How Do Political Institutions Work?

Structuring Intertemporal Interactions

Carlos Scartascini
(Inter-American Development Bank)

Ernesto Stein
(Inter-American Development Bank)

Mariano Tommasi[1]
(Universidad de San Andrés)

Abstract

This paper presents an approach to study the effects of political institutions on policies, which puts emphasis on the intertemporal nature of policymaking. We argue that viewing political institutions from the perspective of their effects on intertemporal interactions and intertemporal cooperation can lead to predictions different from those emerging from views that do not emphasize such dimensions.

We illustrate this point by contrasting predictions from an intertemporal framework with predictions from veto player approaches, and we provide evidence supporting our argument. In particular, increasing the number of veto players does not necessarily make a polity less able to change policies.

Preliminary draft – March 2008

[1]We received helpful comments from Lucy Goodhart, Juan Carlos Hallak, John Huber, Marcelo Leiras, Isabella Mares, Vicky Murillo, Pablo Pinto, Jim Snyder, Federico Weinschelbaum and seminar participants at MIT, Columbia, and Universidad de San Andrés. Some of these ideas have been anticipated in Braun, Leiras and Tommasi (2005). Tommasi acknowledges the support of the John Simon Guggenheim Memorial Foundation, as well as the hospitality of the MacMillan Center for International and Area studies at Yale University, and of the Research Department at the Inter-American Development Bank. We received valuable research assistance from Heather Berkman and Laura Trucco.

1. Introduction

> " Institutions may be seen as architecture and as rules that determine opportunities and incentives for behavior, inclusion and exclusion of potential players, and structuring the relative ease or difficulty of inducing change, and the mechanisms through which change may be facilitated or denied."
>
> Rhodes, Binder and Rockman (2006, p. xiii).
> Introduction to the *Oxford Handbook of Political Institutions*

For the last several decades there has been a great surge of interest in institutional design in new democracies, as well as in institutional reform more broadly. Improved institutions are supposed to help achieve a number of lofty objectives, which could be summarized in the (now a bit trodden) expression "better governance". This applied concern echoes and is echoed in academia, where the study of institutions is a central concerns in the social sciences. Assessing the effects of political institutions, an intellectual endeavor at the core of political science, is one crucial component of the recent revival of the study of institutions in various disciplines.

As the opening caption above highlights, political institutions determine inclusion and exclusion of players and structure the relative ease or difficulty of policy change. The best known line of work in modern political science relating the rules of inclusion and exclusion of political actors to the relative difficulty of policy change is the veto players' theory of George Tsebelis and others. One of the main implications of that theory is that having more veto players necessarily makes a polity less able to change its policies. We argue in this paper that that assertion if false: having more veto players does not necessarily make a polity less able to adjust its policies, once an intertemporal perspective is added to the analysis.

That institutions allocate decision power over time is an important fact that has long been recognized, and that has been a staple in explanations of *institutional origin*. In various lines of work, institutions are either collectively chosen or imposed by the powerful, allocating intertemporal decision making power in order to achieve either efficiency or distributive objectives. See for instance Williamson (1991) on alternative modes of economic organization, North and Weingast (1989) on Parliament, Weingast and Marshall (1988) on institutions within the U.S. Congress, Acemoglu and Robinson

(2006) on the democratic franchise, Boix (1999) on electoral systems, and Buchanan and Tullock (1962) on constitutions. Several of those lines of work emphasize the role of institutions in facilitating intertemporal transactions and in enforcing intertemporal cooperation.[2]

Research on the *effects of institutions* has given less emphasis to the intertemporal dimensions of political and policy exchanges, and has focused mainly on spot exchanges, that is, exchanges that take place at one point in time, mostly in the context of static models – see for instance the excellent textbook treatments in Persson and Tabellini (2000)[3] and Mueller (2003). There are some exceptions in the treatment of behavior within legislatures, especially in American Politics, where there are some repeated game versions of legislative bargaining models, for instance Fox (2006), Carrubba and Volden (2000), and Calvert and Fox (2003). But, to our knowledge, there is almost no formal work of that sort in the field of comparative politics. There are, though, some insightful discussions of problems of intertemporal cooperation and their relation to some political institutions, with respect to party system institutionalization and to Executive-Legislative relations – see Mainwaring and Torcal (2005) and Shugart (2006) for recent accounts and references.

This paper is part of an agenda in which we study the effects of political institutions on intertemporal cooperation and, hence, on the resulting policies. Most existing formal literature has mapped political institutions (such as electoral rules, and forms of government) into parameters of the description of what are essentially one-shot games. We suggest modeling policymaking as a repeated game, and hence mapping political institutions into parameters of repeated games. [4]

As we show in this paper in one important specific context, viewing political institutions from the perspective of their effects on intertemporal interactions can lead to predictions different from those emerging from the predominant models that do not emphasize

[2] For a complementary line of work seeing institutions as *equilibria* of repeated games, see Calvert (1995a, 1995b), Aoki (2001) and Greif (2006), and references there. As it will be seen below, the spirit of our models is quite close to that line of work.

[3] Part IV of the Persson and Tabellini text is devoted to "dynamic politics", but most of the dynamics there is through *economic* state variables, and not focused on the comparative analysis of the effects of political institutions, a topic covered in Part III in the context of static models.

temporal dimensions. We illustrate this point by contrasting predictions from an intertemporal framework with predictions from veto player approaches. In particular, we show that increasing the number of veto players does not necessarily make policy change less likely, and we provide evidence supporting our argument.

2. Veto Players' Theory

Veto player approaches and veto player theory have achieved great prominence in the field of comparative politics. In a work that has been characterized as a *tour de force* of modern political science theory (Franzese, 2005) George Tsebelis (1995, 1999, 2000, 2002) elaborated a very useful approach to the study of comparative politics and policymaking. A review article states:

> "Veto point and veto player approaches have come to occupy a central place in comparative politics, especially in the fields of comparative public policy and political economy. Virtually every policy area has been studied within at least one of the various approaches, and the relevant literature grows at a fast pace. The most elaborate and prominent approach, George Tsebelis' veto player theory, moves well beyond the explanation of particular policy outputs on economic outcomes and tries to provide a unified theoretical perspective on political institutions in a wide variety of political systems. Tsebelis' theory systematically relates veto players to the potential for policy change in a political system." (Ganghoff, 2003: 1).

Veto player logic has been applied to the study of welfare states (Jochem 2003, Obinger 2002), inequality (Birchfield and Crepaz, 1998) fiscal adjustment (Pamp, 2007), tax competition (Basinger and Hallerberg, 2004), monetary policy (Keefer and Stasavage, 2003), monetary institutions, (Hallerberg, 2002), international trading arrangements (Mansfield, Milner, and Pevehouse, 2007), the business environment (Henisz ,2000) among various other important issues, such as European Union decision-making.

Tsebelis' work on veto players is motivated by the fact that, since most of the previous literature on political institutions tended to use a single criterion to identify the main characteristics of a polity (presidential/parliamentary, majoritarian/proportional, two-

[4] A similar logic has been utilized (for instance by Przeworski, 2005) to study democracy as the

party/multiparty, etc.), the relations and interactions among all those dimensions were underdeveloped. For understanding the policymaking process of a given country, aggregating the generic effects induced by its characteristics in each of the various institutional dimensions is not adequate. It is necessary to use some sort of **systemic** lens that permits comparing political systems which vary simultaneously along many dimensions. Tsebelis proposes the "configuration of veto players" as the optic to summarize the characteristics of political systems, especially when seen from the perspective of its policy consequences. A veto player is an (individual or collective) actor whose consent is necessary to change policy. Every political system has a configuration of veto players, with varying numbers, ideological differences, and internal levels of cohesion. In various works, Tsebelis and collaborators have developed a mapping, a set of rules according to which all political institutions (regime types, parliaments, party systems, parties, and so on) are translated into a configuration of veto players. (See for instance, Tsebelis 2002, part II). Constitutional prescriptions, the attributes of the party system and the electoral rules determine the number and cohesion of veto players.

The number and cohesion of veto players, given the ideological distances separating them, affect the set of outcomes that can replace the status quo (the *winset* of the status quo). The size of the winset is smaller when the number of veto players and the ideological distance between them are larger and when players are more cohesive. When the winset is very small, the status quo prevails and "policy stability" obtains. One of the main predictions of the veto players approach is, then, that when the number of veto players is larger, policy change is less likely.

Tsebelis' initial work has been applied mainly to parliamentary democracies, even though the framework has wider scope. There have been a number of applications to presidential regimes. For instance, an important volume edited by Haggard and McCubbins (2001),[5] provides some valuable extensions and applications of the veto player logic. In particular, the volume advances in the direction of instrumenting the

---

equilibrium outcome of intertemporal cooperation.

[5] The volume (*Presidents, Parliaments, and Policy*) has theoretical contributions by the editors in combination with Gary Cox and Matthew Shugart and empirical contributions applied to a number of presidential democracies by various other distinguished scholars. For brevity we will often refer to this work as "Cox and McCubbins" to refer to chapter 2, the main theoretical chapter in the volume.

logic of veto player analysis to presidential democracies. It also provides further specification of the dependent variable, characteristics of policies (and of policymaking), which is quite useful for the purposes of comparison with the predictions from our intertemporal approach. Cox and McCubbins (2001) argue that one of the most important trade-offs in policymaking is that between the ability to change policy (*decisiveness*) and the ability to commit to a given policy once it is enacted (*resoluteness*). The abilities to change and to commit to policies depend on the number of veto points that political institutions establish (*separation of power*) and the diversity of party interests controlling those veto points (*separation of purpose*). Different institutions (electoral rules, the number of chambers, legislative procedures, etc.) map, through *separation of power* and *separation of purpose* into an effective number of veto players.[6] The effective number of vetoes increases when a polity has both many institutional veto points and political actors with diverse interests controlling those veto points. Countries with more effective veto players will be located closer to the resoluteness end along a decisiveness- resoluteness continuum.

We can summarize some of the main predictions from these veto player approaches in two propositions, which we state as hypotheses to be evaluated in the empirical section.

