Awb\frac{1-2\Delta}{l^2\gamma}>0.$$

The second order conditions are verified by inspection.

- Case with asymmetric polarization (probability mass of Δ on $\underline{\lambda}$)

To pass the reform it is necessary that

$$\begin{aligned}\frac{\widehat{\lambda}-\underline{\lambda}-a}{l}(1-\Delta)+\Delta &\leq M \\ &\iff \widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)\,l}{(1-\Delta)}\leq a\end{aligned}$$

So the maximization problem becomes in this case:

$$\begin{aligned}&\max\left\{\int_{-A}^{\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)l}{(1-\Delta)}} 1\frac{1}{2A}da+\int_{\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)l}{(1-\Delta)}}^{A}(\lambda_m(1-\Delta)+\underline{\lambda}\Delta+a)\gamma\frac{1}{2A}da-b\frac{1-p}{p}M\right\} \\ = \quad &\max\left\{\begin{array}{c}\left(\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)l}{(1-\Delta)}+A\right)+\left(A-\widehat{\lambda}+\underline{\lambda}+\frac{(M-\Delta)l}{(1-\Delta)}\right)(\lambda_m(1-\Delta)+\underline{\lambda}\Delta)\,\gamma \\ +\left(\frac{A^2}{2}-\frac{\left(\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)l}{(1-\Delta)}\right)^2}{2}\right)\gamma-2Ab\frac{1-p}{p}M\end{array}\right\}\end{aligned}$$

Now, by imposing the first order conditions, we obtain:

$$\frac{1}{(1-\Delta)}\left(((\lambda_m(1-\Delta)+\underline{\lambda}\Delta)\,\gamma-1)l+l\gamma\left(\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)\,l}{(1-\Delta)}\right)\right)-2Ab\frac{1-p}{p}=0$$

from which we can derived a closed form solution M^*. Anyway, in this case the sign of $\frac{dM^*}{d\Delta}$ cannot be unambiguously determined because of the shift in the mean of the λs.

Now consider the case in which the individuals on the lower extreme are not included in the constitutional design stage (i.e. the mean λ_m is not affected).

$$\max\left\{\left(A-\widehat{\lambda}+\underline{\lambda}+\frac{(M-\Delta)\,l}{(1-\Delta)}\right)(\lambda_m\gamma-1)+\left(\frac{A^2}{2}-\frac{\left(\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)l}{(1-\Delta)}\right)^2}{2}\right)\gamma-2Ab\frac{1-p}{p}M\right\}$$

Now, by imposing the first order conditions, we obtain:

$$\frac{l}{(1-\Delta)}\left((\lambda_m\gamma-1)+\left(\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)\,l}{(1-\Delta)}\right)\gamma\right)-2Ab\frac{1-p}{p}=0$$

$\frac{dM^*}{d\Delta}>0$ unambiguously in this case.

Proof of Proposition 3

Risk aversion model. We define the bankruptcy threshold as $\theta<1$. So, $(\lambda_i+a)\,\gamma<\theta$ implies that bankruptcy happens for individual i and her utility plummets down at level $-u$ of utility (for example, because of bankruptcy costs). For simplicity we fix $p=1$ in this analysis. The maximization problem now becomes:

$$\begin{aligned}
& \max\left\{\int_{-A}^{\widehat{\lambda}-\underline{\lambda}-lM}1\frac{1}{2A}da+\int_{\widehat{\lambda}-\underline{\lambda}-lM}^{A}\left(-u\int_{\underline{\lambda}}^{\frac{\theta}{\gamma}-a}\frac{1}{l}d\lambda+\int_{\frac{\theta}{\gamma}-a}^{\overline{\lambda}}(\lambda+a)\frac{\gamma}{l}d\lambda\right)\frac{1}{2A}da\right\} \\
= & \max\left\{\begin{array}{c}\left(\widehat{\lambda}-\underline{\lambda}-lM+A\right)+ \\ \int_{\widehat{\lambda}-\underline{\lambda}-lM}^{A}\left(u\frac{-\theta+a\gamma+\underline{\lambda}\gamma}{\gamma l}+a\frac{\gamma}{l}\left(\overline{\lambda}-\frac{\theta}{\gamma}+a\right)+\frac{\gamma}{2l}\left(\left(\overline{\lambda}\right)^2-\left(\frac{\theta}{\gamma}-a\right)^2\right)\right)da\end{array}\right\} \\
= & \max\left\{\begin{array}{c}\left(\widehat{\lambda}-\underline{\lambda}-lM+A\right)+\frac{1}{6}\frac{\gamma}{l}\left(A^3-\left(\widehat{\lambda}-\underline{\lambda}-lM\right)^3\right)+ \\ \frac{u+\overline{\lambda}\gamma}{2l}\left(A^2-\left(\widehat{\lambda}-\underline{\lambda}-lM\right)^2\right)-\frac{1}{2\gamma}\frac{2u\theta-2u\underline{\lambda}\gamma-\overline{\lambda}^2\gamma^2+\theta^2}{l}\left(A-\widehat{\lambda}+\underline{\lambda}+lM\right)\end{array}\right\}
\end{aligned}$$

Now, by imposing the first order conditions, we obtain:

$$\begin{aligned}
& -l+\frac{1}{2}\gamma\left(\left(\frac{1}{\gamma}-\underline{\lambda}-lM\right)^2\right)+\left(u+\overline{\lambda}\gamma\right)\left(\frac{1}{\gamma}-\underline{\lambda}-lM\right) \\
= & \frac{1}{2\gamma}\left(2u\theta-2u\underline{\lambda}\gamma-\overline{\lambda}^2\gamma^2+\theta^2\right)
\end{aligned}$$

Solutions are :

$$M_1 = \frac{1 + l\gamma + u + \sqrt{(2l\gamma u + u^2 + 2\gamma l + 2u\theta + \theta^2)}}{l\gamma}$$

$$M_2 = \frac{1 + l\gamma + u - \sqrt{(2l\gamma u + u^2 + 2\gamma l + 2u\theta + \theta^2)}}{l\gamma}$$

Now, by imposing the second order conditions, we verify that:

$$l\gamma\left(\left(\frac{1}{\gamma} - \underline{\lambda} - lM\right)\right) + \left(u + \overline{\lambda}\gamma\right) l < 0$$

The solution has to satisfy $M < \frac{1}{\gamma l}\left(1 + l\gamma + u\right)$. So we rule out M_1. For the comparative statics we now set $\theta = 0$ and for $\overline{\lambda}_m \gamma > 1$ and $\underline{\lambda} \leq 0$ (the assumption that the reform is good on average and that someone may lose from the reform) the following holds:

$$\frac{dM^*}{du} = \frac{\sqrt{(2l\gamma u + u^2 + 2\gamma l + 2u\theta + \theta^2)} - l\gamma - u - \theta}{\sqrt{(2l\gamma u + u^2 + 2\gamma l + 2u\theta + \theta^2)} l\gamma} < 0$$

Which can be verified by expanding the part of the numerator that is not under the square root as a square and confront this quantity with what is under square root.

Also note that including expropriation would not change the results under the risk aversion model, as the two effects would add each other up in reducing insulation.

Proof of Proposition 4

We analyze the risk aversion model with symmetric polarization. Again we set the bankruptcy threshold at θ (and we will set it equal to zero for simplicity when we derive our results below). So, $\left(\lambda_i + a\right)\gamma < \theta$ implies a bankruptcy-related reduction of utility down to level $-u$ of utility. Also we have to recall that $\Delta \leq 1/2$. For simplicity we fix $p = 1$ in this analysis The maximization problem now becomes:

$$\begin{aligned}
& \max \left\{ \begin{array}{c} \int_{-A}^{\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)l}{(1-2\Delta)}} 1\frac{1}{2A}da + \int_{\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)l}{(1-2\Delta)}}^{A} \left(-\Delta u - u\left(\int_{\underline{\lambda}}^{\frac{\theta}{\gamma}-a} \frac{1-2\Delta}{l} d\lambda\right)\right)\frac{1}{2A}da + \\ \int_{\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)l}{(1-2\Delta)}}^{A} \left(\int_{\frac{\theta}{\gamma}-a}^{\overline{\lambda}} (\lambda + a)\frac{\gamma(1-2\Delta)}{l} d\lambda + \Delta\overline{\lambda}\right)\frac{1}{2A}da \end{array} \right\} \\
= & \max \left\{ \begin{array}{c} \left(\widehat{\lambda} - \underline{\lambda} - \frac{(M-\Delta)l}{(1-2\Delta)} + A\right) + \\ \int_{\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)l}{(1-2\Delta)}}^{A} \left(\left(u\frac{-\theta + a\gamma + \underline{\lambda}\gamma}{\gamma l} + a\frac{\gamma}{l}\left(\overline{\lambda} - \frac{\theta}{\gamma} + a\right)\right)(1-2\Delta)\right) da + \\ \int_{\widehat{\lambda}-\underline{\lambda}-\frac{(M-\Delta)l}{(1-2\Delta)}}^{A} \left(\frac{\gamma}{2l}\left(\overline{\lambda}^2 - \left(\frac{\theta^2}{\gamma^2} - 2a\frac{\theta}{\gamma} + a^2\right)\right)(1-2\Delta) + \Delta(\overline{\lambda} - u)\right) da \end{array} \right\} \\
= & \max \left\{ \begin{array}{c} \left(\widehat{\lambda} - \underline{\lambda} - \frac{(M-\Delta)l}{(1-2\Delta)} + A\right) + \Delta(\overline{\lambda} - u)\left(A - \widehat{\lambda} + \underline{\lambda} + \frac{(M-\Delta)l}{(1-2\Delta)}\right) + \\ (1-2\Delta)\left(\frac{1}{6}\frac{\gamma}{l}\left(A^3 - \left(\widehat{\lambda} - \underline{\lambda} - \frac{(M-\Delta)l}{(1-2\Delta)}\right)^3\right) + \frac{u + \overline{\lambda}\gamma}{2l}\left(A^2 - \left(\widehat{\lambda} - \underline{\lambda} - \frac{(M-\Delta)l}{(1-2\Delta)}\right)^2\right)\right) \\ -\frac{(1-2\Delta)}{2\gamma}\frac{2u\theta - 2u\underline{\lambda}\gamma - \overline{\lambda}^2\gamma^2 + \theta^2}{l}\left(A - \widehat{\lambda} + \underline{\lambda} + \frac{(M-\Delta)l}{(1-2\Delta)}\right) \end{array} \right\}
\end{aligned}$$

Now, by imposing the first order conditions, we obtain:

$$\begin{aligned}
&\frac{\Delta(\overline{\lambda}-u)l-l}{(1-2\Delta)}+(1-2\Delta)\left(\left(\frac{1}{2}\frac{\gamma}{(1-2\Delta)}\left(\frac{1}{\gamma}-\underline{\lambda}-\frac{(M-\Delta)\,l}{(1-2\Delta)}\right)^2\right)+\right)\\
= \quad &-\left(u+\overline{\lambda}\gamma\right)\left(\frac{1}{\gamma}-\underline{\lambda}-\frac{(M-\Delta)\,l}{(1-2\Delta)}\right)+\left(\frac{2u\theta-2u\underline{\lambda}\gamma-\overline{\lambda}^2\gamma^2+\theta^2}{2\gamma}\right)
\end{aligned}$$

Let us impose for simplicity $\underline{\lambda}=-\overline{\lambda},\theta=0$. The F.O.C. becomes:

$$\frac{\Delta(\overline{\lambda}-u)2\overline{\lambda}-2\overline{\lambda}}{(1-2\Delta)}+\frac{\overline{\lambda}^2\gamma^2}{2\gamma}+\frac{\gamma}{2}\left(\frac{1}{\gamma}-\frac{(M-\Delta)\,2\overline{\lambda}}{(1-2\Delta)}\right)^2+\left(u+\overline{\lambda}\gamma\right)\left(\frac{1}{\gamma}-\frac{(M-\Delta)\,2\overline{\lambda}}{(1-2\Delta)}\right)=0$$

