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## **INSTITUTIONAL BIAS TOWARDS THE STATUS QUO**

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# INSTITUTIONAL BIAS TOWARDS THE STATUS QUO<sup>+</sup>

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## Resumen

Algunas sociedades parecen estar mejor equipadas para implementar reformas económicas eficientes y entregar resultados positivos de su implementación. Nuestro modelo presenta una relación novedosa entre reforma económica y calidad institucional, mostrando que las características del sistema político pueden dejar a los ciudadanos sin la posibilidad de recompensar apropiadamente a los políticos que implementan proyectos nuevos y, por lo tanto, favoreciendo a aquellos que aseguran el *status quo*, aunque mediocre, de la economía. En este ambiente, se dejan de lado nuevos proyectos de política económica y la calidad de las instituciones políticas se vuelve inerte. Las instituciones políticas son importantes porque afectan el valor para el político de mantenerse en el poder. Mostramos que las sociedades con sistemas políticos de calidad media pueden presentar sesgo institucional hacia el *status quo*. Este sesgo surge debido a la incapacidad de los ciudadanos para diseñar reglas de votación efectivas que induzcan al político a implementar nuevos proyectos exitosamente.

## Abstract

Some societies appear to be better equipped than others to implement efficiency enhancing policy reforms and to deliver positive results out of their implementation. Our model presents an under-examined element of policy reform and institutional quality, showing how the characteristics of the political system may render citizens unable to properly reward politicians who implement new projects, thus favoring politicians who secure the status quo, albeit mediocre, of the economy. In such an environment, new policy projects are sidelined and political institutional quality remains inert. Political institutions matter because they affect the value for the politicians of staying in office. We show that societies with a suboptimal political system may present institutional bias towards the status quo. This bias arises due to the inability of the citizens to design an effective voting rule that induces politicians to implement new projects successfully.

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# 1 Introduction

The main idea we present in this paper is simple and to the best of our knowledge innovative in the following way: In some countries, due to the characteristics of their political system, voters are unable to effectively reward politicians who embark on successful policy reforms, but are able to effectively reward politicians who maintain the status quo of the economy even if it is mediocre. Through our notion of "effectively rewarding" the politician we mean that citizens are able to utilize their vote to create incentives for the politician to undertake their preferred action. If voters are not able to effectively reward a politician who successfully implements new projects, then new projects are never implemented in equilibrium.

In our model, the status quo demands no effort from the politician and delivers a positive outcome every period. New projects, on the other hand, demand a fixed implementation cost, are effort costly for the politician and deliver a (higher) positive outcome but only with a probability that depends on the politician's effort. Furthermore, the citizens' ability to reward the politician is linked with the quality of the political system. We characterize the institutional quality of the political system using two criteria. Firstly, the ability of the voters to reward well performing politicians with reelection. Secondly, the ability of voters to use elections to dismiss bad performing politicians.

We show that political institutions matter because they affect the value of holding office for the politician. Specifically, an increase in the quality of the political system increases the value of holding office for the politician who complies with the demands of the citizens. We also find that it is only when the political system reaches a certain quality level where voters are able to reward a politician who does not keep the status quo, that we observe new projects implemented in the economy at all. The voters are able to motivate the politician to successfully implement the project if the per period implementation cost (fixed and variable) is lower than the expected net benefit from implementation. Institutions play a crucial role in policy implementation because the expected net benefit from implementing the project is a positive function of the quality of the political system.

The notion that societies with better political institutional quality are more prone

to engage in successful policy reform seems to enjoy some empirical support (Giavazzi and Tabellini, 2005). For example, let's consider the process of economic liberalization as the "new project" to be implemented. Using the indicator of economic liberalization developed by Sachs and Werner (1995) and later expanded by Wacziarg and Welsh (2003) we identify the period in time when a country implemented an economic liberalization reform.<sup>1</sup> Additionally, to measure the quality of the political system at the time of the policy implementation, we rely on the Polity IV index developed by Marshall and Jaggers (2000). The index is a composite index of democracy and autocracy and has, in a number of recent studies, e.g., Rodrik and Wacziarg (2004), Mulligan et al. (2004), Giavazzi and Tabellini (2005), Persson (2005), been used as an indicator of democracy, as a tool to classify political regimes (democracy versus autocracy), or as a tool to define episodes of democratization.<sup>2</sup> The Polity IV index is coded from -10 (autocratic) to 10 (democratic). The majority of the studies mentioned above use 0 as the threshold to classify a country as democratic.<sup>3</sup>

We classify political regimes into three categories depending on the quality of the political system. Low quality political systems are political systems with a Polity IV score lower than 0. This is what most of the empirical studies mentioned above would consider as autocratic regimes. Medium quality political systems are political systems with a Polity IV score between 0 and 4. Finally, high quality political systems are identified with a Polity

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<sup>1</sup>A country is considered closed to international trade if one of the following conditions is satisfied: i) Average tariff exceed 40%. ii) Non-tariff barriers cover more than 40% of its imports. iii) The black market premium on exchange rate exceeds 20%. iv) It has socialist economic system. v) Much of its exports are controlled by a state monopoly.

A country is classified as open if none of these conditions apply.

<sup>2</sup>The Polity IV index is constructed from two separate indexes of democracy and autocracy, where the democracy index measures general openness of political institutions on a scale from 0 to 10 and the autocracy index measures general closedness political institutions on a scale from -10 to 0. Both indexes are constructed from scores given to six authority characteristics. These are i) regulation of executive recruitment: institutionalized procedures regarding the transfer of executive power; ii) competitiveness of executive recruitment: extent to which executives are chosen through competitive elections; iii) Openness of executive recruitment: Opportunity for non-elites to attain executive office; iv) executive constraints: operational (de facto) independent of chief executive; v) regulation of participation: development of institutional structures for political expression; vi) competitiveness of participation: extent to which non-elites are able to access institutional structures for political expression (Marshall and Jaggers, 2000.). The Polity IV index is simply the difference between the democracy and autocracy index and ranges from -10 (high autocracy) to 10 (high democracy).

<sup>3</sup>Aidt and Eterovic (2007) argue that the polity IV index is a more accurate measure of political competition than democracy.

IV score between 5 and 10. Looking at the data presented in Table 1 (see Appendix) we observe that the vast majority of episodes of economic liberalization occurred during periods where the country presents a high quality political system. Out of 82 countries for which we have data of economic liberalization and Polity IV, 51 countries had a Polity IV score higher or equal to 5 at the time economic liberalization took place. Only 6 countries had a Polity IV score between 0 and 4.<sup>4</sup> The remaining 25 countries had a negative score at the time of economic liberalization. At first glance, the raw data appears to lend credence to notion that political institutions matter for policy reform. Although, we acknowledge that in order to make a valid empirical assessment, regression analysis is needed.

The relevant question then is, how do political institutions influence policy reforms? In the economic literature, the function that explains the support for the government as a function of economic and political outcomes is known as the VP-function.<sup>5</sup> The VP-function is based on the idea that voters hold governments responsible for the development of the economy. An important requirement for holding accountable aforementioned political leadership is their ability to influence the course of policy. Such an arrangement may rarely be the case. However, empirical evidence gathered mostly from developed countries provides support for the existence of the VP-function. Though empirical studies have found highly significant VP-functions, the function appears to be unstable both over time and across countries (Nannestad and Paldam, 1994).

One explanation for a dearth of consistent results over time may be attributed to the fact that most governments are not solely responsible for economic conditions. Governments that do not enjoy a parliamentary majority or that are formed by minority coalitions are likely to be more constrained by the political system and therefore may present a scenario in which it is more difficult for the voters to identify who is to blame or reward for the economic situation. A second possibility to explain the lack of stability of the VP-function is that outcomes may not be linear (Hibbs, 1979), so the relationship between economic performance and government popularity wanes and waxes through time.

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<sup>4</sup>There are 7 countries with Polity IV score equal to 5. A reclassification of medium quality political systems as countries that have a Polity IV between 0 and 5 still favors the implementation of economic liberalization under high quality political systems by 44 to 13 countries.

<sup>5</sup>See Nannestad and Paldam (1994) for an extensive survey of the literature on the VP-function.

Some societies appear better equipped than others to implement efficiency enhancing policy reforms and to deliver positive results out of their implementation. If voters favor politicians who deliver positive policy outcomes and politicians benefit enough from being in political office, then the implementation of efficiency enhancing policies should be the usual case and the VP-function of the voters should be stable and continuous.

