Policy compromises: corruption and regulation in a dynamic democracy

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Abstract

This paper evaluates the extent of regulation in a democracy with political corruption. Elected politicians can restrict entry of firms in exchange for bribes from entrepreneurs. Full liberalization implies free entry and allocative efficiency and is supported by a majority of voters. Voters reelect politicians based on observed performance. We study Markov-perfect equilibria of the resulting game, and demonstrate that voters agree to tolerate some corruption and inefficient regulation in political equilibrium. Efficient policies can be promoted by productivity growth. Political corruption entails excessive stabilization of aggregate fluctuations.

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JEL classification: D72; K42; O41.

"The state is now the giver of many valuable rights.... I suspect that a careful study would display vast caprice, much venality, and a number of calluses on applicants' knees and navels" (Stigler,1975, p. 19).

1 Introduction

It often appears that democratic societies must live with inefficient regulation of economic activity and high levels of corruption for extended periods of time. This paper proposes a theoretical model to evaluate the extent to which entry regulation can persist over time and to analyze how democratic societies might by designing appropirate incentives demise of inefficient regulation and encourage honest politics. A crucial insight from the model is that sustained economic growth can be an important factor in putting incentives right.

Entry regulation can, in varying degrees, be found in all societies and in many different forms. Often entry to economic activities is restricted by the costs of complying with multiple legal requirements or the need to obtain permits and licences from the state or obtain membership of specific organizations. De Soto (1990) provides a seminal study of the legal obstacles that a would-be entrepreneur have to go through to operate a firm legally in Peru, and follows up in De Soto (2000) with a comparison with Egypt, Haiti, and Philippines. In all these countries, the transactions costs of satisfying large numbers of often inconsistent regulations and legal requirements work as significant barriers to entry to the formal sector, created and preserved by the state. While this phenomenon is more pronounced in less developed countries, it is not confined to that category of countries. Djankov et al. (2000) collect information about the cost that a small, new firm has to pay to obtain legal status in a sample of 75 developed and less developed countries. On average, it takes 63 working days to go through the required procedures at an official cost of about 34% of GDP per capita. In countries like the US and UK the obstacles are less severe, yet it still takes 7 and 11 working days respectively to get the paper work done. It is not surprising that Djankov et al. (2000) find that entry restrictions are highly correlated with corruption.

Entry regulation can also take the form of comprehensive systems of industrial licencing. Bhagwati (1993, pp. 49-50) documents a leading example of this phenomenon in India where industrial licencing *"..sought to regulate domestic entry and import competition, ... to penalize unauthorized expansion of capacity, ... and indeed to define and delineate virtually all aspects of investment and production through a maze of Kafkaesque controls"*. Elected

governments constructed that maze from 1950 onwards and it started to be dismantled from 1991, in efforts initiated by yet other elected governments.[1] The corruption potential in a massive licence system like this is enormous, and it is not surprising to find that corruption levels in India are high.[2]

These examples illustrate the tight connection between the level of economic development, inefficient regulation of economic activity and corruption and motivate our main hypothesis: entry restrictions are implemented and maintained by corruptible politicians because of their corruption potential. Politicians favor policies that leave room for corruption. The relevant vested interests – businesses that benefit from protection, bureaucrats who enjoy the power of enforcing regulation, and politicians who can sell more favors in a regulated economy – make it difficult to initiate reforms (Coate and Morris, 1999; Haggard, 2000). The general public loses out. That is, however, not the end of the story. In democratic societies, citizens have some voice in policy-making. Politicians may be corrupt but they are aware that they have to face elections. Voters can, and do, punish politicians, who introduce too many inefficiencies, at the polls and so, use the right embodied in the democratic institution to terminate the tenure of an under-performing, corrupt politician. A key question is if voters can induce honest politics and get elected politicians to implement efficient economic policies. That is, when is it possible for democracies to get rid of inefficient regulation?

In this paper, we propose a model of policy compromise that can be used to analyze the extent of regulation and corruption in a dynamic democracy. Governments can regulate entry into the production sector by issuing production licenses. Output and wages increase, and profits decline with the number of licenses, or the degree of liberalization (Propositions 1 and 2) and the stage is set for social conflict. Workers earn wages, and would like to see the license system abolished. Entrepreneurs would like a license for themselves but see others denied.