Which has solutions

$$M_1=\frac{(1-2\Delta)\,(u+1)+\overline{\lambda}\gamma+\sqrt{\left(\left(4\overline{\lambda}\gamma+2\overline{\lambda}\gamma u-4\overline{\lambda}^2\gamma\Delta\right)(1-2\Delta)-4u^2\Delta+u^2+4u^2\Delta^2\right)}}{2\gamma\overline{\lambda}}$$

$$M_2=\frac{(1-2\Delta)\,(u+1)+\overline{\lambda}\gamma-\sqrt{\left(\left(4\overline{\lambda}\gamma+2\overline{\lambda}\gamma u-4\overline{\lambda}^2\gamma\Delta\right)(1-2\Delta)-4u^2\Delta+u^2+4u^2\Delta^2\right)}}{2\gamma\overline{\lambda}}$$

and the first solution is ruled out by SOC. Define $M_2=M^*_{\Delta,u}$. Now let us check the comparative statics:

$$\begin{aligned}
\frac{dM^*_{\Delta,u}}{d\Delta} \quad &= \quad -\frac{(u+1)\sqrt{(2\Delta-1)\left(2\overline{\lambda}\gamma\left(2\overline{\lambda}\Delta-u-2\right)+(2\Delta-1)\,u^2\right)}+u^2\,(2\Delta-1)-\overline{\lambda}\gamma\left(u+2+\overline{\lambda}-4\overline{\lambda}\Delta\right)}{\sqrt{(2\Delta-1)\left(4\overline{\lambda}^2\gamma\Delta+2u^2\Delta-2\overline{\lambda}\gamma u-4\overline{\lambda}\gamma-u^2\right)\gamma\overline{\lambda}}}\\
&= \quad -\frac{(u+1)}{\gamma\overline{\lambda}}-\frac{-u^2+2u^2\Delta-\overline{\lambda}\gamma u-2\overline{\lambda}\gamma-\overline{\lambda}^2\gamma+4\overline{\lambda}^2\gamma\Delta}{\sqrt{(2\Delta-1)\left(4\overline{\lambda}^2\gamma\Delta+2u^2\Delta-2\overline{\lambda}\gamma u-4\overline{\lambda}\gamma-u^2\right)\gamma\overline{\lambda}}}<0
\end{aligned}$$

To prove this we just have to check that, considering the highest-order terms for u large enough it has to hold that $-\frac{u}{\gamma\overline{\lambda}}-u\frac{2\Delta-1}{\gamma\overline{\lambda}\sqrt{(2\Delta-1)(2\Delta-1)}}\leq 0$

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Table 1

Sample Means

Sub-Samples	Fractionalization Measures		
	Ethnic Fractionalization Index (from Alesina et al., 2002)	Linguistic Fractionalization Index (ELF, from Easterly and Levine, 1997)	AVELF Index (from Easterly and Levine, 1997)
Non- Democracy	0.504 [88]	0.532 [53]	0.386 [99]
Democracy	0.332 [60]	0.309 [56]	0.233 [60]
Direct Presidential	0.543 [68]	0.485 [55]	0.427 [70]
Semi-Presidential	0.484 [22]	0.516 [13]	0.303 [25]
Parliamentary	0.298 [49]	0.302 [38]	0.237 [51]

Notes: The number of observations for the means are in the square brakets below. Data on ethnic and linguistic fractionalization are from Alesina, Devleeshauer, and Wacziarg (2002), while data on ELF and AVELF are from Easterly and Levine (1997). We classify a country a democracy according to Persson and Tabellini (2001) sample and definition based on Freed House political rights indexes. The Form of Government ordered variable is from the Database of Political Institutions, available from DATAVINE/ Harvard CID and the World Bank (Beck et al., 2001) for period 1975-1995. We consider the variable SYSTEM, complemented to 2, to facilitate exposition (Direct Presidential is assigned 2, Semi-Presidential 1, and Parliamentary 0).