However, in a representative democracy, other factors should also be taken into account to understand the real incentives faced by voters and politicians. Two major branches of research try to understand why welfare enhancing policies are not always implemented. The first branch of research focuses on the effects of uncertainty on policy decisions. In democracies with majoritarian electoral system and voters with heterogenous preferences, the presence of individual specific uncertainty could distort the aggregate preferences of the citizens (Fernandez and Rodrik, 1991). Certain reforms that would have been popular ex-post may not be able to gather enough support to be implemented in the first place. Surprisingly, this result endures even if the government is allowed to compensate the losers after the policy is implemented (Jain and Mukand, 2003). When the incumbent faces individual uncertainty about the outcome of the reform, he is unable to credibly promise compensation after its implementation. Another kind of uncertainty, this time regarding the possibility of future policy reversal may increase the cost of initial policy implementation. Rodrik (1989,1991) shows that sensible economic policies may not deliver positive returns if citizens have doubts about the future survival of the reforms.

The second branch of research directs attention to the role of competing interest groups influencing government decisions. Existing interest groups will try to block reforms that put at risk their current economic rents (Kuznets, 1968; Mokyr, 1990) or that change the structure of political power (Acemoglu and Robinson, 2000). Coate and Morris (1995) develop a model in which a "bad" politician sometimes conceals his type to the voters through the use of inefficient transfers to interest groups. In such a scenario, the conclusion may result in a wasteful politician implementing projects that are not warranted. Coate and Morris (1999) explore how the private sector reacts to newly introduced policy. They illustrate how a firm's sunk costs, or investments geared to take full benefit of newly introduced policies, may generate a form of institutional persistence which increases the

likelihood of future policy retention. According to the Coate and Morris model, voters anticipate the inertia of protectionist policies, and subsequently, discipline politicians for the introduction of such policies, even if they are Pareto improving. Alesina and Drazen (1991) focus on the timing of stabilization policies. They argue that if the stabilization program has significant distributional implications, competing groups may try to shift the cost to the others. Under such circumstances, stabilization may become a war of attrition and its implementation delayed.

The majority of models exploring policy implementation and reform rely on the assumption that changes in policy will spur a post-implementation dichotomy of "winners" and "losers". Most models further pair this assumption together with the notion of asymmetry of information between politicians and the voters, predicting multiple sources of inefficient friction. Under these rubrics, uncertainty, a paucity of information among participating parties, or acrimonious outcomes may thwart the adoption and implementation of sensible reforms.

Our model takes a theoretical departure from some of these assumptions, in the sense that we do not require heterogenous agents to generate what we call "institutional bias towards status quo". For the sake of highlighting tensions in policy implementation, we assume that if the policy is implemented, all citizens will equally enjoy its benefits. Another point of departure that our model takes from previous ones is that we don't rely on any inefficiency to generate the bias towards the status quo. The policy is implemented only if its expected payoff to the citizens surpasses the payoff of the status quo policy.

The model we present offers some interesting insights into the adoption of policy reforms through policy implementation. Firstly, to analyze the likelihood of implementation and later of success of policy reform, the theoretical model shows the existence of three categories of political systems. The quality of the political system is given by the citizens' ability to design effective voting rules that induce the politician to implement reform or status quo, depending upon which alternative delivers higher utility to them. In high quality political systems, citizens are able to design effective voting rules to induce the politician to implement the reform or if they prefer it to keep the status quo. In this category, improvements in the institutional quality increase the likelihood of success of policy



implementation. Additionally, economic performance is linked to the electoral outcome. If the politician delivers the good economic outcome, then he is reelected by the citizens.

However, the correlation between institutional quality and the expected return from policy reform is not continuous. Societies qualified as having medium quality political institutions present a bias towards status quo policies. Within this group, the quality of the political system is not correlated with the likelihood of success of policy reform. Citizens cannot design an effective voting rule that induces the politician to implement the project successfully. This makes the status quo policy the most attractive option for the voters. The relationship between economic outcomes and electoral success is different than in a high quality political system. Now, the politician has only to maintain the status quo of the economy to be reelected. Finally, in societies classified as having low quality political institutions, citizens are unable to set effective performance standards of any kind.

The existence of institutional bias towards the status quo could have important practical policy implications. Firstly, in a medium quality political system improvements in the political quality will have no effect on the likelihood of implementation of the policy reform. A lack of impact may concern the policy makers and discourage further efforts in the direction of improving the quality of political institutions. Secondly, our model provides theoretical support to the non-linearity of the VP-function. There is a "break" in the VP-function when the society goes from medium to high quality political system. In medium quality political systems the politician is reelected for delivering the status quo of the economy while in high quality political systems the standards for reelection are more demanding.

The rest of the paper is organized as follows. In section 2, we present the model and discuss our main results. In section 3, we analyze the likelihood of adoption of policy reform. Finally, in section 4, we conclude.

## 2 The Model

### 2.1 Assumptions

Societies organize themselves in multiple ways allowing their democracies to have different degrees of political accountability. To account for these differences, we follow Aidt, Dutta and Sena (2008) in assuming that the institutional quality of the political system depends on two factors. Firstly, the ability of the voters to reward a politician who complies with the standards set by the voters. Secondly, the ability of voters to use elections to dismiss a politician who deviates from the standards set by the voters. The following two assumptions make the distinction between these two types of governance failures:

**Assumption 1 (Governance Failure 1)** *Voters can only promise to reelect a politician that satisfies their standards in period  $t$  with probability  $p \in [0, 1]$ .*

**Assumption 2 (Governance Failure 2)** *Voters can only promise to dismiss a politician that does not satisfy their standards in period  $t$  with probability  $1 - q \in [0, 1]$ .*

Effectively,  $p$  and  $q$  represent the institutional quality of the political system. Improvements in the quality of the political system are captured by increases in  $p$  and decreases in  $q$ . A "perfect" democracy corresponds to  $p = 1$  and  $q = 0$ . A "perfect" dictatorship corresponds to  $q = 1$ . Additionally, we understand a representative democracy to be a political system providing a fair degree of political accountability.

**Definition 3 (Representative Democracy)** *In a representative democracy, governance failure 1 is lower than governance failure 2, i.e.  $p \geq q$ .*

We focus our investigation on the study of the effects of political institutions on policy implementation in a representative democracy.

### 2.2 The Economic Framework

Consider an economy populated by  $n$  identical, infinitely lived citizens. Each period a politician is selected to run the government. The politician has to decide whether to

implement a new project or to keep the status quo. The politician's *implementation-decision* space is:

$$I_t = \{0, 1\}$$

where  $I_t = 0$  means not implement and  $I_t = 1$  means implement the project in period  $t$ .

The outcome of the policy decision is  $y_t = I_t y_t^P + (1 - I_t) y_t^{SQ}$ . The status quo policy delivers a fixed positive outcome every period that it is implemented. This is:

$$y_t^{SQ} = \delta$$

where  $\delta > 0$ . The characteristics of the status quo are known by the politician and the citizens.

On the other hand, there is a new project available to the incumbent. The outcome of the new project is determined by the politician's effort. The policy outcome is:

$$y_t^P = \begin{cases} \Delta & \text{with probability} = f(e_t) \\ 0 & \text{with probability} = 1 - f(e_t) \end{cases}$$

where  $\Delta > \delta$ ,  $e_t \in (0, \infty^+)$  stands for incumbent's effort and  $f(0) = 0$ ,  $f_e \geq 0$ ,  $f_{ee} < 0$ , and  $f(e_t) \in [0, 1]$ . The politician and the citizens observe the characteristics of the new project.

Effort is costly for the politician,  $C(e)$ , where  $C(0) = 0$ ,  $C_e \geq 0$ , and  $C_{ee} > 0$ . There is also a fixed cost for implementing the project,  $F > 0$ . There is no fixed cost for implementing the status quo. The payoff of the politician in office in period  $t$  is represented by the function:

$$U_t^P(e_t, I_t) = R - C(e_t) - I_t * F \tag{1}$$

where  $R > 0$  are the per-period "ego rents" for the politician in office. The "ego rents" ( $R$ ) can be interpreted as the value of holding office for a single term and represents the incumbent's explicit compensations from being in office plus any additional rent he may derive from his tenure. Out of the office the politician receives zero payoff and never returns

to office again. Note that the politician's objective function is inspired by Ferejohn (1986). The politician does not steal from the pool of resources of the economy as in Persson et al. (1997). Instead the politician has to exert a positive effort that decreases his per period ego rent to implement the new project.<sup>6</sup>

Citizens care only about the policy outcome. Their payoff in period  $t$  is represented by the function:

$$U_t(y_t) = y_t \tag{2}$$

Elections are held every period. In each election, the incumbent politician compete against a challenger (randomly) selected from a pool of politicians. The challenger is assumed to be a perfect substitute for the incumbent.