Politicians are elected by majority rule. They cannot commit to a pol-

[1] Similar systems developed in other countries in the region, such as Bangladesh and Pakistan (Srinivasan, 2000).

[2] In Transparency International's 2001 ranking of countries according to perceived corruption India is number 71 out of 91 countries with a score of 2.7 out of 10.

icy platform at the time of election. Once in office, they can restrict the number of licenses and charge for the ones they issue. This is the source of corruption. Their bribe income depends on having the license system in place. The majority of the population is workers. They attempt to control politicians by holding them accountable for policy choices. To this end, they set performance standards, and vote a politician out of office if his policy fails to comply with the standard, as in Barro (1973) and Ferejohn (1986).

We study Markov-perfect equilibria of the resulting game. We show that equilibrium policy is, typically, a compromise between the preferred policy of the politician and his constituency (Proposition 3). Political equilibrium entails corruption and so, voters agree to elect and reelect politicians proven to be corrupt. High levels of corruption go hand in hand with inefficient economic policy: corruption and inefficient regulation are two sides of the same coin. This is due to the fact that the politician is – up to a point – able to extract more bribes by restricting economic activity (Lemma 1).

We use the model to examine how economic growth affects corruption and economic efficiency. Importantly, level effects, and growth effects work in opposite directions. Level effects have a negative impact because the corruption potential is larger in richer societies. Growth effects have a positive impact for a more subtle reason. The scope for corruption grows with GDP, and so politicians prefer to postpone collecting their bribe in a growing economy. To this end, they have to hang on to office, and pander to their constituency by lifting restrictions. Excessive stabilization, or counter-cyclical policy, is a consequence of the same principle in situations of erratic productivity growth. Politicians want to be reelected in recessions, and collect their bribes during booms. For the latter purpose, they impose excessive regulation that lowers output and looks like "fine-tuning" of aggregate fluctuations. Our analysis sets out a simple incentive package (Proposition 4), consisting of a political salary and the threat of termination, as one possible mechanism to promote honesty and efficiency in a growing economy.

Corruption is obviously difficult to observe and quantify and empirical studies, typically, rely on data on *perceived* levels of corruption, reported by, for example, Transparency International, or on data on the number of criminal charges against corrupt government officials (Del Monte and Pa-

pagni, 2001). Empirical studies of corruption (see, e.g., Mauro, 1995, 1998; Paldam, 1999; and Treisman, 2000) evaluate the correlation between measured corruption and economic and social indicators in cross-country studies. An important, and robust finding, is that corruption is negatively correlated with the level of GDP per capita and, to a lesser extent, also with economic growth. In our framework, the former is an outcome: regulation decreases output levels *and* generates corruption at the same time. Output and corruption are therefore endogenous variables, and we must look to other factors such as productivity growth to understand why they differ across societies. A crucial implication of our model is that (productivity) growth can reduce corruption, by reducing the cost of controlling corruption via, for example, political salaries. This suggests an alternative explanation of the observed negative correlation between growth and corruption.

The theoretical literatures on corruption and regulation is huge, and we shall not attempt to summarize it here.[3] However, before we turn to the formal model, we briefly relate our work to the branches of the literature on which it explicitly builds. First, corruption arises a many different levels and for many different reasons. We focus on what we call *political corruption*. Political corruption occurs at the highest level of government and involves major government projects and programs or the design of the overall legal structures that regulate economic activities. This type of corruption can be found in almost all societies (Rose-Ackerman, 1999, chapter 3) and arises when non-benevolent politicians realize that entry restrictions and other regulation can be to their personal benefit (Shleifer and Vishny, 1993).[4] The basis idea is that politicians have temporary monopoly rights to political favors and may use this position to distort economic policy to generate large rents for themselves. Political corruption is different from *bureaucratic corruption*. Bureaucratic corruption arises when a benevolent government wants to regulate the economy with the aim of eliminating market failures (Acemoglu and Verdier, 1998; 2000, and Laffont and Tirole,1993, chapter 15) but has imperfect information about compliance. For example, the government may want to subsidize efficient firms and close down inefficient ones, in the

[3]The literature is surveyed by Bardhan (1997) and Rose-Ackerman (1999).