PROPOSITION 1 (Veto Player Theory): *A more decisive polity must necessarily be less resolute* (Haggard and Mc Cubbins, p. 6).

PROPOSITION 2 (Veto Player Theory): *As the effective number of vetoes increases, the polity becomes more resolute and less decisive* (Haggard and Mc Cubbins, p. 27). Or equivalently: *Many veto players make significant policy changes difficult or impossible* (Tsebelis 2002, p. XV).

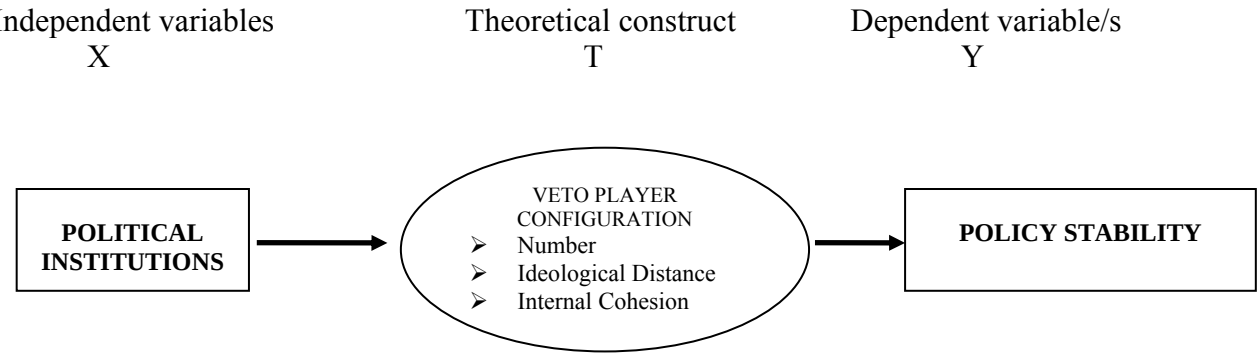
The approaches of Tsebelis and of Cox and McCubbins and collaborators, as well as the one we present in this paper could be summarized with the visual aid of Figure 1. They all have a common logical structure, going from political institutions as independent variables to some characteristics of policies as dependent variables, mediated by a

[6] Such mapping is provided in detail in *Presidents, Parliaments, and Policy* in chapter 3 by Shugart and Haggard (2001) and in the introductory chapter 1 by Haggard and McCubbins (2001b). See also Perez-

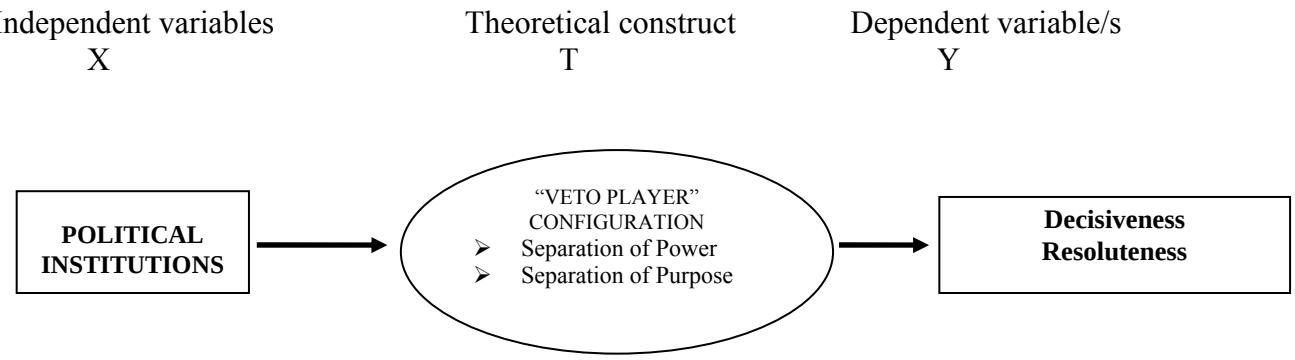
theoretical lens: "veto player" in the first two (panels a and b respectively) and "intertemporal cooperation" (panel c) in our framework, which we explain in the next section.

Figure 1

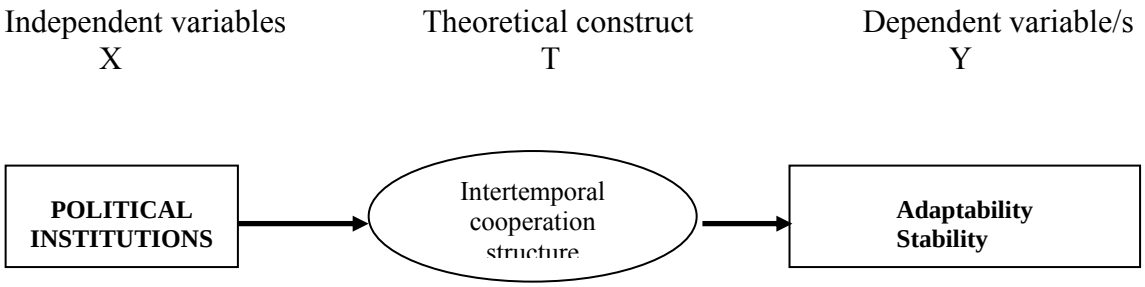
A. VP Framework of Tsebelis (1995 and 2002)



B. Framework of Cox and McCubbins in Haggard and McCubbins (2001)



C. Intertemporal cooperation Framework



Liñan and Rodríguez Raga (2003) for a detailed mapping of institutions in presidential regimes to the

3. An Intertemporal Framework

As indicated by Figure 1, the way we suggest looking at the effects of institutions on policies can be expressed in a visual scheme similar to the ones we used to summarize veto player approaches. The difference lies in the theoretical lens utilized to relate the workings of political institutions to the features of public policies. Our organizing principle is intertemporal cooperation.

The elements of this framework are not new, yet we believe that the way the ingredients are mixed is somewhat novel. The formal structure of the models within this framework has been presented before in Spiller, Stein and Tommasi (2003), and Spiller and Tommasi (2007, chapter 2); it builds upon previous contributions such as Alesina (1988), Dixit, Grossman and Gul (2000), Dixit (2003) and de Figueiredo (2002). The conceptualization of policymaking as intertemporal exchanges draws from a long tradition in transaction cost economics, which has been applied to the political arena by North (1990), Dixit (1996), Levy and Spiller (1996), Huber and Shipan (2002) and Epstein and O'Halloran (1999).[7]

The framework attempts to capture some salient aspects of policymaking over time in a fairly stylized manner. Political transactions surrounding public policies are characterized by a number of features that the framework attempts to highlight. In particular:

(1) *Politics and policymaking take place over time*. Decisions are made at different points in time, often by different configurations of actors. The framework captures this feature by modeling policy choice in the context of repeated games.
(2) *There are elements of conflict and of commonality of interests around almost any policy issue.* Almost all policy decisions involve conflicts among different values and different interests, most obvious when (as often the case) imply distributive issues. Take military defense, a quintessential public good; it

---

veto players framework.

[7] Jacobs (2004) presents a logic of intertemporal policy choices very close in spirit to ours, and applies it to study the politics of pension reform in Britain and the Unites States in Jacobs (2008). The intertemporal nature of policymaking has also been emphasized in some theoretical work on political economy by economists, most notably Besley and Coate (1998).

certainly generates widely different opinions, as well as important distributive issues (where to locate military facilities, for instance). Another quintessential public good, macroeconomic stabilization has important distributional components in its implementation alternatives. The objective function of the players in our models captures the presence of elements of conflict and commonality of interest.

(3) *Political power of different actors varies over time*. Political popularity, coalition formation, and the normal workings of democracy lead to substantial randomness in the power of any political actor over time. This is also true even in autocratic polities, albeit in a different form. The framework captures this through a "political random variable" μ_t that indicates the distribution of political power at each point in time.

(4) *Underlying conditions change over time*. Random events frequently call for policy adaptation. New circumstances in international markets, policy decisions in other countries, technological changes, diseases, natural disasters, and social and demographic changes are events that present new demands on public policy.[8] These circumstances are captured in the model by the presence of some "economic shocks", θ_t.

Focusing on features (1) and (2), modeling policymaking in the context of repeated games leads naturally to interpreting the results (public policies) and the conditions leading to those results (in this case, political institutions) in terms of the degree of cooperation attained in each case. Features (3) and (4) allow operationalizing the dependent variables in a way that gets to the heart of the point of this paper:

- We will say that a policy is **adaptable** if it responds adequately to economic shocks θ.
- We will say that a policy is **stable** if it does not react to political shocks μ.

We devote the next section to a brief explanation of why we focus on these dependent variables.

[8] For instance, in its suggestively titled *Guidelines for Designing Policies in Today's Complex, Dynamic, and Uncertain World* the International Institute for Sustainable Development (2007) asserts that "Governments must operate in an ever-changing and uncertain world".

We have applied this framework previously to study the effects of political institutions on these and other properties of policies, and found that some characteristics of the workings of political institutions, such as institutionalized and programmatic party systems, legislatures with strong policymaking capabilities, professionalized bureaucracies, and independent judiciaries tend to generate better public policies. (IADB 2005, Stein and Tommasi, 2007, Beckman et al 2008). In our ongoing agenda we are investigating the effects of some of the political institutions most emphasized in the comparative politics literature (electoral rules, regime type, etc,) on policymaking and policies.

In this particular paper, we focus on the effects of one very important "reduced form" characteristic of political systems, the number of veto players. This allows us to contrast the results from this intertemporal approach with one of the most distinguished lines of thought in modern day comparative politics. It turns out, as we will show below, that incorporating intertemporal considerations can lead to reverse some of the core predictions of the veto players approach. In particular, we will build an example in which increasing the number of veto players indeed *facilitates* policy adjustment.

Before presenting the model, in the next section we provide a brief discussion of the way in which we conceptualize our dependent variables both in the model and in the empirical work.