Immediately after each election, the citizens announce a performance standard to the politician, letting the incumbent know that he is only getting their votes in the next election if he delivers the policy outcome that is found satisfactory by the citizens. Citizens observe the implementation-decision of the incumbent and the outcome of the policy, but they do not observe the effort exerted by the incumbent. Let's denote the performance standard announced at the beginning of period  $t$  by  $\hat{y}_t$ . The standard requires the incumbent to deliver minimum policy outcome  $y_t \geq \hat{y}_t$  to the citizens in order to get their votes. Since, the utility of the citizens is a simple function of the policy outcome, to base the performance standard on policy outcome is analogous to have it based on the utility level. Voters and the politician have the same discount factor  $\beta \in (0, 1)$ .

## 2.3 The Timeline

The game unfolds in the following way: At the beginning of each period, citizens announce a performance standard to the politician. Next, the incumbent politician decides whether to keep the status quo or implement the new project and simultaneously chooses the level of effort he exerts,  $e_t$ . The citizens observe the implementation decision of the incumbent

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<sup>6</sup>We are interested in analyzing the effects of political institutions on policy implementation. When the politician's per-period rents from being in office do not depend on the policy outcome, the voters have to find the way to motivate the politician to implement the project.

and the outcome of the policy. Citizens do not observe the effort exerted by the incumbent. At the end of the period, an election takes place and voters judge the performance of the politician against the standard. After this, the sequence of events is repeated.

The outcome of the election is jointly determined by the actions of the politician and by random events,  $f(e_t)$ ,  $p$  and  $q$ . The model characterizes a dynamic agency where voters (the principle) use elections, the only policy tool available to them, to provide incentives to the politician (the agent).

## 2.4 Equilibrium

There are  $n + 1$  strategic players,  $n$  of them are citizens and one of them is the incumbent politician. For simplification following Ferejohn (1986), Persson et al. (1997) and Aidt and Dutta (2007) we assume that citizens are able to perfectly coordinate their voting behavior. Thus, we can treat them as a single principal effectively reducing the dynamic agency to a one principal and one agent political agency model.<sup>7</sup>

Generally speaking, the citizen's voting function is a mapping from the policy outcome space into the probability of voting for the incumbent:

$$\phi_t(y_t) : \{0, \delta, \Delta\} \rightarrow [0, 1]$$

A pure strategy of the citizen is a voting function  $\phi_t(y_t) \in [0, 1]$  that maximizes the citizen's utility given the implementation-decision and the effort level exerted by the incumbent. We restrict our attention to threshold vote functions of the following type:

$$\begin{aligned}\phi_t(y_t) &= 1 \text{ iff } y_t \geq \hat{y}_t \\ \phi_t(y_t) &= 0 \text{ iff } y_t < \hat{y}_t\end{aligned}$$

where  $\hat{y}_t$  is the performance standard announced by the voter at time  $t$ .

A pure strategy of the incumbent is a selection of implementation-decisions and effort

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<sup>7</sup>Aidt and Magris (2006) show how to do the analysis in a political agency model when citizens do not coordinate their voting behavior.

levels that maximizes his utility function in each subgame given the threshold vote function of the citizen:

$$\vartheta(\phi_t) : \{0, 1\}^3 \rightarrow \{0, 1\} \times [0, \bar{e}_t]$$

This two-players game is a dynamic game with complete but imperfect information. Therefore the solution concept is subgame perfection. A *subgame perfect equilibrium* of this game is a profile of strategies for the citizen and the incumbent that satisfy the following conditions:

1. In every period, the voting strategy of the citizen is optimal given the equilibrium strategy of the politician.
2. In every period, the strategy of the politician is optimal given the equilibrium voting strategy of the citizen.

Finally, we restrict our attention to stationary equilibria. Therefore we set  $e_t = e$  for all  $t$ .

## 2.5 The Political Model

Our model builds on work done by Barro (1973), Ferejohn (1986), Persson et al. (1997), and Besley (2006) and belongs to the literature of repeated performance voting.

First, we characterize the sequence of effective performance standards as follows. Suppose that citizens announce the standard  $\hat{y}$  at time  $t$ . Denote  $V(\hat{y}, I, e)$  the politician's value of holding office at time  $t$  given his implementation decision, effort level and the citizen's performance standards at time  $t$ . Formally,

$$V(\hat{y}, I, e) = \left[ R - C(e) - I * F + p\beta\pi(\hat{y}, I, e) V'(\hat{y}, I, e) + q\beta(1 - \pi(\hat{y}, I, e)) V'(\hat{y}, I, e) \right] \quad (3)$$

where  $[R - C(e) - I * F]$  is the politician payoff, defined in eq.1,  $[p\pi(\hat{y}, I, e) + q(1 - \pi(\hat{y}, I, e))]$  denotes the incumbent's re-election probability and  $V'$  is the continuation value of holding

office. Note that  $\pi(\hat{y}, I, e)$  is the probability of delivering  $y \geq \hat{y}$ . This is:

$$\pi(\hat{y}, I, e) = \begin{cases} 1 & \text{if } I = 0 \text{ and } \hat{y} \leq \delta \\ 0 & \text{if } I = 0 \text{ and } \hat{y} > \delta \\ f(e) & \text{if } I = 1 \text{ and } \hat{y} \leq \Delta \\ 0 & \text{if } I = 1 \text{ and } \hat{y} > \Delta \end{cases} \quad (4)$$

When a politician decides to comply with the citizen's standard, he is reelected only with probability  $(p\pi(\hat{y}, I, e) + q(1 - \pi(\hat{y}, I, e)))$ . The politician satisfies the citizen's standard with probability  $\pi(\hat{y}, I, e)$  and the voter can only promise to reelect a politician that satisfies the standards with probability  $p$ . Similarly, the politician fails to satisfy the citizen's standard with probability  $(1 - \pi(\hat{y}, I, e))$  and the voter can only promise to dismiss a politician that does not satisfy the standards with probability  $(1 - q)$ . The probability of delivering  $y \geq \hat{y}$  ( $\pi(\hat{y}, I, e)$ ) depends on the performance standards set by the voter and the implementation-decision and effort exerted by the incumbent. In particular, when  $\hat{y} \leq \delta$  the incumbent has two ways to satisfy the standard. The incumbent can set  $I = 0$  and deliver  $\delta$  with probability 1 or he can set  $I = 1$ , exert effort  $e$  and deliver  $\Delta$  with probability  $f(e)$ . When  $\delta < \hat{y} \leq \Delta$ , the incumbent has only one way to satisfy the standard. He can set  $I = 1$ , exert effort  $e$  and deliver  $\Delta$  with probability  $f(e)$ . Finally, when  $\hat{y} > \Delta$ , the incumbent is unable to satisfy the standard.

From the value of holding office ( $V$ ) we are able to derive optimality conditions for the effort level the politician exerts ( $e$ ) given the politician's implementation decision ( $I$ ) and the citizen's performance standard ( $\hat{y}$ ).

**Lemma 4 (Optimal effort)** *Let  $e^*(\hat{y}, I)$  be the politician's optimal effort given his implementation decision and the citizen's performance standard.*

- *If the politician implements the status quo ( $I = 0$ ), he exerts no effort,  $e^*(\hat{y}, 0) = 0$ .*
- *If the politician implements the project ( $I = 1$ ), then*

– When  $\hat{y} \leq \Delta$ , he exerts effort equal to  $e^*(\hat{y}, 1) = e^R$ , where  $e^R$  solves

$$C_e(e^R) = \frac{(R - C(e^R) - F) \beta f_e(e^R) (p - q)}{1 - \beta (pf(e^R) + q(1 - f(e^R)))}$$

– When  $\hat{y} > \Delta$ , he exerts no effort,  $e^*(\hat{y}, 1) = 0$ .

**Proof.** By applying routine substitution to eq. 3 we get that the politician's value of holding office given his implementation decision, effort level and the citizen's standards can be written as:

$$V(\hat{y}, I, e) = \left[ \frac{R - C(e) - I * F}{1 - \beta [p\pi(\hat{y}, I, e) + q(1 - \pi(\hat{y}, I, e))]} \right]$$

Maximizing  $V(\hat{y}, I, e)$  with respect to effort  $e$  we get:

$$\frac{\partial V}{\partial e} = \frac{(-C_e(e))(1 - \beta(p\pi(\cdot) + q(1 - \pi(\cdot)))) + (R - C(e) - F) \beta \frac{\partial \pi(\cdot)}{\partial e} (p - q)}{(1 - \beta(p\pi(\cdot) + q(1 - \pi(\cdot))))^2} = 0$$

The condition above delivers the optimal effort level for the politician given  $I$  and  $\hat{y}_t$ .