[4]Shleifer and Vishny (1994) use this hypothesis to explain price controls.

interests of efficiency. It can, in principle, distinguish between good and bad firms, but doing so requires expertise. Experts are specialized officials assigned to the task, who are corruptible and may withhold information for a price. It is possible to ensure honest reporting, by paying the experts enough, but this is costly. It may, therefore, be constrained efficient to allow for some corruption and to accept the implied distortion.

Second, our formal model is similar, and closely related to Persson et al. (1997) and Coate and Morris (1999). Persson et al. (1997) analyze situations where the government can divert resources from the private sector. It is limited in this pursuit only by electoral accountability. The extent to which "separation of powers" can be successful in reducing equilibrium levels of diversion is evaluated.[5] Coate and Morris (1999) show that inefficient policies that favor one sector can persist over time once they have been implemented. Our model shares the notion that corruption is linked to inefficient economic policy and that inefficiencies persist in equilibrium when electoral accountability is sufficiently weak. In contrast to Persson et al. (1997) and Coate and Morris (1999), our analysis is based on a complete specification of technologies, endowments, and constraints. As a consequence, we can evaluate the impact of changes in economic fundamentals on the quality of policy making. We focus on the extent to which better policies can be achieved by the use of economic incentive instruments: specifically, of political salaries, as emphasized by Barro (1973), Becker and Stigler (1974) and Besley and McLaren (1993). We have little to say, at present, about the relative efficiency of incentives and constitutional constraints in achieving better policy outcomes.

The rest of the paper is organized as follows. In Section 2, we set out the economic model. In Section 3, we describe the political system. Policy outcomes are analyzed in Sections 4 and 5. In Section 6, we conclude.

[5]Separation of powers increases competition between government agents and reduces the scope for diversion of public resources. The mechanism is much the same as the one that makes consumers prefer a duopoly to a monopoly.

2 The Economy

We consider an economy with a continuum of individuals with measure L.[6] The size of the population is constant. Time is discrete, indexed by $t = 0, 1, 2, \cdots$. Each individual has one unit of labor each period that can be used for supervision, s_i, or manual work, ℓ_i, and so, $s_i + \ell_i \leq 1$. A homogeneous consumption good, y, is produced every period. Individuals live for ever, consume their net income each period, discount the future at rate β, and derive no utility from leisure. Taxes (τ_t), when relevant, are levied lump-sum irrespective of income or occupation.

At any point in time, an individual can either be a manual worker or an entrepreneur. Manual workers supply labor to a competitive labor market. Entrepreneurs run firms and supervise manual workers.[7] The firm owned by entrepreneur j produces with the following production technology:

$$y_{jt} = A_t s_{jt}^{1-\alpha} \ell_{jt}^{\alpha}, \quad 0 \leq \alpha < 1, \tag{1}$$

where ℓ_{jt} denotes the hours of manual work hired by entrepreneur j; s_{jt} denotes the time spend on supervision by entrepreneur j; and A_t is the level of technology, common to all firms. Profits are retained by the entrepreneur who runs the firm.

A would-be entrepreneur needs to obtain a license to operate a firm from the government.[8] The incumbent politician can choose the number of licenses and determine who gets them. A license confers the right, but not the obligation to operate a firm for *one* period. License holder j chooses how much time to spend on supervision, $s_{jt} \in [0, 1]$, and supplies the remaining part of her time to the labor market. Non-license holders have no choice of

[6] The economic model is a simplified version of the model developed in Dutta (2000), which derives originally from Lucas (1978).

[7] It is not possible to hire somebody else to supervise a firm.