4. The Dependent Variables

Tsebelis defines his independent variable policy *stability* as the impossibility of significantly changing the status quo. In defending the importance of that choice, he refers to political scientists' interest in the *decisiveness* of a political system – its capacity to resolve problems as they arise (2002: 6-7). He relates that concern with the concerns of Weaver and Rockman (1993) on government capabilities, and contrasts it with economists' concern with policy *credibility*. In Tsebelis view, policy stability is a characteristic that embeds an inherent trade off between the virtues of commitment (more stability) and the virtues of decisiveness (less stability). Tsebelis is adamantly agnostic about the normative value of his dependent variable. According to him, those who dislike the status quo prefer a political system with the capacity to make changes

while advocates of the status quo prefer a system that produces policy stability (Tsebelis 2002: 7-8). Decisiveness in bringing about policy change is a good thing when the status quo is undesirable, or when an exogenous shock disturbs a desirable process; while commitment may be preferable when the status quo is desirable (Tsebelis 2002: 8).

In Tsebelis' work, then, there is only one policy characteristic as dependent variable, and its normative properties cannot be judged since that characteristic embeds an inherent trade off. Cox and McCubbins (2001) take a further step and distinguish among two related, but different, dependent variables: *decisiveness*, the ability of a State to enact and implement policy change, and *resoluteness*, the ability of a State to commit to maintaining a given policy. Even though Cox, McCubbins and collaborators distinguish between these two concepts, they assert that a more decisive polity must necessarily be less resolute. (Haggard and Mc Cubbins, 2001: 6). [9]

One of the points of this paper is to contend with the latter assertion. In order to do that we operationalize two potentially separate policy characteristics, which we call policy *adaptability* and policy *stability*, very close to the notions of decisiveness and resoluteness respectively.[10] We relate adaptability to the ability to change policy for the right reasons, and stability to the ability not to change policy for the wrong reasons. We believe this way of conceptualizing the dependent variables is consistent with the spirit of much of the previous literature (including even Tsebelis and Cox and McCubbins themselves), it can be well captured in a theoretical model, and it permits empirical implementation. Here we present our notions of adaptability and stability, and in latter sections we implement them both theoretically and empirically.

[9] Cox, McCubbins and collaborators refer also to other relevant characteristics of policies, such as whether they are *private* or *public-regarding*. Those are important issues which we also address in other work (Stein and Tommasi 2007, Stein et al 2008, IADB 2005) but that are not the focus of the comparison with the approach of Tsebelis which we emphasize in this paper.

[10] *Decisive* and *resolute* are adjectives that qualify the polity, why *adaptability* and *stability* are adjectives that qualify policies. In a sense, it is indistinct to focus on properties of polities or (generic) properties of policies. We use the latter wording mainly because we find the words *decisiveness* and *resoluteness* too difficult.

Adaptability of public policies

Policies might be more or less responsive to changes in the environment. As stated before, various events call for policy adaptation quite frequently. New circumstances in international markets, policy decisions in other countries, technological changes, diseases, natural disasters, and social and demographic changes are events that present new demands on public policy. These changing underlying circumstances might even include the stock of knowledge or information about the effects of previous policies. Our notion of adaptability embeds several desirable traits of policy or policymaking which have been referred to in the previous literature. For instance:

- the ability to adapt to exogenous shocks (Tsebelis 1999: 591)[11]
- the flexibility to resolve problems faster (Tsebelis 2002: 7)
- the capacity to solve problems when they arise (Tsebelis 2002: 6-7)
- the ability to innovate when policies fail (Weaver and Rockman 1993)
- the adaptation of social programs to contemporary socio-economic risks (Natali and Rhodes, 2006)
- the ability of policy to adapt to new conditions (International Institute for Sustainable Development, 2007)[12]

Stability of public policies

From our own work in Latin American, we see countries that seem capable of sustaining policies over time, while in other countries policies are frequently reversed, often at each minor change in political winds (see for instance IADB 2005 and Stein et al 2008). Having stable policies does not mean that policies cannot change at all, but rather that changes respond to changing economic conditions, to the failure of previous policies, or to the recognition of further objectives, rather than to political changes. In countries with stable policies, changes tend to be incremental, building upon achievements of previous administrations, and tend to be achieved through consensus. In contrast, volatile policy environments are characterized by large swings and by lack

[11] In that paper Tsebelis refers to stability as the inability to adapt to exogenous shocks. Since we are reserving the word *stability* to refer to a positive concept, we would refer to said inability as "lack of adaptability".

[12] The International Institute for Sustainable Development (2007) asserts that "policies crafted to operate within a certain range of conditions are often confronted by challenges outside that range. The result is that many policies don't accomplish their goals and have unintended or perverse impacts. Therefore, in order to help policies help people, policy-makers need ways to craft policies that can adapt to a range of anticipated and unanticipated new conditions."

of consultation with different groups in society.[13] Our notion of stability, very similar to *resoluteness* in Cox and McCubbins, embeds several desirable traits of policy or policymaking which have been referred to in the previous literature. In particular, it captures the spirit of the whole discussion of credibility of economic policies. The effects of policies on the final economic and social outcomes of interest depends on the actions and reactions of a number of economic and social agents, who take into account their expectations about future policies before deciding on their responses. In the words of Rodrik (1995), it is not trade liberalization per se, but *credible* trade liberalization that is the source of efficiency gains. The predictability of a set of incentives of a trade regime, or lack thereof, is generally of much greater importance than the *structure* of these incentives."[14]

Stability, then, refers to things such as:

- the ability to ensure policy stability so that policies have time to work (Weaver and Rockman 1993: 6)
- the ability to make and maintain international commitments in the realm of trade and national defense (Weaver and Rockman 1993: 6)
- credible commitment not to alter the rules of the game each time there is a government change
- the ability to uphold promises (Cox and McCubbins 2001: 31)[15]
- the ability to carry our a policy compromise (Cox and McCubbins 2001: 31)
- the consistency with which a policy is implemented (Rodrik 1995: x)

5. The Model

Preliminaries

In this section we present a simple model that is consistent with the intertemporal framework introduced above. The point of the model is to provide an example that

[13] Chile is a clear example of the former (Aninat et al, 2008), while Argentina is a clear example of the latter (Spiller and Tommasi, 2007).

[14] On credibility and commitment in macroeconomic policy see the classic works of Kydland and Prescott (1977) and Barro and Gordon (1983), as well as recent statements in Alt (2002), Granato (1996), Drazen (2000) and Persson and Tabellini (2000).

[15] "Governments unable to make credible promises hinder economic development." (Keefer and Stasavage 2003: 407)

demonstrates that some important propositions from the veto players approach are not necessarily valid once intertemporal considerations are added Later in the paper we provide empirical evidence rejecting hypotheses coming out of the veto players' framework, as well as some preliminary evidence supporting the intertemporal approach.

Before presenting the formal aspects of the model, it is useful to motivate its basic structure with some examples. The model is a repeated divide-the-dollar game in which the efficiency of each allocation at each point in time is a function of random events that materialize over time.

Imagine that we are to allocate an annual budget for visiting faculty at a small university in a faraway place like Buenos Aires. The university is organized in N departments.16 The committee in charge of allocating money for visiting faculty is composed of v members, coming from different departments (v<N), and it has to make its decisions by unanimity. Being the university located a bit far from the geographical center of international academia, it has difficulties in attracting great scholars. But occasionally, the opportunity of attracting a first rate academic arises; a Nobel laureate economist might feel like spending the northern summer near the wonderful trout fishing opportunities of Patagonia, or a distinguished political scientist might feel like spending her sabbatical in the world capital of tango. Given the significant reputational externalities for the University of having a top academic around, those circumstances will call for an allocation of the budget quite loaded in favor of the department that faces such an opportunity in any particular year.

A similar intuition operates at the level of a country's budget. There are various circumstances that arise over time which might require reallocating budget in some particular directions. Say the economy has been lagging behind for many years due to low productivity, and it is understood that pumping up the education system is necessary in order to overcome that problem. Or there is a potential threat of military conflict with a neighboring country, which calls for more spending on military

equipment and new recruits. Or it seems beneficial for aggregate welfare to alter international trade policy in a direction more favorable for some sectors.[17]

We will show that whether the university or the country in the examples above are able to move resources (adjust policies) in the necessary direction will depend on the relevant actors' ability to strike agreements for intertemporal cooperation. And the probability of being able to cooperate over time will depend on some parameters of the model that we could interpret as "political institutions", including the number of veto players.

The set-up

Imagine a polity composed of N players (actors, parties, sectors). Let Ω be the set of players, denoted by i = 1,2,...N, so that Ω = {1,2,....,N}. These players interact repeatedly and discount the future with a common discount factor $\delta \in [0,1]$. Let v denote the number of veto players; that is, the number of actors who will seat at the decision table and make a collective decision by unanimity. There is a random process μ_t that allocates political power at each point in time. Among other things, the realization of this random process will define, for any given v, who will be the players sitting at the table at time t. We assume a uniform probability distribution, so that the probability of each player being at the table is v/N.[18]

The decision they have to make in each period consists of allocating a budget, normalized to 1, across the N parties, so that $\sum_i x_{it} = 1$, where x_{it} is the share received by player i in period t. This divide-the-dollar game is not purely distributive; there is an element of efficiency of allocations which in a simplified manner captures the intuition of the examples above. There is an "externality" from allocating the budget in (what in each period turns out to be) the most productive way. We model the payoff of each

[16] Many readers of this Review may be familiar with this metaphoric scenario of budget allocation within a university. See chapter 4 of McCarty and Meirowitz (2007) for a similar example, one of hiring a new faculty member in a large academic department organized in several fields.