Table 2

	(1)	(2)	(3)	(4)	(5)	(6)
	DEMOCRACY	**DEMOCRACY**	**DEMOCRACY**	**DEMOCRACY**	**DEMOCRACY**	**DEMOCRACY**
British Colonial Origin	0.248	0.294	-0.08	-0.112		
	0.261	*0.29*	*0.26*	*0.274*		
French Colonial Origin	1.527	1.879	1.188	1.405		
	*0.313***	*0.368***	*0.396***	*0.397***		
Spanish/Portuguese Colonial Origin	1.61	1.916	1.629	1.908		
	*0.386***	*0.411***	*0.453***	*0.463***		
Other Colonies	2.416	2.878	1.978	2.047		
	*0.349***	*0.527***	*0.468***	*0.526***		
Fraction of Catholic	-0.016	-0.012	-0.01	-0.011	-0.011	-0.009
	*0.004***	*0.004***	*0.004**	*0.004***	*0.004***	*0.005*
Fraction of Protestant	-0.021	-0.013	-0.007	-0.007	-0.007	-0.004
	*0.005***	*0.006**	*0.006*	*0.006*	*0.005*	*0.006*
Fraction of Muslims	-0.004	0.003	0.003	0.003	0.001	0.001
	0.004	*0.005*	*0.005*	*0.006*	*0.004*	*0.006*
Socialist Legal Origin					2.877	8.195
					*0.343***	*0.357***
French Legal Origin					1.087	1.36
					*0.266***	*0.325***
Other Legal Origin					-0.451	0.337
					0.44	*0.349*
Ethnic Fractionalization (Alesina et al., 2002)	0.942		0.944		1.296	1.152
	*0.323***		*0.424**		*0.349***	*0.425***
ELF60 (Easterly and Levine, 1997)		1.306		0.685		
		*0.401***		*0.402*		
Log(GDP)			-1.055	-1.082		-1.126
			*0.169***	*0.177***		*0.166***
Observations	144	106	109	103	144	109

Notes: Standard errors in italics below coefficient estimates. * significant at 5%; ** significant at 1%. Ordered probit coefficients reported. DEMOCRACY is index of Political Rights from Freedom House in 1980 (0 = most free, 6 = less free).

Table 3

	(1)	(2)	(3)	(4)	(5)	(6)
	PRES	**PRES**	**PRES**	**PRES**	**PRES**	**PRES**
British Colonial Origin	0.682	1.139	1.327	1.074		
	*0.346**	*0.421***	*0.531**	*0.511**		
French Colonial Origin	1.867	2.681	2.737	2.719		
	*0.368***	*0.490***	*0.653***	*0.639***		
Spanish/Portuguese Colonial Origin	1.673	2.563	2.054	2.486		
	*0.508***	*0.520***	*0.620***	*0.571***		
Other Colonies	1.154	2.099	1.424	1.548		
	*0.366***	*0.544***	*0.658**	*0.605**		
Fraction of Catholic	0.003	0.006	0.012	0.009	0.005	0.015
	0.005	*0.006*	*0.007*	*0.007*	*0.005*	*0.006**
Fraction of Protestant	-0.008	-0.001	0.011	0.008	-0.002	0.011
	0.006	*0.009*	*0.009*	*0.01*	*0.007*	*0.01*
Fraction of Muslims	0.012	0.011	0.012	0.013	0.014	0.014
	*0.005**	*0.006*	*0.006**	*0.006**	*0.006**	*0.006**
Socialist Legal Origin					0.751	-0.404
					*0.311**	*0.455*
French Legal Origin					0.632	0.262
					*0.302**	*0.334*
Other Legal Origin					-0.673	-0.647
					0.607	*0.652*
Ethnic Fractionalization (Alesina et al., 2002)	1.335		0.624		1.664	1.207
	*0.450***		*0.611*		*0.475***	*0.567**
ELF60 (Easterly and Levine, 1997)		1.445		0.905		
		*0.500***		*0.531*		
Log(GDP)			-0.54	-0.563		-0.698
			*0.210**	*0.229**		*0.213***
Observations	138	106	109	103	138	109

Notes: Standard errors in italics below coefficient estimates. * significant at 5%; ** significant at 1%. Ordered probit coefficients reported. PRES represents form of government at the end of the 1980s (2 = Direct Presidential, 1 = Semi-Presidential, 0 = Parliamentary), data are transformations of the SYSTEM variable in Database of Political Institutions (Beck et al., 2001).