[8] In our model, the license system is economically inefficient. License systems can, however, in some cases, help promote efficiency. Consider the example of a natural monopoly. The government may for political reasons want to change the regulatory conditions imposed on the monopoly *after* investments have been sunk. Realizing this *ex ante*, underinvestment will take place. As argued by Newbery (1999, chapter 2), a license system that insulates the natural monopoly from political pressures can mitigate this problem and promote efficiency.

occupation. They are working full time for a firm and earn the real wage, w_t. The real wage adjusts to clear the labor market each period. Let $\lambda_t \in [0, L]$ be the number of licences issued in period t. We think of λ_t as an index of economic liberalization. We lose nothing by assuming that licenses are held by individuals $j \in [0, \lambda_t]$.

The state of the economy at time t is summarized by $e_t = (A_t, \lambda_t)$. In our analysis, A_t is exogenous, while λ_t is to be endogenously determined by a political process (see section 3). Let $n_t \leq \lambda_t$ be the number of firms operating in period t. National income is given by $Y_t = \int_0^{n_t} y_{jt} dj$. For any sequence of states $\{e_0, \cdots, e_t, \cdots\}$, with $e_t \geq 0$, an *equilibrium* of the economy is a sequence $\{\cdots, (n_t, Y_t, w_t), \cdots\}$ such that all individuals and firms optimize, and the labor market clears each period. We write $\pi_{jt} = y_{jt} - w_t \ell_{jt}$ as the equilibrium profit level of firm j at time t. At a symmetric equilibrium, $\pi_{jt} = \pi_t$.

Proposition 1 establishes that the equilibrium is stationary: the number of firms, employment, and incomes depend only on the current state of the economy.

Proposition 1 (Stationary Equilibrium) *Let $e_t = (A_t, \lambda_t)$ be the state of the economy at time t. An equilibrium exists and is stationary, whenever $e_t > 0$. Let $\lambda_H = (1 - \alpha)L$. Then equilibrium quantities and incomes are*

$$n(e_t) = \min[\lambda_t, \lambda_H]; \quad Y(e_t) = A_t n(e_t)^{1-\alpha}(L - n(e_t))^{\alpha};$$

$$w(e_t) = \alpha \frac{Y(e_t)}{L - n(e_t)}; \quad \pi(e_t) = (1 - \alpha)\frac{Y(e_t)}{n(e_t)}.$$

Furthermore, $\pi(e_t) = w(e_t)$ if and only if $\lambda_t \geq \lambda_H$; otherwise $\pi(e_t) > w(e_t)$. For all e_t, the number of workers is greater than or equal to αL.

Proof. For each $\lambda > 0$, individuals $j \leq \lambda$ are license holders, and have the right to choose $s_j > 0$ and employ workers in their firm. Suppose $s_j(e) > 0$. Profit maximization implies

$$\ell_j(e, w) = s_j \left(\frac{\alpha A}{w}\right)^{\frac{1}{1-\alpha}}$$

and

$$y_j = As_j^{1-\alpha}\ell_j^{\alpha} \equiv s_j y(w); \quad \pi_j = (1-\alpha)y_j \equiv s_j \pi(w).$$

A license holder earns $\pi(w)s_j + w(1-s_j)$ which is maximized at $s_j = 1$ whenever $\pi(w) > w$. In this case, all licences are used, i.e., $n(e) = \lambda$ and the total supply of labor is $L - \lambda$. Labor market clearing requires that $\lambda \ell_j(e,w) = L - \lambda$. Therefore, equilibrium national income, the wage rate, and profit per firm satisfy

$$Y(e) = A\lambda^{1-\alpha}(L-\lambda)^{\alpha}; \quad w(e) = \alpha\frac{Y(e)}{L-\lambda}; \quad \pi(e) = (1-\alpha)\frac{Y(e)}{\lambda}.$$

From these, we obtain the condition

$$\pi(e) > w(e) \Rightarrow \lambda < (1-\alpha)\, L \equiv \lambda_H.$$

Suppose $\lambda \geq \lambda_H$. Let $n \leq \lambda$. Firms maximize profits and all labor is employed. Equilibrium national income, the wage rate, and profit per firm satisfy

$$Y(A,n) = An^{1-\alpha}(L-n)^{\alpha}; \quad w(A,n) = \alpha\frac{Y(A,n)}{L-n}; \quad \pi(A,n) = (1-\alpha)\frac{Y(A,n)}{n}.$$