When  $I = 0$ , eq. 4 becomes either 0 or 1 depending on  $\hat{y}$ . Then,  $\frac{\partial \pi(\hat{y}, 0, 0)}{\partial e} = 0$ , and the first order condition of the maximization problem is now:

$$\frac{\partial V}{\partial e} = \frac{-C_e(e)}{1 - \beta(p\pi(\cdot) + q(1 - \pi(\cdot)))} = 0$$

which implies that  $e^*(\hat{y}, 0) = 0$ .

When  $I = 1$ , eq. 4 becomes either  $f(e^R)$  or 0, depending on  $\hat{y}$ . If  $\hat{y} \leq \Delta$ , the probability of delivering  $y \geq \hat{y}$  is  $f(e^R)$ . The first order condition of this maximization problem is now:<sup>8</sup>

$$\frac{\partial V}{\partial e} = \frac{(-C_e(e))(1 - \beta(pf(e) + q(1 - f(e)))) + (R - C(e) - F) \beta f_e(e) (p - q)}{(1 - \beta(pf(e) + q(1 - f(e))))^2} = 0$$

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<sup>8</sup>The second order condition evaluated at the maximum is:

$$\frac{\partial^2 V}{\partial e^2} = \frac{(-C_{ee}(e^R))(1 - \beta(pf(e^R) + q(1 - f(e^R)))) + (R - C(e^R) - F) \beta f_{ee}(e^R) (p - q)}{(1 - \beta(pf(e^R) + q(1 - f(e^R))))^2} < 0$$



The politician will exert effort equal to:

$$C_e(e^R) = \frac{(R - C(e^R) - F) \beta f_e(e^R) (p - q)}{1 - \beta (pf(e^R) + q(1 - f(e^R)))}$$

which implies that  $e^*(\hat{y} \leq \Delta, 1) = e^R$ . If  $\hat{y} > \Delta$ , the probability of delivering  $y \geq \hat{y}$  is 0. The first order condition of this maximization problem is now:

$$\frac{\partial V}{\partial e} = \frac{-C_e(e)}{1 - \beta q} = 0$$

which implies that  $e^*(\hat{y} > \Delta, 1) = 0$ . ■

Lemma 4 characterizes the optimal effort levels for the politician given his implementation decision and the citizen's performance standard. When the project is not implemented, the politician always exerts no effort irrespective of the performance standard. When the project is implemented, the politician exerts effort  $e^*(\hat{y}, 1)$  which depends on the citizen's standard ( $\hat{y}$ ) and the determinants of the institutional quality of the political system ( $p, q$ ).

A politician is trying to comply with the citizen's standard if his value of holding office at time  $t$  implies a positive probability of delivering a policy outcome that is higher or equal than the performance standard,  $V \Rightarrow \pi(\hat{y}, I, e) > 0$ . On the other hand, a politician is trying to deviate from the citizen's standard if his value of holding office at time  $t$  implies a zero probability of delivering a policy outcome that is higher or equal than the performance standard,  $V \Rightarrow \pi(\hat{y}, I, e) = 0$ .

**Definition 5** *We define a sequence of performance standards  $\{\hat{y}_t\}_{t=0}^\infty$  as "effective" performance standards if and only if*

$$\max_{I_t, e_t} V_t \Rightarrow \pi(\hat{y}_t, I_t, e_t) > 0 \text{ for } t = 0, 1, 2, \dots$$

In words, an effective performance standard requires the politician to voluntarily seek to comply with the standard set by the voter. To induce the politician to comply, the standards have to allow him to enjoy a higher or equal discounted utility by seeking

to comply with the standards ( $\pi(\hat{y}, I, e) > 0$ ) than by deviating in any way from them ( $\pi(\hat{y}, I, e) = 0$ ).

Since there are three possible policy outcomes ( $y$ ) and  $0 < \delta < \Delta$ , any performance standard based on  $y$  can be classified into one of the following four groups:

$$1) \hat{y} = 0; \quad 2) \hat{y} \in ]0, \delta]; \quad 3) \hat{y} \in ]\delta, \Delta]; \quad 4) \hat{y} \in ]\Delta, \infty].$$

An important consideration is that effective performance standards can be found in some groups of performance standards but not necessarily in all. For example, since the maximum payoff possible is  $\Delta$ , standards belonging to group 4 are never effective because the politician is unable to comply with them. If the citizen sets  $\hat{y} \in ]\Delta, \infty]$ , the politician will always deviate from the standard. Additionally,  $\hat{y} = 0$  constitutes the worst possible outcome for the voter. The voter can always do better by setting the status quo as the standard.

We study a sequence of effective performance standards based on the observable policy outcome and we focus on those standards that maximize the voter's lifetime utility. These are standards classified into groups 2 and 3. Then,

**Lemma 6 (Effective standards type 2 )** *A necessary condition for effective performance standards of type 2 is that  $F \geq \frac{-R\beta(p-q)}{1-p\beta}$ .*

**Proof.** Suppose  $\hat{y} \in ]0, \delta] = \hat{y}_2$ : The politician takes his implementation decision ( $I$ ) in order to maximize the value of holding office ( $V$ ) given the politician's optimal effort level ( $e^*$ ) and the citizen's standard ( $\hat{y} = \hat{y}_2$ ). If the politician sets  $I = 0$ , lemma 4 shows that  $e^* = 0$  and from eq. 4 we know that  $\pi(\hat{y}_2, 0, 0) = 1$ . Then, using eq. 3 we find that when the politician sets  $I = 0$  he gets:

$$V(\hat{y}_2, 0, 0) = R + p\beta V'$$

By routine substitution we get that:

$$V(\hat{y}_{2,t}, 0, 0) = \frac{R}{1 - p\beta}$$

If the politician sets  $I = 1$ , lemma 4 shows that  $e^* = e^R$  and from eq. 4 we know that  $\pi(\hat{y}_2, 1, e^R) = f(e^R)$ . Then, using eq. 3 we find that when the politician sets  $I = 1$  he gets:<sup>9</sup>

$$V(\hat{y}_2, 1, e^R) = \left[ R - C(e^R) - F + \beta(pf(e^R) + q(1 - f(e^R))) V' \right]$$

By routine substitution we get that:

$$V(\hat{y}_2, 1, e^R) = \left[ \frac{R - C(e^R) - F}{1 - \beta(pf(e^R) + q(1 - f(e^R)))} \right]$$

Note that if  $p > q$  it is always true that  $V(\hat{y}_2, 0, 0) > V(\hat{y}_2, 1, e^R)$ . Therefore, the politician maximizes the value of holding office by setting  $I = 0$  and  $e^* = 0$ . This solution characterizes effective performance standards since:

$$\max_{I, e} V = V(\hat{y}_2, 0, 0) \Rightarrow \pi(\hat{y}_2, 0, 0) = 1 > 0$$

Additionally, if  $p \leq q$ , lemma 4 shows that when the politician implements ( $I = 1$ ) he exerts no effort ( $e^* = 0$ ) and from eq. 4 we know that  $\pi(\hat{y}_2, 1, 0) = 0$ . The project never delivers the positive outcome. Therefore, when  $p \leq q$  if the politician sets  $I = 1$  he gets:

$$V(\hat{y}_2, 1, 0) = \left[ \frac{R - F}{1 - q\beta} \right]$$

The politician exerts no effort but has to pay the fixed implementation cost  $F$ . Since  $V(\hat{y}_2, 0, 0) \Rightarrow \pi(\hat{y}_2, 0, 0) > 0$  and  $V(\hat{y}_2, 1, 0) \Rightarrow \pi(\hat{y}_2, 1, 0) = 0$ , the politician tries to comply with the standard if and only if,

$$V(\hat{y}_2, 0, 0) \geq V(\hat{y}_2, 1, 0)$$

A necessary condition for effective performance standards of type 2 is:

$$F \geq \frac{-R\beta(p - q)}{1 - p\beta}$$

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<sup>9</sup>We assume the participation constraint  $C(e) + F \leq R\beta(pf(e) + q(1 - f(e)))$  is not binding.