[17] The model could also be interpreted as a set of independent random issues arising over time, leading to the possibility of changing from a given status quo (here normalized as zero payoffs for everyone). Alternative new policies on that issue would lead to different distributive and efficiency outcomes.

player at each time period (at each stage game) as $U_{it} = x_{it} + \alpha I_t$, where I_t is an indicator function which takes the values

$$I_t = \begin{cases} 1 & if \quad x_{jt} = 1 \quad for \quad j = \theta_t \\ 0 & otherwise \end{cases},$$

where θ_t is an economic random variable that indicates which is the salient sector or issue of the day, and it is uniformly distributed across ***i***'s, taking each value with probability ***1/N***. This formulation captures the fact that each player cares not only about his/her share, but also about the efficiency of the overall allocation. The efficiency of the overall allocation is modeled as an externality that is present only if the entire budget is allocated to the area with greater opportunities each period.[19] The results we present here generalize to a more smooth formulation, but this stark one simplifies computations and presentation. The relative importance given to one's own share vis a vis overall efficiency depends on the size of the parameter α. (To make the problem interesting, we assume α<1, otherwise anyone would always choose the optimal allocation in a trivial manner.)

In order to close the description of the model it is necessary to specify, beyond the requirement of unanimity, the details of the decision-making procedure within the table. For concreteness, we take a simple (one-round closed rule) bargaining protocol. Assume that $\boldsymbol{\mu_t}$ partitions the set of players Ω into three subsets in each period. The first of those three sets is a singleton, i.e. a set composed of only one player, $\boldsymbol{a_t}$, who will be the agenda setter, as in the random recognition rule in Baron and Ferejohn (1989). The second set $\boldsymbol{W_t}$ will contain ***(v-1)*** players, who will have to vote on the basis of a proposal made by $\boldsymbol{a_t}$. Let $V_t = W_t \cup \{a_t\}$ be, then, the set of veto players at time t. The rest of the players, belonging to the set Ω / V_t , will be outside the table. After the random variables $\boldsymbol{\mu}$ and $\boldsymbol{\theta}$ are realized, the agenda setter $\boldsymbol{a_t}$ will propose an allocation, a vector X_t^a . After that, the ***(v-1)*** players belonging to W_t will vote. The action of each of these

[18] Think for instance that $\boldsymbol{\mu_t}$ is a vector of ***N*** real numbers assigned at random to each of the players, and that the ***v*** players with larger numbers get to sit at the table. Or think that the ***v*** seats are allocated each period in the following manner: each player's name is put in an urn, and ***v*** names are taken at random.

[19] Imagine a sports team playing a game: each player enjoys his/her own minutes in the field or court, but all the players get and extra kick if the team wins the game, an event that is more likely the closer they are to the optimal allocation of players (which might vary depending on circumstances such as injuries, state of the field, weather, characteristics of the rival team, etc.)

voters is a function ϕ from the set of possible allocations X (an N-dimensional simplex) to the set $\{0,1\}$, where 0 means voting against the proposal, and 1 means voting for the proposal, so that $\phi_{it} \in \{0,1\}$.[20] If all the voters vote in favor, that is if $\phi_{it} = 1 \ \forall i \in W_t$, then the allocation implemented X_t will be equal to the one proposed by the agenda setter, $X_t = X_t^a$. Otherwise, every player gets a status quo payoff which we normalize to 0 for notational simplicity.[21]

Having described the game, now we proceed to solve it. The steps of our analysis follow a standard usage in the study of cooperation in this type of games. We start by analyzing equilibria in the one-shot version of the game, which will lead to non-cooperation. Then we explore first-best allocations, and we construct strategies that can support first-best allocations as part of a cooperative equilibrium to the repeated game. We will show that in non-cooperative equilibria, policies will not adjust to economic shocks, while in cooperative equilibria, they will. We will provide comparative statics on how the parameters of the game, in particular the number of veto players ***v***, affect the feasibility of cooperation, and hence the adaptability of policies.

Non-cooperative equilibrium

It is convenient to start by specifying the outcome for the case of the one-shot version of this game (or equivalently, for the limit case of $\delta = 0$). It is easy to verify that, given α<1, the stage game has a unique subgame-perfect equilibrium, in which the agenda setter proposes an allocation giving a tad above zero to each of the other ***(v-1)*** players at the table, nothing to anyone outside the table, and keeps almost the whole budget for himself.[22] Formally, that leads to the allocation vector $X^N = \{x_{it}\}$ such that

[20] We assume away mixed strategies, for simplicity.

[21] As stated, the (one-round) closed rule bargaining protocol is chosen to simplify the exposition. Our results generalize to a broader class of bargaining protocols, as those summarized in chapter 10 of McCarty and Meirowitz (2007). That is the Baron-Ferejohn family of legislative bargaining models but in this case, as in Rubinstein (1982), with unanimity as opposed to majority rule. We use unanimity since that is the formal definition of veto players.

[22] Given the rule of unanimity and the simultaneity of the voting moves, the one-shot game has multiple equilibria, since once one of the voters has rejected the proposal, any vote by another voter constitutes a weak best response. It is easy to get rid of all the other equilibria by using subgame perfection jointly with iterated elimination of weakly dominated strategies. (McCarty and Meirowitz, 2007, chapter 5).

$$x_{it} = \begin{cases} 1 & for \quad i = a_t \\ 0 & for \quad i \neq a_t \end{cases}.$$ [23]

As it is well known from the theory of repeated games, the indefinite repetition of the one-shot subgame perfect equilibrium is also an equilibrium in the repeated game for any value of the discount factor δ.

This non-cooperative equilibrium gives players an expected value of

$$V^N = \left(\frac{1}{1-\delta}\right)\left(\frac{1+\alpha}{N}\right).$$

The first term on the right hand side brings the value of the series of allocation to the present, and comes from the fact that $(1+\delta+\delta^2+....) = \frac{1}{1-\delta}$ for $\delta \in [0,1]$. The second term comes from the fact that on average each player gets to keep the whole budget one out of ***N*** periods and every player receives the externality α each time the agenda setter happens to be the player receiving the shock θ_t, an event which also occurs with probability ***1/N***.

Notice that in this non-cooperative equilibrium policies do not adjust to economic shocks ***θ***, hence they are not adaptable, while they do adjust to political realizations, and hence they are volatile. (We will see below that the opposite is the case in more cooperative equilibria.)

First best

In order to explore other equilibria we start by specifying the first best allocation, the one that maximizes the sum of the objective functions of the ***N*** players. It is easy to see that the optimal allocation gives the full budget to the sector that received the productivity shock θ_t in each period. That is, the optimal vector $X^*(\theta_t)$ contains

[23] More generally, the allocation could be defined as $x_{it} = 0$ for $i \in \Omega / V_t$, $x_{it} = \varepsilon$ for $i \in V_t$, and $x_{it} = 1-(v-1)\varepsilon$ for $i = a_t$. We follow the standard convention of letting ε go to zero, and assuming that players who are indifferent between two actions at zero, will chose the one they would have chosen for ε>0.

$$x_{it} = \begin{cases} 1 & for \quad i = \theta_t \\ 0 & for \quad i \neq \theta_t \end{cases}.$$

Expected welfare from the first best is

$$V^* = \left(\frac{1}{1-\delta}\right)\left(\frac{1}{N} + \alpha\right).$$

The difference with the non-cooperative case lies in the fact that now the externality is realized every period; clearly $V^* > V^N$.

A strategy to induce cooperation

Repeated games have multiple equilibria. A number of "folk theorems" have demonstrated that for high enough δ, every feasible payoff that is individually rational can be supported as a subgame perfect equilibrium (Fudenberg and Tirole 1991, McCarty and Meirowitz 2007). To analyze these types of games one conventionally posits a set of strategies for the players, a strategy profile, and then determines under what subsets of parameters of the game such strategies can be supported as an equilibrium.[24] We look now at a strategy profile that could allow implementation of the first best in the repeated game. The strategy profile calls for cooperation along the equilibrium path sustained by the threat of reversion to non-cooperation (the subgame-perfect equilibrium, of the one-shot game) forever. This type of ("grim trigger") strategy is particularly suitable to analyze repeated games of complete and perfect information such as this one (de Figueiredo, 2002).

In this model, cooperation along the equilibrium path requires the agenda setter proposing the first best allocation $X^*(\theta_t)$, and the ***(v-1)*** other veto players accepting that allocation, $\phi_i(X^*(\theta_t)) = 1 \ \ \forall i$. This leads to the payoff V^*.

In order to verify under what conditions cooperation can be sustained, we need to specify a punishment strategy in case of deviations from cooperation. A number of results in the theory of repeated games simplify this effort; a crucial one is the "one-shot deviation principle", which tells us that in order to verify whether a postulated

[24] See for instance de Figueiredo (2002) and Carruba and Volden (2000).

equilibrium is indeed subgame perfect, it is enough to verify that there is no profitable one period deviation (Mailath and Samuelson, 2006). The punishment strategy we postulate is one that reverts the game to non-cooperation for ever if a proposal different from $X^*(\theta_t)$ is ever accepted and (hence) implemented.[25]

Identifying when cooperation is sustainable requires determining who has the greatest incentive to defect and then calculating the conditions under which that person will cooperate. In the context of this model, the person with the greatest incentive to defect in any given period is the player who turns out to be the agenda setter, provided he is not the same agent who received the "efficiency" shock θ_t. (In this latter case the agenda setter will be happy to conform to the cooperative requirement of keeping the whole budget for himself).

If an agent who happens to be the agenda setter of the period were to deviate, in order to ascertain his payoff from a proposal different from $X^*(\theta_t)$, he needs to consider the possible reaction of the other ***(v-1)*** veto players. For that reason we work by backwards induction from the behavior of the voters of a period of possible deviation.

Imagine a proposal different from X^* was made. Take as given the action of the other ***(v-2)*** voters as accepting the deviant proposal, and consider the decision of one $i \in W_t$. If he accepts the deviant X_t^a, it gets implemented, and the play of the game switches to non-cooperation forever after. If he rejects it, he and everyone else gets zero in that period,[26] but the equilibrium remains cooperative forever after. In comparing this two options, voter ***i*** will pay special attention to how much the deviant proposal gives to him, x_{it}^a. Define x^0 as a critical value such that ***i*** accepts the proposal only if it gives him $x_{it}^a \geq x^0$. In that case, he will accept the deviant proposal if and only if

[25] In a technical appendix available upon request we demonstrate why this punishment strategy is more effective that an alternative one in which punishment is triggered just by the proposal, independently of whether it is accepted by the other veto players or not. It turns out that the strategy of making all the veto players jointly responsible enforces cooperation for a larger set of parameters.