Note that $n > 0 \Rightarrow \pi(A,n) \geq w(A,n)$ from the occupational choice of individuals $j \leq \lambda$; that $n = \lambda_H$ is the unique solution to $\pi(A,n) = w(A,n)$; and that $\pi(A,n) < w(A,n)$ whenever $n > \lambda_H$. This establishes that $\pi(e) = w(e) \Leftrightarrow \lambda \geq \lambda_H$ and that $n(e) = \lambda_H$ for $\lambda \geq \lambda_H$. Finally, we see that $L - n(e) \geq \alpha L$ for all e ■

When the number of licenses issued is strictly less than $\lambda_H \equiv (1-\alpha)\, L$, all licenses are fully utilized and they carry a scarcity rent, i.e., $\pi_t > w_t$. The number of firms is $n_t = \lambda_t$ and the license system imposes a binding constraint on entry and output. When the number of licenses is greater than (or equal to) λ_H, the economy is *fully liberalized* and licenses are no longer scarce and some are not utilized in equilibrium. The number of firms is $n_t = \lambda_H$ and each license holder is indifferent between being a full time entrepreneur or a full time manual worker, i.e., $\pi_t = w_t$.[9]

[9] This is a consequence of the assumption that individuals have similar abilities. Lucas (1978) evaluates the effect of ability differences on the distribution of firm sizes at equilibrium.

Proposition 2 (Income and distribution) *National income, Y_t, is maximized at $n_t = \lambda_H$. Wages increase and profits decrease with λ_t whenever $\lambda_t < \lambda_H$. National income, the wage, and profit per firm increase with A_t, for all $\lambda_t \in (0, L]$.*

Proof. From Proposition 1,

$$Y(e) = An(e)^{1-\alpha}(L - n(e))^{\alpha} \quad \text{with} \quad n(e) = \min[\lambda, \lambda_H];$$

$$w(e) = \alpha A \left(\frac{n(e)}{L - n(e)}\right)^{1-\alpha}; \quad \pi(e) = (1-\alpha)A \left(\frac{L - n(e)}{n(e)}\right)^{\alpha}.$$

We note that Y, w and π are monotonically increasing in A; that π and $\frac{1}{w}$ decrease with n; and that Y attains its maximum at $n = \lambda_H$ ■

National income as well as the income distribution depend on the extent of regulation. When relatively few licenses are issued the economy is inefficient. An expansion of the number of licences increases national income and has an asymmetric impact on the income distribution. Liberalization abolishes the licensing system and achieves allocative efficiency with $n = \lambda_H$. Workers welcome this, while entrepreneurs do not, as they see profits decline. The distributional impact of the licence system is central to our analysis. We notice that resistance to lifting restrictions arises from the activities of those losing their economic rents (entrepreneurs) and so, our model is in the tradition of the "economic losers hypothesis" (Krusell and Rios-Rull, 1996; Parente and Prescott, 2000). An increase in productivity (A_t) increases national income, wage and profits proportionally because technological progress is assumed to be factor neutral. Liberalization is contentious, but growth is not.

3 A Dynamic Democracy

We want to study the determination of regulation and reform in democratic societies. Our model of the political process is designed to capture three important features of political decision making over time.

1. **Repeated elections and performance voting:** Voters delegate decisions to elected politicians, who cannot commit to policy actions at

the time of election. Politicians, once in office, are free to decide on the number of licenses to be issued during their tenure and the price to charge per license. Voters can respond after the fact and hold the politician accountable for past performance. The theory of performance voting in a dynamic democracy has been developed by Barro (1973) and Ferejohn (1986)[10] and it has received substantial empirical support (Lewis-Beck, 1988; Nannestad and Paldam 1994). Formally, the incumbent runs against a challenger in the election held at the end of each period, and is reelected for another term if he gains a majority.[11] Proposition 2 shows that the number of workers is at least αL. We assume that $\alpha > 1/2$ and so, a majority of the population would like to see the license system abolished (i.e., $\lambda_t \geq \lambda_H$ for all t). At the beginning of a politician's tenure, voters announce an election rule, $\eta_t(.)$, specifying the probability of reelection when the policy λ_t is delivered. We assume that policies are observed without error[12] and we restrict attention to rules that specify a *performance standard*, $\bar{\lambda}_t$:

$$\eta_t(\lambda_t; \bar{\lambda}_t) = \begin{cases} 1 & \text{iff} \quad \lambda_t \geq \bar{\lambda}_t \\ 0 & \text{otherwise} \end{cases} .$$

A stationary election rule specifies a constant standard $\bar{\lambda}$.