■

Effective standards are performance standards that provide the politician with the incentive to comply with them. As the lemma shows, the quality of the political system characterized by  $p$  and  $q$  together with the fixed implementation cost of the project ( $F$ ) are the key determinants for having effective performance standards of type 2. Specifically, increases in  $F$  or decreases in  $q$  have the effect of decreasing the politician expected payoff for deviating from the standard,  $V(\hat{y}_2, 1, 0)$ . Decreases in  $p$ , on the other hand, have the effect of decreasing the politician expected payoff for trying to comply with the standard,  $V(\hat{y}_2, 0, 0)$ . Additionally, since the fixed implementation cost is positive when  $p \geq q$  performance standards of type 2 are always effective. From the proof of the lemma above we derive the following corollary:

**Corollary 7** *Suppose the citizen announces performance standards of type 2.*

- *If  $F \geq \frac{-R\beta(p-q)}{1-p\beta}$  then the politician does not implement the project ( $I = 0$ ) and exerts effort equal to  $e = 0$ .*
- *If  $F < \frac{-R\beta(p-q)}{1-p\beta}$  then the politician implements the project ( $I = 1$ ), incurs the fixed implementation cost  $F$  and exerts effort equal to  $e = 0$ .*

When performance standards of type 2 are effective, the politician maximizes his lifetime expected utility by not implementing the project. Accordingly, when the politician implements the status quo he maximizes his utility by setting his effort level equal to *zero*. He does this because the citizens' payoff from the status quo policy does not depend on the politician's effort. On the other hand, when performance standards of type 2 are not effective, the politician maximizes his lifetime expected utility by deviating from the standard. To do this, the politician implements the project incurring the fixed implementation cost  $F$  without exerting any effort,  $e = 0$ .

Now we turn our attention to analyze what happens when the citizen announces performance standards of type 3. Specifically,

**Lemma 8 (Effective standards type 3)** *A necessary condition for the existence of effective performance standards of type 3 is  $C(e^R) + F \leq R\beta f(e^R) \frac{(p-q)}{(1-\beta q)}$ .*

**Proof.** Suppose  $\hat{y} \in ]\delta, \Delta] = \hat{y}_3$ : The politician takes his implementation decision ( $I$ ) in order to maximize the value of holding office ( $V_t$ ) given the politician's optimal effort level ( $e^*$ ) and the citizen's standard ( $\hat{y} = \hat{y}_3$ ). If politician sets  $I = 0$ , lemma 4 shows that  $e^* = 0$  and from eq. 4 we know that  $\pi(\hat{y}_3, 0, 0) = 0$ . Then, using eq. 3 we find that when the politician sets  $I = 0$  he gets:

$$V(\hat{y}_3, 0, 0) = \max_e \left[ R - C(e) + q\beta V' \right]$$

By routine substitution we get that:

$$V(\hat{y}_3, 0, 0) = \frac{R}{1 - q\beta}$$

If the politician to sets  $I = 1$ , lemma 4 shows that  $e^* = e^R$  and from eq. 4 we know that  $\pi(\hat{y}_3, 1, e^R) = f(e^R)$ . Then, using eq. 3 we find that when the politician sets  $I = 1$  he gets:<sup>10</sup>

$$V(\hat{y}_3, 1, e^R) = \left[ R - C(e^R) - F + \beta (pf(e^R) + q(1 - f(e^R))) V' \right]$$

By routine substitution we get that:<sup>11</sup>

$$V(\hat{y}_3, 1, e^R) = \left[ \frac{R - C(e^R) - F}{1 - \beta (pf(e^R) + q(1 - f(e^R)))} \right]$$

If  $p \leq q$  from lemma 4 we know that when the politician implements ( $I = 1$ ) he exerts effort  $e^* = 0$  and from eq. 4 we know that  $\pi(\hat{y}_3, 1, 0) = 0$ . Since  $V_t(\hat{y}_3, 1, 0) \Rightarrow \pi(\hat{y}_3, 1, 0) = 0$  and  $V(\hat{y}_3, 0, 0) \Rightarrow \pi(\hat{y}_3, 0, 0) = 0$ , the politician never tries to comply with the standard. If  $p > q$  from lemma 4 we know that when the politician implements he exerts positive effort  $e^* = e^R$  and from eq. 4 we know that  $\pi(\hat{y}_3, 1, e^R) = f(e^R) > 0$ . Since  $V(\hat{y}_3, 1, e^R) \Rightarrow \pi(\hat{y}_3, 1, e^R) > 0$  and  $V(\hat{y}_3, 0, 0) \Rightarrow \pi(\hat{y}_3, 0, 0) = 0$ , the politician tries to comply with the

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<sup>10</sup>As before, we assume that the participation constraint  $C(e) + F \leq R\beta(pf(e) + q(1 - f(e)))$  is not binding.

<sup>11</sup>The first and second order conditions of this maximization problem are the same as the ones presented in the proof of lemma 4.

standard if and only if,

$$V(\hat{y}_3, 1, e^R) \geq V_t(\hat{y}_3, 0, 0)$$

A necessary condition for the existence of effective performance standards of type 3 is:

$$C(e^R) + F \leq R\beta f(e^R) \frac{(p-q)}{(1-\beta q)}$$

■

**Corollary 9** *Suppose the citizen announces performance standards of type 3 then:*

- *If  $C(e^R) + F \leq R\beta f(e^R) \frac{(p-q)}{(1-\beta q)}$  the politician implements the project ( $I = 1$ ), incurs the fixed implementation cost  $F$  and exerts effort equal to  $e^R$ .*
- *If  $C(e^R) + F > R\beta f(e^R) \frac{(p-q)}{(1-\beta q)}$  the politician does not implement the project ( $I = 0$ ) and exerts effort equal to  $e = 0$ .*

Taking a closer look to the lemma above we note that  $C(e^R) + F \leq R\beta f(e^R) \frac{(p-q)}{(1-\beta q)}$  is a more demanding condition than  $F \geq \frac{-R\beta(p-q)}{1-p\beta}$ .<sup>12</sup> Effective standards of type 2 require that  $V(\hat{y}_2, 0, 0) \geq V(\hat{y}_2, 1, 0)$ . Accordingly, effective performance standards of type 3 require that  $V(\hat{y}_3, 1, e^R) \geq V(\hat{y}_3, 0, 0)$ . Notice that  $V(\hat{y}_3, 0, 0) > V(\hat{y}_2, 1, 0)$  due to the fixed implementation cost  $F$ . When  $p > q$ ,  $V(\hat{y}_2, 0, 0)$  is always greater than  $V(\hat{y}_3, 1, e^R)$  for any positive fixed implementation cost. Therefore, if standards of type 3 are effective then standards of type 2 are effective too. When  $p \leq q$ , the standards type 2 are effective if  $V(\hat{y}_2, 0, 0) \geq V(\hat{y}_2, 1, 0)$ . This is when  $F > \frac{-R\beta(p-q)}{1-p\beta}$ . Standards of type 3, on the other hand, are never effective for  $F > 0$  when  $p \leq q$ .<sup>13</sup>

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<sup>12</sup>Formally, what we mean is  $C(e^R) + F \leq R\beta f(e^R) \frac{(p-q)}{(1-\beta q)} \Rightarrow F \geq \frac{-R\beta(p-q)}{1-p\beta}$  but  $F \geq \frac{-R\beta(p-q)}{1-p\beta} \nRightarrow C(e^R) + F \leq R\beta f(e^R) \frac{(p-q)}{(1-\beta q)}$ . To see this, suppose  $C(e^R) + F \leq R\beta f(e^R) \frac{(p-q)}{(1-\beta q)}$ . This implies that  $p > q$ . When  $p > q$ ,  $F \geq \frac{-R\beta(p-q)}{1-p\beta}$  always holds for any  $F \geq 0$ . On the other hand we can always find cases where  $F \geq \frac{-R\beta(p-q)}{1-p\beta} \nRightarrow C(e^R) + F \leq R\beta f(e^R) \frac{(p-q)}{(1-\beta q)}$ . For example, suppose  $p = q$ .

<sup>13</sup>When  $p \leq q$  the politician sets an effort level of  $e_t = 0$  when he implements the project. The politician also incurs in a fixed implementation cost  $F$  for implementing the project. Additionally, the project is never succesfull ( $f(0) = 0$ ).

The differences between the conditions for effective standards of type 2 and 3 emanate from the individual characteristics of the status quo and the new project. First, compared to the status quo policy, implementing the project is costly for the politician ( $C(e^R) + F$ ). These costs decrease the payoff the politician receives each period in office that he implements the project. Second, trying to comply with the standards by implementing the project is riskier than doing it, if possible, by setting the status quo. When  $p > q$ , if the politician implements the project, he exerts effort equal to  $e^R$  and is reelected with probability  $pf(e^R) + q(1 - f(e^R)) < p$ .<sup>14</sup>

To better understand the role of the quality of political institutions in facilitating the existence of effective performance standards among the two different types of standards, let's assume we are in the case of "perfect" democracy. When  $p = 1$  and  $q = 0$  the condition for the existence of effective performance standards of type 2 is always met. This is not true for performance standards of type 3. For them, the condition for the existence of effective performance standards is now  $C(e_{p=1,q=0}^R) + F \leq R\beta f(e_{p=1,q=0}^R)$ . Even the best possible quality of political institution is not enough to ensure the existence of effective performance standards of type 3. Then, to ensure the existence of effective performance standards of type 3 above certain level of political institutional quality from now on we assume that  $C(e_{p=1,q=0}^R) + F \leq R\beta f(e_{p=1,q=0}^R)$ . In the presence of "perfect" political system, performance standards of type 3 are always effective.