[26] Remember that, for expositional simplicity, we are (i) assuming a one-round closed rule bargaining protocol, and (ii) normalizing the disagreement payoff to 0. The generality of our results does not depend on either of these assumptions.

$0 + \delta V^* \leq x^0 + \delta V^N$, which is equivalent to $x^0 \geq \left(\frac{\alpha\delta}{1-\delta}\right)\left(\frac{N-1}{N}\right)$. Hence, if the deviant agenda setter proposes an allocation giving $\left(\frac{\alpha\delta}{1-\delta}\right)\left(\frac{N-1}{N}\right)$ to each of the other ***(v-1)*** veto players, all of them will accept it. Obviously, $\boldsymbol{a_t}$ will give zero to everyone outside the table, so that such a strategy will allow him to keep $1-(v-1)\left(\frac{\alpha\delta}{1-\delta}\right)\left(\frac{N-1}{N}\right)$ to himself in the deviation period. That would be a worthwhile deviation as long as

$$1-(v-1)\left(\frac{\alpha\delta}{1-\delta}\right)\left(\frac{N-1}{N}\right)+\delta V^N > \alpha + \delta V^* .$$

The converse needs to be true in order for our equilibrium to be sustained, which is equivalent of what we express in the following Lemma.

Lemma:

In the equilibrium we proposed, cooperation implementing the first-best allocation can be sustained if and only if

$$\left(\frac{\delta}{1-\delta}\right) \geq \left(\frac{N}{N-1}\right)\left(\frac{1-\alpha}{\alpha}\right)\left(\frac{1}{v}\right).$$

This is our main result. It is easy to see that the inequality in the Lemma is relaxed by having a larger number of veto players ***v***. Having more players sitting at the table reduces the incentives to deviate from cooperation, and hence makes cooperation sustainable over a larger set of other parameters.

Given that cooperation in our model leads to the optimal allocation $X^*(\theta_t)$, we say that, in the equilibrium we have constructed, *a larger number of veto players increases the likelihood of adjusting policies to economic shocks.* Hence, in this example, more veto players increase the adaptability of policies, contrary to the predictions of veto player frameworks, as summarized in Proposition 2 above.

Our model also contradicts Proposition 1 (above) from veto player theory. In our cooperative equilibrium we have both more adaptability (more response to $\boldsymbol{\theta}$) and more stability (less response to $\boldsymbol{\mu}$) than in the non-cooperative case. If different polities were

in different equilibria, our model would predict a positive correlation between adaptability and stability (between decisiveness and resoluteness).

Since our model and the particular cooperative equilibrium we have built constitute just examples, not general cases, we express our results in a less taxative manner than veto player approaches.

PROPOSITION 1' (Intertemporal Approach): *It is not true that a more decisive polity must necessarily be less resolute. Furthermore, there are some forces (of different equilibria in repeated- interaction contexts) leading to a positive association between decisiveness and resoluteness (adaptability and stability).*

PROPOSITION 2' (Intertemporal Approach): *Many veto players do not necessarily make significant policy changes difficult or impossible. There are some channels through which more veto players increase policy adaptability.*

In the formulation of this section, the channel by which more veto players can lead to more cooperation is the fact that the more players at the table, the more costly an opportunistic deviation for the agenda setter. There are various other channels that could bring this result. For instance, my willingness to cooperate today (to permit an adjustment unfavorable to me) could be affected by my likelihood of sitting again at the table in the future, when efficiency might call for reallocation towards me.[27]

6. Empirical Analysis

The dependent variables

In this section we provide preliminary evidence consistent with our argument. In particular, we reject some of the propositions coming out or the veto player literature: more adaptability does not necessarily imply lower stability, and a higher number of vetoes does not necessarily imply lower adaptability. While we don't provide complete evidence of an alternative model, the results help us to support the argument that

[27] From personal experience we recognize that channel as being present in budget making at universities.

intertemporal cooperation may allow policy makers to reach certain agreements over policy that are not possible in the more traditional veto player models.

Our dependent variables are two characteristics of policies: *stability* and *adaptability*. These variables have been constructed from a number of international data sets, mostly but not exclusively based on subjective data. [28] We believe that the questions we chose from those data sets approximate well the essence of the policy characteristics we are looking for, even though they suffer from various well-known problems of subjective data. We have provided a number of robustness checks. One of the exercises was to look at the correlation between the variables and similar variables we constructed in a more detailed manner for a smaller sample of Latin America and the Caribbean countries.[29] For both stability and adaptability the correlation of these variables with the more detailed ones for the Latin American subsample was positive and highly significant. Consequently, we have some confidence on the fact that the new data collected reflects quite well these characteristics of public policy according to experts' opinions, at least for Latin America and the Caribbean. We have performed additional robustness checks, such as comparing our data with similar sector specific data.[30] For example, we have found a negative and significant relationship between adaptability and data on fiscal procyclicality, which shows that the adaptability variable is effectively capturing government policy responses to changes—in this case, economic conditions. Table 1 presents the dependent variables.

[28] The variables have been constructed through a mean of means procedure. This method is used in order to preserve the rankings, when compiling the information to create indexes for the variable, particularly if there are missing observations in the original data. The advantages of this method are that it is robust and simple to compute. The components of each variable are rescaled from 0 – 4, with 0 representing lower scores, and 4 the highest. Once each component is rescaled, the following steps are followed: i) the mean of each component is determined; ii) the mean of the means of each component is calculated; iii) each observation of a variable is divided by the mean of the variable's sample, creating a new "table" of data; iv) in this new "table", missing values for countries are replaced by the average of whichever variables are available for that country (using data within the "table").

[29] The survey, conducted for the IDB's flagshift publication of 2006 (IDB 2005 and reference there), questioned more than 150 experts in 18 Latin American countries, including public policy analysts, economists, political scientists, and former policymakers, and was explicitly designed with these characteristics of policies in mind.

[30] For additional robustness checks see Berkman, et al (2008).

Table 1. The dependent variables

Variable	*Stability*	*Adaptability*
Components	Standard deviation of the detrended Fraser Index of Economic Freedom (quadratic trend) (1999-2004) Global Competitiveness Report (GCR, 2002): Legal or political changes over the past five years have (1=severely undermined your firm's planning capacity, 7=had no effect) Global Competitiveness Report (GCR, 1998, 1999, 2000, 2002): New governments honor the contractual commitments and obligations of previous regimes (1=not true, 7=true). Profils Institutionnels-database and 2006: "Consistency and continuity of government action in economic matters" A5101, (from 1=low levels of capability, consistency, authority, rapidity, confidence to 4=high levels)	Bertelsmann Transformation Index (BTI) 2006 ranking: Questions comprising BTI's adaptability index include the ability of the political leadership to act flexibly, political leaders' capability for learning, and whether political leaders can replace failing measures with innovative policy. Columbia State Capacity Survey, Question 29: a) Rate the state's ability to respond effectively to domestic economic problems, originally on a scale from 1- 10. A5100 from Profils Institutionnels-database (2006): (Decision_making_capacity_a), "Decision-making capacity of the political authorities in economic matters (responsibility, rapidity, etc)" ranked 1 to 4, 4 being highest. Columbia University State Capacity Survey (1990, 1999, 2000, 2002) (cscs21_ie), Question # 21. Rate the state's ability to formulate and implement national policy initiatives
Observations	148	146

Testing the hypotheses from Veto-Players Theory

Veto-players theories have very sharp and conclusive predictions that we have summarized in Propositions 1 and 2 above. Our intertemporal approach calls into question the generality of those predictions, stating that there are channels and conditions that can make these predictions more or less likely to be true. In this subsection we present evidence rejecting these veto-player hypotheses. In the next subsection we provide some evidence attempting to reconcile veto player predictions with a broader framework that incorporates intertemporal considerations.

Proposition 1: "…*a more decisive polity must necessarily be less resolute…*"

Following the traditional veto player literature, we would expect a negative correlation between adaptability and stability. However, a negative correlation does not appear –at least easily- in our data. As Table 2 shows, the correlation between adaptability and stability is not negative even after controlling for the initial level of development of the

country, the group or region the country belongs to (e.g., Developed, LAC, SSA, etc), and the legal origin of the country (e.g., British law, French, etc).[31]

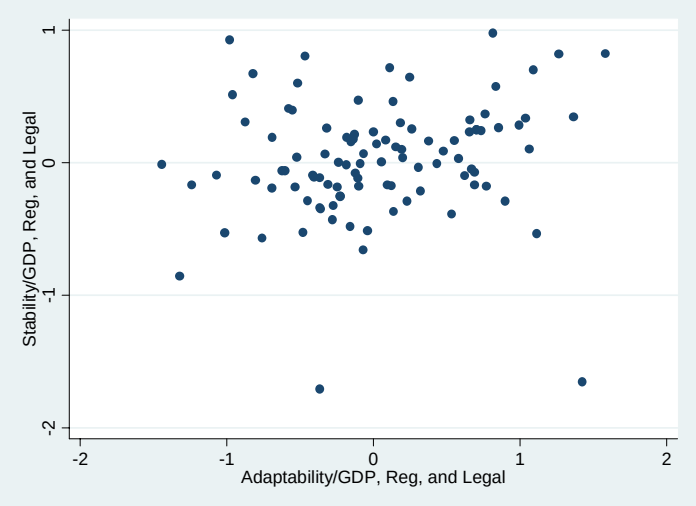
Table 2. Correlation between adaptability and stability

	(1)	(2)	(3)
Corr (stab,adapt)	0.54***	0.32***	0.16
Controlling for:			
Ln (GDPpc)		Yes	Yes
Regional dummies			Yes
Legal origin			Yes
Observations	122	101	100

*Note: *** significant at the 1% level*

In Figure 2, the results of column 3 can be observed in terms of a scatterplot diagram. Again, from this data, it would be difficult to argue that a negative correlation exists between stability and adaptability for the cross section of a large number of countries.[32]

Figure 2. Stability and Adaptability Scatterplot



[31] Ln(GDPpc) is the log of GDPpc in 1980. Regions include dummies for Developed, Asia, ECA, LAC, MNA, SSA, and Africa. Legal origin includes dummies for British, French, German, Scandinavian and Socialist. Legal origin has been selected because it is exogenous to some of the variables that we incorporate later on in the model and it responds to some interrelated criticisms on the comparative politics literature: i) they can capture some of the political variables that can't be modeled explicitly (legal origin usually affects the type of institutions chosen); ii) the legal origin is one of the main determinants of the actual policy-making (in the end, the things that can or can't be done depend in part on the legal system); iii) political institutions today depend in part on the basic institutional setting at the time of the colony (North and Weingast (1998).