2. **Corruption and licenses:** The fact that a license to run a firm can have economic value suggests that it can be sold at a price. Shleifer and Vishny (1993) define corruption as "the sale by government officials of government property for personal gain". We consider corruption at the highest level of government where policy decisions have macroeconomic implications. The incumbent politician has a temporary monopoly[13] on the sale of licences and is certainly tempted to extract the surplus

[10] See also Austen-Smith and Banks (1989), Banks and Sundaram (1993; 1998), Reed (1994) and Besley and Case (1995).

[11] Challengers play no active role in the model. They are important only because they serve as substitutes for the incumbent. The value of holding office must, therefore, be sufficiently high to ensure positive supply of office-seeking challengers.

[12] The case with imperfectly observable policy actions can be analyzed along the lines of Ferejohn (1986).

[13] Shleifer and Vishny (1993) provides a detailed analysis of the industrial organization

resulting from restricting entry to the economy.[14] Each period, the incumbent chooses λ_t, and the price, b_t, at which he sells each licence. Accordingly, the politician's *unofficial income* is:

$$B_t = \lambda_t b_t. \tag{2}$$

3. **Power and politics:** Politicians care about holding public office for many reasons. Two of these are money and power. For sure, power allows them to make money, because they can sell government property and earn B_t. The office itself may, however, also offer a good living. Even poor societies often reward elected politicians with high salaries, or high standards of living relative to the rest of the population. We refer to this as the politician's *official income* and denote it ω_t. In addition, politicians typically like power for its own sake – a factor that we call m for megalomania and refer to as the ego-rent. Together, these three elements add up to the payoff of a politician when in office and contribute to the desire to be reelected allowing voters to influence policy choices. We assume that politicians give up their private sector job once elected. This is reasonable in countries where conflict-of-interest laws are strict and enforced but not crucial for our results.

3.1 The Market for Licenses

The politician has temporary monopoly power in the political market. He can issue as many licenses as he likes, subject to the willingness to pay of would-be entrepreneurs. Lemma 1 evaluates the bribe function, relating the number of licenses to the total surplus that can be extracted.

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of corruption. While the assumption of monopoly power is extreme, it is not crucial for our results. We could assume that the surplus is being split, e.g., by means of Nash bargaining, as in Besley and McLaren (1993), between entrepreneurs and politicians.

[14] Empirical studies of corruption from many country suggest that this is a reasonable hypothesis. See Oldenburg (1987) for India; Levin and Satarov (2000) for Russia; Soto (1990) for Peru; and Rose-Ackerman (1999, chapter 3) for examples from several countries.

Lemma 1 (The Bribe Function) *The incumbent politician prices each license at b_t where*

$$b_t = \max[A_t \left((1-\alpha) \left(\frac{L-\lambda}{\lambda} \right)^{\alpha} - \alpha \left(\frac{\lambda}{L-\lambda} \right)^{1-\alpha} \right), 0].$$

The politician's unofficial income, $B_t(\lambda_t, A_t) = \lambda_t b_t$, is maximized at $\lambda_t = \lambda_L$, where $0 < \lambda_L < \lambda_H$.