Turning our attention to the representative citizen's behavior we find that the citizen maximizes his utility subject to the (existent) constraints on the effectiveness on performance standard. Now we can state the complete characterization of the equilibrium of this game in the following two propositions.

**Proposition 10 (Equilibrium 1)** *Assume  $C(e^R) + F \leq R\beta f(e^R) \frac{(p-q)}{(1-q\beta)}$ .*

- *If  $\Delta f(e^R) \geq \delta$ , the citizen sets the standard equal to  $\hat{y} \in ]\delta, \Delta]$ , the politician sets  $I = 1$ , incurs the fixed implementation cost  $F$  and exerts an effort level equal to  $e^R$ . The citizen votes for the politician if  $y = \Delta$  and the expected policy outcome is  $y = \Delta f(e^R)$ .*

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<sup>14</sup>Remember that when  $p \leq q$ , the project always deliver zero payoff and the politician is unable to comply with standards type 2 or 3.

- If  $\Delta f(e^R) < \delta$ , the citizen sets the standard equal to  $\hat{y} \in ]0, \delta]$ , the politician sets  $I = 0$  and exerts an effort level equal to zero. The citizen votes for the politician if  $y = \delta$  and the policy outcome is  $y = \delta$ .

**Proof.** see appendix 5.1. ■

**Proposition 11 (Equilibrium 2)** Assume  $F > \frac{-R\beta(p-q)}{1-p\beta}$  and  $C(e^R) + F > R\beta f(e^R) \frac{(p-q)}{(1-q\beta)}$ . The citizen sets the standard equal to  $\hat{y} \in ]0, \delta]$ , the politician sets  $I = 0$  and exerts an effort level equal to zero. The citizen votes for the politician if  $y = \delta$  and the policy outcome is  $y = \delta$ .

**Proof.** see appendix 5.2. ■

**Proposition 12 (Equilibrium 3)** Assume  $F \leq \frac{-R\beta(p-q)}{1-p\beta}$ . The citizen sets the standard equal to  $\hat{y} \in ]\delta, \Delta]$ , the politician sets  $I = 0$  and exerts an effort level equal to zero. The citizen votes for the politician if  $y = \Delta$  and the policy outcome is  $y = \delta$ .

**Proof.** see appendix 5.3. ■

The existence of effective standards of different types has important implications for policy implementation. Using effective standards of type 2 the citizens are able to induce the politician to keep the status quo of the economy. This line of action secures the citizens a positive stable outcome of  $\delta$  every period. Using effective standards of type 3 the citizens are able to induce the politician to implement the project and to exert positive effort. The implementation of the project delivers each period a positive expected payoff of  $\Delta f(e^R)$  to the citizens. However, when effective performance standards of type 3 are impossible to attain, the citizens become unable to motivate the politician to implement the project ( $I = 1$ ) and to exert any effort other than  $e = 0$ . Since the probability of delivering the positive outcome is a function of the politician's effort where  $f(0) = 0$ , the project delivers *zero* payoff to the citizens. When effective performance standards of type 3 are not possible, it is never in the citizens interest to have the project implemented.

Finally, suppose we are in the case of "perfect democracy" and the quality of the political system allows the citizen to exert the highest level of accountability to the politician,



$p = 1$  and  $q = 0$ . Also, remember that  $C(e_{p=1,q=0}^R) + F \leq R\beta f(e_{p=1,q=0}^R)$ . From proposition 10 we derive the following corollary:

**Corollary 13 (Benchmark)** *When  $p = 1$  and  $q = 0$ , the politician implements the project and exerts effort level  $e_{p=1,q=0}^R$  if and only if,  $\Delta f(e_{p=1,q=0}^R) \geq \delta$ . Otherwise, the project is not implemented.*

The project is only implemented when it delivers a higher expected payoff to the citizen than the status quo. Since the quality of the political institutions is at its highest level, corollary 13 provides the benchmark for comparing the effects of changes in the quality of the political system on policy implementation.

### 3 Analysis of Policy Reform

Our model offers some interesting insights to the adoption of policy reforms. Firstly, to analyze the likelihood of success of policy reform, the theoretical model shows the existence of three categories of political systems defined by their quality. High quality political systems ( $H$ ) are characterized by  $C(e^R) + F \leq R\beta f(e^R) \frac{(p-q)}{(1-q\beta)}$ . As we discussed before, this condition is more demanding in terms of institutional quality than  $F > \frac{-R\beta(p-q)}{1-p\beta}$  so the incumbent politician is subject to a high level of accountability arising from the citizens. The citizens can credibly promise to reelect a well performing politician and to sack an under-performing one.

In regime ( $H$ ) the citizens are able to design effective voting strategies that induce the politician to implement the project and, given that the project is implemented, to maximize the probability of the positive outcome. In regime ( $H$ ), starting from any  $p \leq 1$  or  $q \geq 0$ , further increases in the quality of the political system translates directly into increases in the likelihood of success of policy reform. Increases in  $p$  or decreases in  $q$  have the effect of increasing the effort exerted by the politician when he implements the policy,  $e^R$ . The increase of the effort exerted by the politician increases the probability of success of the project,  $f(e^R)$ . The following proposition summarizes these findings.

**Proposition 14 (High Quality Political System)** *In high quality political systems, if  $\Delta f(e^R) \geq \delta$ , the reform is implemented and it is successful with probability  $f(e^R)$ . Furthermore, improvements in the institutional quality characterized for increases in  $p$  or decreases in  $q$ , increase the likelihood of success of the policy reform.*

**Proof.** see appendix 5.4. ■

**Corollary 15** *The politician exerts maximum effort in a perfect democracy, i.e.  $e_{p=1,q=0}^R \geq e_{p,q}^R$ .*

**Proof.** see appendix 5.5. ■

The corollary above implies that compared to our benchmark, any high quality political system ( $H$ ) that departs from "perfect democracy" in its institutional quality is less likely to implement reform, and if implemented, it is less likely to deliver the positive outcome.

Medium quality political systems ( $M$ ) are those characterized by  $F \geq \frac{-R\beta(p-q)}{1-p\beta}$  and  $C(e^R) + F > R\beta f(e^R) \frac{(p-q)}{(1-\beta q)}$ . The political system is good enough to have effective performance standards of type 2 but not to have effective performance standards of type 3. The citizens are able to induce the politician to keep the status quo but not to induce him to implement the policy successfully. In regime ( $M$ ) if the policy reform is implemented, the politician finds more attractive to deviate from the standards of the citizens by setting effort level equal *zero*. This action would deliver a *zero* payoff to the voters for certain. Because of this, the project is never implemented along the equilibrium path and we are under what constitutes in fact an institutional system bias towards the status quo.

**Proposition 16 (Medium Quality Political System 1)** *In medium quality political systems, we have an institutional bias towards the status quo. The project is never implemented.*

Within regime ( $M$ ) increases in the quality of the political system have no effect in the likelihood of success of policy reform. Increases in the quality of the political system do have an effect in taking the economy from regime ( $M$ ) to regime ( $H$ ) but effects on the likelihood of success of policy reform appear only when the economy finds itself at regime ( $H$ ). Therefore,

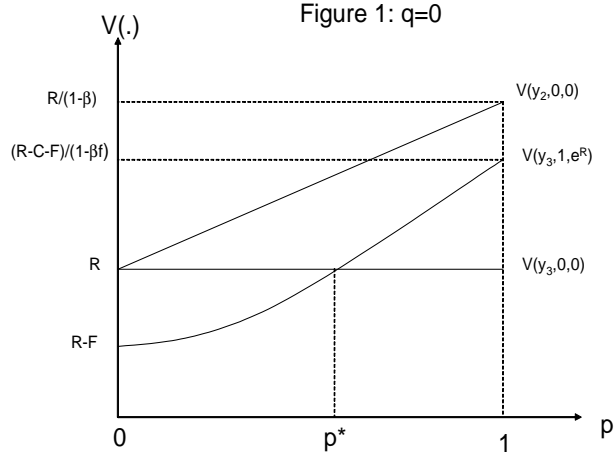
**Proposition 17 (Medium Quality Political System 2)** *In medium quality political systems, improvements in the institutional quality characterized for increases in  $p$  or decreases in  $q$ , have no effect on the likelihood of success of policy implementation but take the economy closer to regime (H).*