[32] As we will see below, it doesn't imply that a trade-off may exist for subset of the sample.

Proposition 2: *"… more veto players reduce policy adaptability"*

The hypothesis 2 is one of the central tenets of the veto player approach. (Contrary to that, in our model above we showed that there are certain conditions under which increasing the number of vetoes may also increase the adaptability of policies.) For testing this hypothesis, we constructed a *vetoes* variable that proxies the number of veto players in a country by combining the variables that have been traditionally used in empirical studies in the veto player tradition.[33] These variables are:

1. *Political Regime Characteristics and Transitions* from University of Maryland Polity IV Project (average of data from 1990-2003).
   - It refers to the extent of institutionalized constraints on the decision-making powers of chief executives, whether individuals or collectivities. The concern is therefore with the checks and balances between the various parts of the decision-making process.
2. *Constraints on the Executive* from the Henisz Dataset – Henisz (2000) (average of data from 1990-2004)
   - It refers to the limit on the executive's actions.
3. *POLCONV* from Henisz Dataset (average of country data from 1990 to 2004).
   - It is constructed by identifying the number of independent branches of government with veto power over policy change and is then modified to take into account the extent of alignment across branches of government using data on the party composition of the executive and legislative branches.

As indicated in Table 3, the regression results show that vetoes is positive and significant. A higher number of vetoes leads to higher adaptability of policies.[34] Hence, we reject veto player proposition 2.[35] We obtain the same results (sign and significance) if we use the individual components instead of the composite index.

[33] The method used to construct the variable is the same we described above for the dependent variables. The partial correlations among the three components are all above 0.84.

[34] For the empirical analysis we use weighted least squares. We discard those countries for which we have a single source, and the rest are weighted according to the number of sources of information for the dependent variables. Analytic weights are typically appropriate when you are dealing with data containing averages. The weighting variable contains the number of series over which the average was calculated.

[35] The results on the veto player variables are also positive and significant with respect to stability, for most specifications, as predicted both by veto player theories and by our intertemporal approach.

Table 3. Regressions on adaptability (weighted least squares).

	(1)	(2)	(3)
Vetoes	0.16***	0.18***	0.19***
	(0.04)	(0.05)*	(0.06)
Ln(GDPpc)	Yes	Yes	Yes
Region		Yes	Yes
Legal Origin			Yes
$AdjR^2$	.44	.52	.51
Obs	109	109	108

Note: significant at 1% level (***), 5% (**), and 10% (*)

Some evidence incorporating intertemporal factors

The veto player literature postulates (proposition 1) a stark negative relation between stability and adaptability. In our view, stability and adaptability are both desirable traits that even though rival at some level, are both more (less) likely to emerge in polities with higher (lower) degrees of intertemporal cooperation. Intuitively, we can think of the negative correlation predicted by veto player theories as operational along an iso-cooperation frontier, while different countries might be located along different iso-cooperation lines at different "distances from the origin" in the stability/adaptability space. More cooperative polities will tend to have more of both desirable traits, while the two traits might trade-off for a given level of cooperation.

Using this logic, it may be expected that, while it is not possible to identify a negative correlation between stability and adaptability in the data, it may become possible after controlling for some of the determinants of intertemporal cooperation that we have found to matter in the model. For example, it may be sensible to check if it is possible to find a negative relationship between adaptability and stability by controlling for the discount factor of the actors involved in negotiations. As presented in the previous section, if actors have a low discount factor (high discount rate), the probability of reaching cooperative agreements may fall. Consequently, as the discount factor decreases, a trade off between stability and adaptability may appear in the data.

The discount factor of policymakers (delta in the model) might be proxied (quite roughly) by the probability that they will be around in the future. For example, a legislator from the US, who is usually reelected several times, might have a much lower discount rate (higher delta) than a legislator from Mexico, who can only serve for one

term without the possibility of reelection.[36] While those politicians who may be out of the office in the next period have no incentive for reaching agreements that go beyond the present, those who know that they will be in the negotiation table in the future may trade policies today for policies in the future.

For approximating the discount factor of the policymakers (delta), while having high coverage, we have chosen two components: changes to the constitution and changes in the cabinet.[37] The first variable is defined as the number of basic alterations in a state's constitutional structure that have a significant impact on the political system. The second is defined as the number of times in a year that a new premier is named and/or 50% of the cabinet posts are occupied by new ministers. Consequently, each one of the variables proxy the volatility of the polity, hence, they proxy the uncertainty faced by some of the most relevant policymakers regarding their rate of survival. The discount factor variable delta is constructed in a way such that, as in the model, higher values imply a higher probability of cooperation.

While the discount factor is one of the most relevant determinants of cooperation as shown in the model, it may be not the only one. Better conditions in society towards cooperation and a more civil political environment may also play a role. Consequently we constructed two additional variables *trust* and *capabilities*.

Trust is composed by the opposite of ethnic fractionalization and language fractionalization.[38] We expect that as trust increases it also does the probability of reaching cooperative agreements. In terms of the examples presented in the previous section, as the percentage of actors sitting at the negotiation table have more similar preferences, the probability of cooperation may increase.[39]

[36] In Stein et al (2008) we analyze the particular impact of these types of restrictions on the policymaking process.
[37] As discount factor we use the reverse of the first principal component. We have done exercises using other, sometimes even more accurate, variables such as the reelection rate of legislators, changes in the number of vetoes, changes of the executive and the vote volatility of the executive but we don't include them here because results are basically the same but in some combinations it reduces the sample size considerably. Sources and definitions are in the appendix.
[38] In some specifications we have tried adding a third variable called *distrust* from the WVS. While the results are the same, it reduces the sample significantly (30 observations).
[39] This result has been widely analyzed in the literature. For example, see IDB 2007, chapter 7, for experimental results showing that cooperation increases as people sitting at the negotiation table are more similar.

The *capabilities* variable is constructed using the following components: political regime, party institutionalization, law and order, (no) military president, and congress capabilities.[40] This variable tries to capture certain characteristics of the political environment that could lead to better chances for cooperation (but exogenous of our vetoes variable). For example, higher values of law and order imply better enforcement of deals and contracts (which facilitate cooperation). Also, a more capable congress and institutionalized parties could generate better conditions for policy negotiation. Consequently, we expect that as the capabilities variable increases, the conditions for cooperation rise too because the policy actors have better aptitudes for policymaking and the overall policy arena is more "civil". Regression results are presented in Table 4.

Table 4. Intertemporal cooperation and stability and adaptability (weighted least squares).

	Stability			Adaptability		
	(1)	(2)	(3)	(4)	(5)	(6)
Delta	0.09**			0.22***		
	(0.04)			(0.07)		
Trust		0.01			0.20***	
		(0.04)			(0.07)	
Capabilities			0.17***			0.42***
			(0.06)			(0.11)
Ln(GDPpc)	Yes	Yes	Yes	Yes	Yes	Yes
Region	Yes	Yes	Yes	Yes	Yes	Yes
Legal Origin	Yes	Yes	Yes	Yes	Yes	Yes
AdjR^2	.53	.52	.58	.50	.61	.54
Obs	103	75	84	107	73	83

Note: significant at 1% level (***), 5% (**), and 10% (*)

The regression results for stability and adaptability are basically the same regardless which one of the variables is used: as the polity is less volatile, trust is higher among the players, and they have higher capabilities, stability and adaptability are higher as well.

The interpretation of the results is straightforward. At higher levels of delta, trust and capabilities, policy actors find it more feasible to reach intertemporal agreements. Hence, it is easier for them to agree on policies independent of the realizations of the economic and political shocks, which provides higher stability and adaptability. On the contrary, at low levels of the discount factor, trust, and capabilities, cooperation falls apart. In that case, policies would have lower stability (they would change following

[40] See definitions and sources in the appendix.

every political shock) or low adaptability (will not necessarily adjust to changing economic circumstances).

In addition to the impact of the variables on each one of the dependent variables, the logic of our framework also generates additional predictions linking some political variables to the likelihood of cooperative policymaking.[41] As we said, the distance to the origin of coordinates in the stability/adaptability space would be higher under a cooperative equilibrium. On the contrary, lower discount factors, trust, and capabilities would reduce the distance to the origin. The model, however, can't predict a specific impact of the variables on the ratio between stability and adaptability. Table 5 suggests that, as expected, the independent variables affect the "distance" while they don't affect the ratio in a particular way.

Table 5. Intertemporal cooperation and the ratio and the distance (weighted least squares).

	Stability/ Adaptability			Distance (Stability, Adaptability)		
	(1)	(2)	(3)	(4)	(5)	(6)
Delta	-0.12			0.14*		
	(0.09)			(0.07)		
Trust		-0.07			0.17**	
		(0.08)			(0.07)	
Capabilities			-0.01			0.44***
			(0.13)			(0.10)
Ln(GDPpc)	Yes	Yes	Yes	Yes	Yes	Yes
Region	Yes	Yes	Yes	Yes	Yes	Yes
Legal Origin	Yes	Yes	Yes	Yes	Yes	Yes
$AdjR^2$	0.05	0.16	0	0.59	0.62	0.66
Obs	99	71	80	99	71	80

Note: significant at 1% level (***), 5% (**), and 10% (*)

Given that the likelihood of reaching intertemporal agreements seems to matter for explaining stability and adaptability, it may be relevant to check if there are substantial differences in terms of the correlation between stability and adaptability among those countries where the probability may differ considerably. Because it is easier to interpret –and closer to the model- we divide the sample among those countries with low and high levels of the discount factor.