**Proof.** see appendix 5.6. ■

Changes in  $p$  and  $q$  affect the politician's expected payoff of trying to comply with performance standards of type 3 through two channels. The first channel works through the discount rate. A decrease in  $p$  or  $q$  decreases the discount rate to  $\beta (pf(e^R) + q(1 - f(e^R)))$ . The decrease in the discount rate translates into a decrease of the politician's expected payoff of trying to comply with performance standards of type 3. The second channel works through the effort exerted by the politician trying to comply with the standards. A decrease in  $p$  or  $q$  affects the effort  $e^R$  which in turn affects the effort cost for the politician and the chances of getting the positive outcome,  $C(e^R)$  and  $f(e^R)$ . However, the effect of changes in  $p$  or  $q$  on  $C(e^R)$  and  $f(e^R)$  cancel out and the quality of the political system affects  $V(\hat{y}_3, 1, e^R)$  only through the discount rate. Additionally, changes in  $q$  affect the politician's expected payoff of deviating from the standards. Specifically, a decrease in  $q$  decreases  $V(\hat{y}_3, 0, 0)$ .

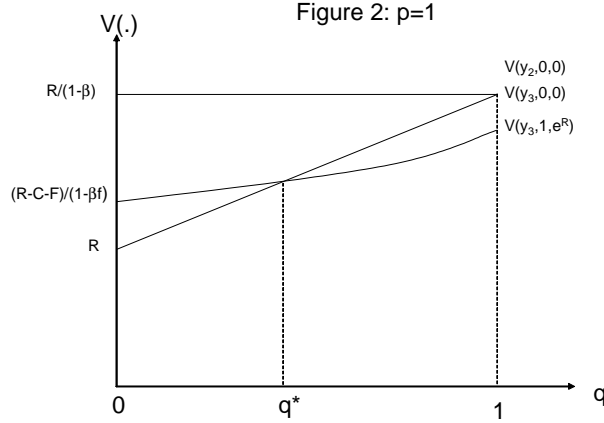
Increases in  $p$  increase  $V(\hat{y}_3, 1, e^R)$  making the existence of effective standards of type 3 more likely. In contrast, decreases in  $p$  decrease  $V(\hat{y}_{3,t}, 1, e^R)$  making the existence of effective standards of type 3 less likely. Figure 1 illustrates this. When  $q = 0$ , standards of type 2 are always effective. Standards of type 3 are effective only when  $V(\hat{y}_3, 1, e^R) > V(\hat{y}_3, 0, 0)$ . As figure 1 shows, this happens when the quality of the political system,

represented by  $p$ , is higher than a cut off level of  $p^*$ .



Changes in  $q$  on the other hand, affect both  $V(\hat{y}_3, 1, e^R)$  and  $V(\hat{y}_3, 0, 0)$  also through the politician discount rate. Decreases in  $q$ , decrease  $V(\hat{y}_3, 1, e^R)$  and  $V(\hat{y}_3, 0, 0)$ . The existence of effective standards of type 3 is more likely if the decrease in  $V(\hat{y}_3, 1, e^R)$  is lower than the decrease in  $V(\hat{y}_3, 0, 0)$ . Figure 2 shows that when  $p = 1$  and  $q = 0$ , standards of type 3 are effective,  $V(\hat{y}_3, 1, e^R) > V(\hat{y}_3, 0, 0)$ . Increases in  $q$  (worsening of the political quality), increase both  $V(\hat{y}_3, 1, e^R)$  and  $V(\hat{y}_3, 0, 0)$ . However the increase in  $V(\hat{y}_3, 0, 0)$  is greater than the increase in  $V(\hat{y}_3, 1, e^R)$ . Then, when the quality of the political system, represented by  $q$ , is lower than a cut off level of  $q^*$ , performance standards

of type 3 are never effective.



Finally, if a low quality political system ( $L$ ) exists, there is no equilibrium with effective performance standards. When  $F \leq \frac{-R\beta(p-q)}{1-p\beta}$  the politician is always better off deviating from the standards of the citizen. The citizen foresees this and sets standards of type 3 or 4 to encourage the politician to deviate by keeping the status quo.

**Proposition 18 (Low Quality Political System)** *In low quality political systems no equilibrium with effective performance standards is possible. The project is never implemented.*

In a low quality political system, the voter is unable to induce the politician to comply with any performance standard but it is able to induce the politician to deviate in alternative ways. Therefore, when inducing the politician to comply with the standards is not an option, the voter induces the deviation alternative that maximizes his utility. This is an interesting result although it presents limited empirical applicability. Our model is better suited to explain the effects of political institutions on policy implementation in a representative democracy i.e. when  $p \geq q$ .

Our model shows that it is only in regimes with high quality political institutions that the electorate has the possibility of inducing the implementation of policy reforms.

## 4 Conclusion

In classifying political systems according to their quality, the model we develop in this paper highlights the way in which channels of political delegation and institutional quality affect policy choice. In examining two environments, those of medium and high political institutional quality, we see markedly different results. While medium quality environment's policies do not react to increases in political quality, those in the higher category do. The schism, or jump between the two environments is one notable outcome of the model. It also provides an additional explanation for the lack of stability over time and across countries presented by the VP-function in most empirical studies.

Societies of high political institutional quality, where citizens rigorously hold politicians accountable for their actions, appear the most prone to engage in policy reform. We further lend evidence to the notion that the better the institutional quality of the country, the higher the expected level of effort exerted by the politician. The higher expected level of effort on the part of the politician translates directly to a higher probability of securing a successful reform outcome.

Our model shows that better institutions do not always make more attractive the pool of policies available to a country. Only countries with higher quality institutions are able to engage in reform processes. Countries with political institutions below a certain threshold present an institutional bias towards the status quo. This constitutes the main result of our paper and tries to answer the question of why seemingly good projects are not always implemented across countries. The answer is that given a country's institutional characteristics  $(p, q)$  implementing new projects may simply not be efficient. Specifically, citizens might not be able to design effective voting rules that induce the politician to implement new projects successfully.

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## 5 Appendix

### 5.1 Proof Proposition 10

Suppose the citizen sets the standard equal to  $\hat{y} \in ]\delta, \Delta]$ . By corollary 9 we know the politician maximizes his payoff when he implements the project ( $I = 1$ ) and exerts effort equal to  $e^R$ . The citizen gets an expected payoff equal to  $U = \Delta f(e^R)$ . Alternatively, suppose the citizen sets the standard equal to  $\hat{y} \in ]0, \delta]$ . Then, by corollary 7 we know that the politician maximizes his payoff when he does not implement the project ( $I = 0$ ) and exerts effort equal to  $e = 0$ . In this case, the citizen gets an expected payoff equal to  $U = \delta$ . Therefore, if  $\Delta f(e^R) \geq \delta$  the citizen maximizes his payoff by setting the standard equal to  $\hat{y} \in ]\delta, \Delta]$ . On the other hand, if  $\Delta f(e^R) < \delta$ , the citizen maximizes his payoff by setting  $\hat{y} \in ]0, \delta]$ .

### 5.2 Proof Proposition 11

Suppose the citizen sets the standard equal to  $\hat{y} \in ]\delta, \Delta]$ . By corollary 9 we know the politician maximizes his payoff when he does not implement the project ( $I = 0$ ) and exerts

effort equal to  $e = 0$ . The citizen gets an expected payoff equal to  $U = \delta$ . Alternatively, suppose the citizen sets the standard equal to  $\hat{y} \in ]0, \delta]$ . Then, by corollary 7 we know that the politician maximizes his payoff when he does not implement the project ( $I = 0$ ) and exerts effort equal to  $e = 0$ . In this case, the citizen gets an expected payoff equal to  $U = \delta$ . Therefore, the citizen weakly prefers to set the standard equal to  $\hat{y} \in ]0, \delta]$ .<sup>15</sup>

### 5.3 Proof Proposition 12

Suppose the citizen sets the standard equal to  $\hat{y} \in ]\delta, \Delta]$ . By corollary 9 we know the politician maximizes his payoff when he does not implement the project ( $I = 0$ ) and exerts effort equal to  $e = 0$ . The citizen gets an expected payoff equal to  $U = \delta$ . Alternatively, suppose the citizen sets the standard equal to  $\hat{y} \in ]0, \delta]$ . Then, by corollary 7 we know that the politician maximizes his payoff when he implements the project ( $I = 1$ ) and exerts effort equal to  $e = 0$ . In this case, the citizen gets an expected payoff equal to  $U = 0$ . Therefore, the citizen always prefers to set the standard equal to  $\hat{y} \in ]\delta, \Delta]$ .