The correlation between stability and adaptability for the different samples shows two different stories –even after controlling for the independent variables. On the one hand,

for the group of countries with high delta, the correlation remains non-negative and there is no trade-off. On the other hand, a trade-off between stability and adaptability may appear in the data for low values of the discount factor (low delta); that is, for the group of countries with lower probability of reaching intertemporal agreements.

Table 6. Correlation between adaptability and stability

		Whole sample	Sample divided by			
			Delta (median)[1]		Delta (75th percentile)[2]	
	Controlling for		High	Low	High	Low
(1)	Ln(GDPpc) + Regional + Legal Origin	0.16	0.62***	-0.22	0.45***	-0.61***
(2)	(1) + Delta	0.13	0.61***	-0.24	0.42***	-0.64***
(3)	(1) + Trust	0.34**	0.60***	0.14	0.50***	-0.35
(4)	(1) + Capabilities	0.19	0.61***	-0.27	0.36**	-0.48

Note: significant at 1% level (***), 5% (**), and 10% (*)

[1] Low and high corresponds to countries being above or below the median

[2] Low and high corresponds to countries being above or below the 75th percentile

Finally, we just check whether our prediction regarding the number of vetoes withstands incorporating the variables that proxy the probability of reaching intertemporal cooperation like controls. As presented in Table 7, vetoes remains positive and significant even in the specification with delta, trust and capabilities, increasing our confidence on the robustness of the result: *more veto players do not necessarily reduce policy adaptability*.

Table 7. Regressions on adaptability (weighted least squares).

	(1)	(2)	(3)	(4)
Vetoes	0.17***	0.20***	0.16**	0.22***
	(0.06)	(0.07)	(0.08)	(0.08)
Delta	0.19***			-0.02
	(0.07)			(0.11)
Trust		0.19***		0.18**
		(0.07)		(0.07)
Capabilities			0.34***	0.32**
			(0.11)	(0.12)
Ln(GDPpc)	Yes	Yes	Yes	Yes
Region	Yes	Yes	Yes	Yes
Legal Origin	Yes	Yes	Yes	Yes
AdjR^2	.54	.65	.56	0.70
Obs	107	73	83	61

Note: significant at 1% level (***), 5% (**), and 10% (*)

[41] This has been developed in more detail in IDB (2005), Stein and Tommasi (2007), and Stein et al (2008).

7. Conclusions

This paper is part of an agenda in which we study the effects of political institutions on intertemporal cooperation and, hence, on the resulting policies. Most existing formal literature, particularly the veto players approach, has mapped political institutions (such as electoral rules, and forms of government) into parameters of the description of what are essentially one-shot games. We suggest modeling policymaking as a repeated game, and hence mapping political institutions into parameters of repeated games.

By introducing the concept of intertemporal cooperation we are able to show that two of the main implications of the veto players' theory are not necessarily true: more adaptability does not necessarily imply lower stability, and having more veto players does not necessarily make a polity less able to adjust its policies. On the contrary, under very specific circumstances, adding veto players may increase the adaptability of policies.

Appendix

Data definition and sources

Variable	Definition and sources	Obs
Ln(GDPpc)	▪ Log of GDP per capita in 1980 ▪ When data unavailable for 1980, closest year available used ▪ Source: World Bank World Development Indicators	115
Legal Origin	▪ Dummy variables that identifies the legal origin of the Company Law or Commercial Code of each country. ▪ Source: Quality of Government by La Porta el at 1999. ▪ Includes: British, French, Germany, Scandinavian, Socialist	148
Regions	▪ Dummy variables according to the country region ▪ Source: World Bank. ▪ Includes: Developed, Asia, ECA, LAC, MNA, SouthAsia, Africa.	152
Constitutional changes	▪ Defined as the number of basic alterations in a state's constitutional structure, the extreme case being the adoption of a new constitution that significantly alters the prerogatives of the various branches of government. Examples of the latter might be the substitution of presidential for parliamentary government or the replacement of monarchical by republican rule. Constitutional amendments which do not have significant impact on the political system are not counted. ▪ Source: Cross National Time Series database (S21F2), covering 1980-2003	151
Cabinet changes	▪ Defined as the number of times in a year that a new premier is named and/or 50% of the cabinet posts are occupied by new ministers. ▪ Source: Cross National Time Series database (S22f2), covering 1980-2003.	151
Volatility of vetoes	▪ Defined as Standard deviation of Vetoes ▪ Source: see Vetoes	152
Executive changes	▪ Executive Power Change ▪ The number of times in a year that effective control of the executive power changes hands. Such a change requires that the new executive be independent of his predecessor. ▪ Source: Cross National Time Series database (S22f3)	151
Ethnic Fractionalization	▪ Source: Alesina et al (2003) from various sources	102
Language Fractionalization	▪ Source: Alesina et al (2003) from various sources	99
Law & Order	▪ Law & Order (n=128) ▪ As noted in (Political Risk Services, 1996): "A country with a sound law and order tradition has sound political institutions, a strong court system and provisions for an orderly succession of power. This indicator reflects the degree to which the citizens of the country are willing to accept the established institutions to make and implement laws and adjudicate disputes. A high point total means that there is a strong law and order tradition, while a low point total means that there is a tradition of depending on physical force or illegal means to setting claims." ▪ Source: Henisz, 1980-2004, 1990-2004	128
Military	▪ Is Chief Executive a military officers? (1 if yes, 0 if no) ▪ Source: Database of Political Institutions, 1990- 2004/ 1980-2004. The value is the mean of the years 1980/1990- 2004 for which data is available	150
Congress Capabilities	▪ Composed of the average of the following two components:	118

	▪ Legislative efficiency ▪ Confidence in Parliament (conparl)	
Party Institutionalization	▪ Composed by five variables: ▪ BTI (2006): To what extent is there a stable, moderate and socially rooted party system to articulate and aggregate societal interests? Ranked from 1 to 7, higher numbers indicating higher levels of a stable party system. ▪ Confidence in Political Parties ▪ Vote Volatility ▪ Party Age ▪ Fairness of Elections	152
Vetoes	▪ Contains data from three variables, two different sources: ▪ University of Maryland Polity IV Project, Political Regime Characteristics and Transitions, average of data from 1990-2003. Refers to the extent of institutionalized constraints on the decision-making powers of chief executives, whether individuals or collectivities. The concern is therefore with the checks and balances between the various parts of the decision-making process. A seven-category scale is used. o (1) Unlimited Authority, (3) Slight to Moderate Limitation on Executive Authority, (5) Substantial Limitations on Executive Authority, (7) Executive Parity or Subordination o Those polities described with a (3) or above also contain an independent judiciary ▪ Henisz Dataset, average of data from 1990-2004. Constraints on the Executive: A seven-category scale is used o (1) Unlimited Authority: There are no regular limitations on the executive's actions, to (3) Slight to Moderate Limitations an Executive Authority, to (7) Executive Parity or Subordination: Accountability groups have effective authority equal to or greater than the executive inmost areas of activity. o Those polities described with a (3) or above also contain an independent judiciary ▪ Henisz Dataset: POLCONV variable, which takes the average of country data from 1990 to 2004. Data ranges from 0-1. Was rescaled to 0-6 o This measure of political constraints estimates the feasibility of policy change (the extent to which a change in the preferences of any one actor may lead to a change in government policy). It is constructed by identifying the number of independent branches of government with veto power over policy change and is then modified to take into account the extent of alignment across branches of government using data on the party composition of the executive and legislative branches.	152

References

Acemoglu, Daron, Simon Johnson and James Robinson (2006) "De Facto Political Power and Institutional Persistence" American Economic Review, (Papers and Proceedings) May, 96(2): 325-330.

Alesina, Alberto (1988). "Credibility and Policy Convergence in a Two-Party System with Rational Voters." American Economic Review **78**(4): 796-805.

Alt, James (2002) "Comparative Political Economy: Credibility, Accountability, and Institutions" in Ira Katznelson and Helen Milner Political Science: The State of Discipline, W.W.Norton & Company, Centennial Edition.

Aoki, Masahiko (2001) Toward a Comparative Institutional Analysis. MIT Press.

Banks, Arthur S. CROSS-NATIONAL TIME SERIES, ICPSR ed. Ann Arbor, MI: Inter-University Consortium for Political and Social Research

Baron, David P. and John A. Ferejohn (1989) "Bargaining in Legislatures." American Political Science Review **83**: 1181-1206.

Barro, Robert J. and David B. Gordon (1983) "A Positive Theory of Monetary Policy in a Natural-Rate Model." Journal of Political Economy **91**(4): 589-610.

Basinger, Scott, and Mark Hallerberg (2004) "Competing for Capital: The Effects of Veto Players, Partisanship, and Competing Countries' Domestic Politics on Tax Reform." American Political Science Review. 98, 2:261-276.

Beck, Thorsten, George Clarke, Alberto Groff, Philip Keefer, and Patrick Walsh. 2001. "New tools in comparative political economy: The Database of Political Institutions." 15:1, 165-176 (September), World Bank Economic Review. < http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20649465~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html>

Berkman, Scartascini, Stein and Tommasi (2008) "Political Institutions and Policy Outcomes around the World" Mimeo, Inter-American Development Bank.

Bertelsmann Transformation Index,
http://www.bertelsmann-transformation-index.de/11.0.html?&L=1>

Besley, Timothy and Stephen Coate (1998) "Sources of Inefficiency in a Representative Democracy" American Economic Review Vol. 88, No. 1. (March), pp. 139-156.

Birchfield, Vicki and Markus Crepaz (1998) "The impact of constitutional structures and collective and competitive veto points on income inequality in industrialized democracies" European Journal of Political Research Volume 34, Number 2 / October

Boix, Carles (1999) “Setting the Rules of the Game: The Choice of Electoral Systems in Advanced Democracies”, American Political Science Review, September, 93(3): 609-624.

Braun, Miguel, Marcelo Leiras and Mariano Tommasi (2005) “Political Institutions, State Capabilities, and Development” Mimeo, Universidad de San Andres.

Calvert, Randall L. (1995a) “Rational Actors, Equilibrium and Social Institutions” in Jack Knight and Itai Sened Explaining Social Institutions, University of Michigan Press.

Calvert, Randall L. (1995b) “The Rational Choice Theory of Institutions: Cooperation, Coordination, and Communication” in Jeffrey S. Banks and Eric Allen Hanushek (eds.) Modern Political Economy. Cambridge University Press.

Calvert, Randall and Justin Fox (2003) “Efective Parties in a Model of Repeated Distributive Legislative Bargaining”, Mimeo.

Carrubba, Clifford J. and Craig Volden (2000) “Coalitional Politics and Logrolling in Legislative Institutions”, American Journal of Political Science, April, 44(2): 255-271.

Cox, Gary W. and Matthew D. McCubbins (2001) “The Institutional Determinants of Economic Policy Outcomes”, in Presidents, Parliaments and Policy. Stephan Haggard and Matthew D. McCubbins. New York, Cambridge University Press.

de Figueiredo, Rui J. P. (2002). "Electoral Competition, Political Uncertainty, and Policy Insulation." American Political Science Review **96**(2): 321-333.

Dixit, Avinash K. (1996) The Making of Economic Policy: A Transaction-Cost Politics Perspective. Cambridge, Mass, MIT Press.

Dixit, Avinash K. (2003) "Some Lessons of Transaction Cost Politics for Less-Developed Countries." Economics & Politics **15**(2): 107-133.

Dixit, Avinash K., Gene Grossman and Faruk Gul (2000) "The Dynamics of Political Compromise." Journal of Political Economy **108**(3): 531-68.

Drazen, Allan (2000) Political Economy in Macroeconomics. Princeton, NJ, Princeton University Press.

Epstein, Lee and Sharyn O’Halloran (1999) Delegating Powers: A Transaction Cost Politics Approach to Policy Making Under Separate Powers. New York, Cambridge University Press.

Fox, Justin (2006) “Legislative Cooperation Among Impatient Legislators” Journal of Theoretical Politics **18**(1): 68-97.

Franzese Jr., Robert J. (2005) “Fiscal Policy with Multiple Policymakers: Veto Actors and Deadlock; Collective Action and Common Pools; Bargaining and Compromise”

Mimeo, University of Michigan. (Published in Japanese in Veto Players and Policy Change, Hideko Magara, ed., Waseda University Press, 2007, pp. 118-61.)

Fudenberg, Drew and Jean Tirole (1991) Game Theory. Cambridge, MA, MIT Press.

Granato, Jim (1996) "The Effect of Policy-Maker Reputation and Credibility on Public Expectations An Application to Macroeconomic Policy Changes", Journal of Theoretical Politics, 8(4): 449-470.

Greif, Avner (2006) Institutions and the Path to the Modern Economy. Cambridge University Press.

Haggard, Stephan and Matthew D. McCubbins (2001) Presidents, Parliaments and Policy. New York, Cambridge University Press.

Hallerberg, Mark (2002) "Veto Players and the Choice of Monetary Institutions" International Organization 56.4: 775-802

Henisz, Witold, "The Political Constraint Index (POLCON) Dataset," 2006 release, <http://www-management.wharton.upenn.edu/henisz/>

Huber, John D. and C. Shipan (2002) Deliberate Discretion? The Institutional Foundations of Bureaucratic Autonomy. New York, Cambridge University Press.

Inter-American Development Bank (2005) The Politics of Policies. The Role of Political Process in Successful Public Policies. Economic and Social Progress in Latin America and the Caribbean 2006 Report.

Inter-American Development Bank (2007) Outsiders?. Economic and Social Progress in Latin America and the Caribbean 2008 Report.

International Institute for Sustainable Development (2007) Adaptive Policies: Guidance for Designing Policies in Today's Complex, Dynamic and Uncertain World

Jacobs, Alan (2004). "Backing into the Future: Reconceiving Policy Reform as Intertemporal Choice" Paper presented at the annual meeting of the American Political Science Association, Hilton Chicago and the Palmer House Hilton, Chicago, IL, Sep 02, 2004.

Jacobs, Alan (2008) "The Politics of When: Redistribution, Investment, and Policymaking for the Long Term" British Journal of Political Science 38(2), 193-220.

Jochem, Sven (2003) "Vetoplayers or Vetopoints? The Politics of Welfare State Reforms in Europe" Paper presented at the annual meeting of the American Political Science Association, Philadelphia Marriott Hotel, Philadelphia, PA, Aug 27, 2003

Keefer, Philip and David Stasavage (2003) "The Limits of Delegation: Veto Players, Central Bank Independence, and the Credibility of Monetary Policy", American Political Science Review (97): 407-423.

Kydland, Finn E. and Edward C. Prescott (1977) "Rules Rather Than Discretion: The Inconsistency of Optimal Plan." Journal of Political Economy **85**(3): 473-491.

Levy, Brian and Pablo T. Spiller (1994) "The Institutional Foundations of Regulatory Commitment: A Comparative Analysis of Telecommunications Regulation." Journal of Law, Economics and Organization **10**(2): 201-246.

Mailath, George J. and Larry Samuelson (2006) Repeated Games and Reputations. Long-run relationships. Oxford University Press.

Mainwaring, Scott and Mariano Torcal (2005) "Party System Institutionalization and Party System Theory: After the Third Wave of Democratization" Paper presented at the annual meeting of the American Political Science Association, , Washington, DC. September.

McCarty, Nolan and Adam Meirowitz (2007) Political Game Theory. An introduction. Cambridge University Press.

Morrow, James D. (1994) Game Theory for Political Scientists. Princeton, NJ, Princeton University Press.

Mueller, Dennis (2003) Public Choice III. Cambridge: Cambridge University Press.

Natali and Rhodes (2006) "The New Politics of Pension Reforms in Continental Europe" in Arza and Kohli The Political Economy of Pensions. Routledge, London (forthcoming).

North, Douglass C. (1990) "A Transaction-Cost Theory of Politics." Journal of Theoretical Politics **2**(4): 355-67.

North, Douglass C. and Barry R. Weingast (1989) "Constitution and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England." Journal of Economic History **49**(4).

Obinger, Herbert (2002) "Veto Players, Political Parties, and Welfare-State Retrenchment in Austria" International Journal of Political Economy Volume 32, Number 2 / Summer: 44 – 66.

Pérez-Liñan, Aníbal and Juan Carlos Rodríguez-Raga (2003) "Veto Players in Presidential Regimes" Paper presented at the annual meeting of the American Political Science Association, Philadelphia Marriott Hotel, Philadelphia, PA, Aug 27.

Persson, Torsten and Guido Tabellini (2000) Political Economics: Explaining Economic Policy. Cambridge, MA, MIT Press.

Profils Institutionnels-database, Centre D'Estudes Prospectives et D'Informations Internationales <http://www.cepii.fr/ProfilsInstitutionnelsDatabase.htm>

Przeworski, Adam (2005) "Democracy as an Equilibrium." Public Choice 123: 253-273

Rhodes, R.A.W., Sarah A. Binder and Bert A. Rockman (2006) The Oxford Handbook of Political Institutions. Oxford University Press.

Rodrik, Dani (1995) Political Economy of Trade Policy. Handbook of International Economics. G. M. Grossman and K. Rogoff. Amsterdam, Elsevier. **3**.

Rubinstein, Ariel (1982) "Perfect Equilibrium in a Bargaining Model", Econometrica, 50: 97-110.

Shugart, Matthew Soberg (2006) "Comparing Executive-Legislative Relations" in Rhodes, R.A.W., Sarah A. Binder and Bert A. Rockman (2006) The Oxford Handbook of Political Institutions. Oxford University Press.

Shugart, Matthew Soberg and Stephan Haggard (2001) "Institutions and Public Policy in Presidential Systems" in Stephan Haggard and Matthew D. McCubbins Presidents, Parliaments, and Policy. New York, Cambridge University Press.

Spiller, Pablo T. and Mariano Tommasi (2007) The Institutional Foundations of Public Policy in Argentina, Cambridge University Press.

Spiller, Pablo T., Ernesto Stein, and Mariano Tommasi (2003) "Political Institutions, Policymaking Processes, and Policy Outcomes: An Intertemporal Transactions Framework", Washington DC, Inter-American Development Bank.

Stein and Tommasi (2007) "The Institutional Determinants of State Capabilities in Latin America." in F. Bourguignon and B. Pleskovic (eds.) Annual World Bank Conference on Development Economics Regional: Beyond Transition. World Bank Publications, 2007.

Stein, Tommasi, Spiller and Scartascini (2008) Policymaking in Latin America. How Politics Shapes Policies. David Rockefeller Center for Latin American Studies, Harvard University.

Swanson et al (2006) "Initial Conceptual Framework and Literature Review for Understanding Adaptive Policies" Chapter 2 in the International Institute for Sustainable Development (2007) Adaptive Policies: Guidance for Designing Policies in Today's Complex, Dynamic and Uncertain World

Tsebelis, George (1995) "Decision Making in Political Systems: Veto Players in Presidentialism, Parliamentarism, Multicameralism and Multipartyism." British Journal of Political Science **25**

Tsebelis, George (1999)

Tsebelis, George (2000) "Veto Players and Institutional Analysis", Governance, 13(4): 441-474.

Tsebelis, George (2002) Veto Players: How Political Institutions Work. Princeton, NJ, Princeton University Press.

Weaver, R. Kent and Bert A. Rockman (1993) Do Institutions Matter? Government Capabilities in the United States and Abroad. Washington DC, Brookings Institution Press.

Weingast, Barry R. and W. Marshall (1988) "The Industrial Organization of Congress; or, Why Legislatures, like Firms, Are Not Organized as Markets?" Journal of Political Economy **96**(11): 132-163.

Williamson, Oliver E. (1991) "Comparative Economic Organization: The Analysis of Discrete Structural Alternatives." Administrative Science Quarterly **36**: 269-296.