### 5.4 Proof Proposition 14

If the policy is implemented ( $I = 1$ ) the politician exerts effort up to the level where:

$$C_e(e^R) = \frac{(R - C(e^R) - F) \beta f_e(e^R) (p - q)}{1 - \beta (pf(e^R) + q(1 - f(e^R)))}$$

Differentiating this expression with respect to  $p$  we get:

$$\frac{\partial e^R}{\partial p} = \frac{\beta C_e(e^R) f(e^R) + \beta f_e(e^R) (R - C(e^R) - F)}{C_{ee}(e^R) (1 - \beta (pf(e^R) + q(1 - f(e^R)))) - \beta f_{ee}(e^R) (R - C(e^R) - F) (p - q)}$$

and differentiating this expression with respect to  $q$  we get:

$$\frac{\partial e^R}{\partial q} = \frac{\beta C_e(e^R) (1 - f(e^R)) - \beta f_e(e^R) (R - C(e^R) - F)}{C_{ee}(e^R) (1 - \beta (pf(e^R) + q(1 - f(e^R)))) - \beta f_{ee}(e^R) (R - C(e^R) - F) (p - q)}$$

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<sup>15</sup>We assume that when indifferent between setting effective standards or ineffective standards, the citizen prefers to set effective performance standards. This assumption is analogous to the standard one in the literature where, when indifferent between reelecting or not reelecting the incumbent, the citizen prefers to reelect.

Since  $C_e, f_e \geq 0$ ,  $C_{ee} > 0$  and  $f_{ee} < 0$  and using  $C_e(e^R)$  we get:

$$\begin{aligned}\frac{\partial e^R}{\partial p} &\geq 0 \\ \frac{\partial e^R}{\partial q} &\leq 0\end{aligned}$$

## 5.5 Proof Corollary 15

We prove this by contradiction. Suppose  $e_{p=1,q=0}^R < e_{p,q}^R$ , where  $p < 1$  and  $q > 0$ . From proposition 14 we know that A)  $\frac{\partial e^R}{\partial p} \geq 0$  and B)  $\frac{\partial e^R}{\partial q} \leq 0$ . A) implies that  $e_{p^*,q}^R \geq e_{p,q}^R$  for all  $p^*$ , where  $1 \geq p^* > p$ . Similarly, B) implies that  $e_{p,q^*}^R \geq e_{p,q}^R$  for all  $q^*$ , where  $q > q^* \geq 0$ . Then, if it holds for all  $p^*$  and  $q^*$ , then it holds for  $p^* = 1$  and  $q^* = 0$ , i.e.  $e_{p^*=1,q^*=0}^R \geq e_{p,q}^R$ .

## 5.6 Proof Proposition 17

We know that an effective standard of type 3 implies that  $V(\hat{y}_3, 1, e^R) \geq V(\hat{y}_3, 0, 0)$ . Changes in the quality of the political system due to changes in  $p$  only affect the politician's expected payoff of trying to comply with performance standards of type C ( $V(\hat{y}_3, 1, e^R)$ ) without effecting the politician's payoff of deviating from the standards ( $V(\hat{y}_3, 0, 0)$ ). Since,

$$\frac{\partial V(\hat{y}_3, 1, e^R)}{\partial p} = \frac{(R - C(e^R) - F)\beta f(e^R)}{(1 - \beta(pf(e^R) + q(1 - f(e^R))))^2} \geq 0$$

increases in  $p$  have the effect of improving the condition for having effective standards of type 3.

On the other hand, changes in the quality of the political system due to changes in  $q$  affect both the politician's expected payoff of trying to comply with performance standards of type 3 ( $V(\hat{y}_3, 1, e^R)$ ) and the politician's payoff of deviating from the standards ( $V(\hat{y}_3, 0, 0)$ ):

$$\frac{\partial V(\hat{y}_3, 1, e^R)}{\partial q} = \frac{(R - C(e^R) - F)\beta(1 - f(e^R))}{(1 - \beta(pf(e^R) + q(1 - f(e^R))))^2} \geq 0$$

and

$$\frac{\partial V(\widehat{y}_3, 0, 0)}{\partial q} = \frac{R\beta}{(1 - \beta q)^2} \geq 0$$

Decreases in  $q$  have the effect of improving the condition for having effective standards of type 3 if:

$$\frac{\partial V(\widehat{y}_3, 0, 0)}{\partial q} \geq \frac{\partial V(\widehat{y}_3, 1, e^R)}{\partial q}$$

Since we are at regime  $(M)$  we have that  $V(\widehat{y}_3, 0, 0) > V(\widehat{y}_3, 1, e^R)$ . This implies that

$$\frac{R\beta}{(1 - \beta q)} \geq \frac{(R - C(e^R) - F)}{(1 - \beta(pf(e^R) + q(1 - f(e^R))))}$$

Using this inequality we get that  $\frac{\partial V(\widehat{y}_3, 0, 0)}{\partial q} \geq \frac{\partial V(\widehat{y}_3, 1, e^R)}{\partial q}$  if:

$$\frac{1}{(1 - \beta q)} \geq \frac{(1 - f(e^R))}{(1 - \beta(pf(e^R) + q(1 - f(e^R))))}$$

which is always true for any  $\beta \in [0, 1]$ ,  $p \in [0, 1]$  and  $f(e^R) \in [0, 1]$ .

Finally,  $C(e_{p=1, q=0}^R) + F \leq R\beta f(e_{p=1, q=0}^R)$  guarantees the existence of effective performance standards of type 3 when  $p = 1$  and  $q = 0$ .

Table 1: Year of permanent liberalization and Polity IV score.

Countries with Polity IV > 4 when they liberalized			Countries with -1 < Polity IV < 5 when they liberalized		
Country	Liberalization Year	Polity IV	Country	Liberalization Year	Polity IV
Australia	1964	10	Armenia	1995	3
Austria	1960	10	Guatemala	1988	3
Costa Rica	1986	10	South Korea	1968	3
Finland	1960	10	Paraguay	1989	2
Hungary	1990	10	Ethiopia	1996	1
Ireland	1966	10	Benin	1990	0
Jamaica	1989	10	Total Number of Countries		6
Japan	1964	10			
Lithuania	1993	10			
Malaysia	1963	10			
New Zealand	1986	10			
Slovenia	1991	10			
Sweden	1960	10			
Uruguay	1990	10			
Bolivia	1985	9			
Ecuador	1991	9			
Israel	1985	9			
Madagascar	1996	9			
Mauritius	1968	9			
Panama	1996	9			
Trin. & Tobago	1992	9			
Turkey	1989	9			
Brazil	1991	8			
Bulgaria	1991	8			
Colombia	1986	8			
Cyprus	1960	8			
Czech Republic	1991	8			
Latvia	1993	8			
Niger	1994	8			
Peru	1991	8			
Philippines	1988	8			
Venezuela	1996	8			
Argentina	1991	7			
Botswana	1979	7			
Gambia	1985	7			
Moldova	1994	7			
Bangladesh	1996	6			
Dominican Rep.*	1992	6			
El Salvador	1989	6			
Honduras	1991	6			
Macedonia	1994	6			
Mozambique	1995	6			
Nicaragua	1991	6			
Zambia	1993	6			
Albania	1992	5			
Georgia	1996	5			
Nepal	1991	5			
Poland	1990	5			
Romania	1992	5			
South Africa	1991	5			
Sri Lanka	1991	5			
Total Number of Countries		51			

Countries with Polity IV < 0 when they liberalized		
Country	Liberalization Year	Polity IV
Burundi	1999	-1
Tanzania	1995	-1
Singapore	1965	-2
Kyrgyzstan	1994	-3
Mexico	1986	-3
Burkina Faso	1998	-4
Cameroon	1993	-4
Egypt	1995	-5
Kenya	1993	-5
Tunisia	1989	-5
Azerbaijan	1995	-6
Ivory Coast	1994	-6
Mauritania	1995	-6
Tajikistan	1996	-6
Chile	1976	-7
Ghana	1985	-7
Guinea	1986	-7
Guyana	1988	-7
Indonesia	1970	-7
Mali	1988	-7
Uganda	1988	-7
Guinea-Bissau	1987	-8
Morocco	1984	-8
Taiwan	1963	-8
Jordan	1965	-9
Total Number of Countries		25

Sources: Year of permanent liberalization (Giavazzi and Tabellini, 2005). Polity IV score: Marshall and Jagger (2000).

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