Proof. A license is valid for one period. Its "price", b_t, cannot exceed its value to the holder, i.e.,

$$b_t \leq \pi(\lambda_t, A_t) - w(\lambda_t, A_t). \tag{3}$$

The politician extracts the entire surplus and so, condition (3) is binding. The total bribe is

$$B(\lambda, A) = \lambda \left(\pi(\lambda, A) - w(\lambda, A) \right). \tag{4}$$

The bribe function is concave and differentiable, with $B(0, A) = 0 = B(\lambda_H, A)$, $\lim_{\lambda \to 0} B'(0, A) = \infty$, and $B'(\lambda_H, A) \leq 0$. Hence, the total unofficial income is maximized at some $\lambda_L \in (0, \lambda_H)$. Note that λ_L is stationary, and independent of productivity A_t ■

The bribe function is illustrated in Figure 1 for two values of A. In the absence of democratic elections, the politician extracts the maximum bribe, $B(\lambda_L, A_t)$, every period by setting $\lambda_t = \lambda_L$. Since $\lambda_L < \lambda_H$, the bribe maximizing policy imposes excessive regulation. The intuition follows from Propositions 1 and 2. A license is valuable only if it is scarce. Liberalization reduces scarcity and the price each licence commands.

4 Policy Choices in a Stationary Economy

We can now define the game between politicians, voters, and would-be entrepreneurs, as it unfolds over time. Political candidates are drawn from the pool of workers, and are identical *ex-ante*. Their payoff while in office is

$$u_t^p = m + \omega_t + B_t - \tau_t. \tag{5}$$

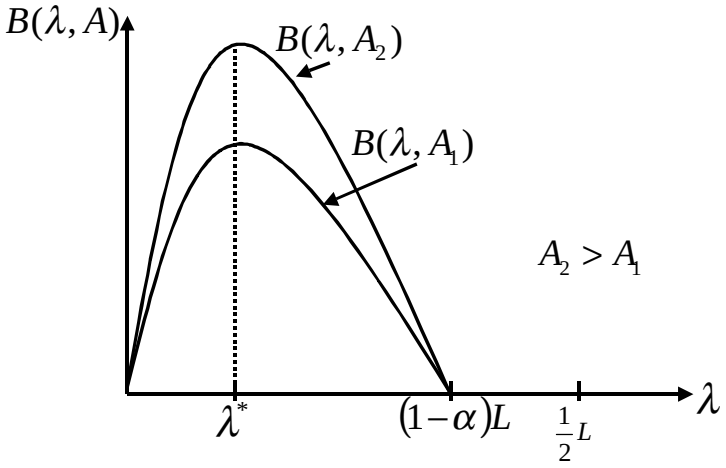

Figure 1: The bribe function.

All candidates have the same ego-rent, $m \geq 0$. An elected politician earns an official income, ω_t, as well as unofficial income, $B_t \geq 0$. Taxes are paid by all, and used to finance the official wage, i.e., $\omega_t = \tau_t L$. A politician who loses office becomes an ordinary citizen. Some citizens are workers who earn the market wage and get utility

$$u_t^w = w_t - \tau_t. \tag{6}$$

The rest are entrepreneurs, who have to pay a bribe, b_t, to obtain their license. From Lemma 1, we see that they get per-period utility

$$u_t^e = \pi_t - b_t - \tau_t = w_t - \tau_t. \tag{7}$$

We notice that workers and entrepreneurs obtain the *same* income, net of bribes and taxes. Accordingly, in a corrupt democracy, all citizens support full liberalization.[15] That is, entrepreneurs are willing to pay the bribe when

[15] This would not be the case if the surplus of the licence system were be be shared between entrepreneurs and the politician.

asked, but pay enough to want the system abolished *ex post*. The lifetime utility for each agent is

$$v_i = \sum_{t=0}^{\infty} \beta^t u_t^{i(t)},$$

where $i(t) \in \{p, w, e\}$ is individual i's occupation at time t. Politicians apply the same discount rate as citizens.

The timing of events is as follows. At the beginning of each period, a politician is already in office. Voters announce a performance standard, $\bar{\lambda}_t$, making it clear to the incumbent that he will be reelected if and only if the number of licenses issued is at least as great as the standard, i.e., $\lambda_t \geq \overline{\lambda}_t$. Next, the politician chooses how many licenses to issue and at what price, (λ_t, b_t). Would-be entrepreneurs can accept or reject the offer of a license at the announced price. Once bribes and licenses have been exchanged, production takes place. Finally, at the end of each period, an election is held. The outcome of the election is determined by the policy implemented by the incumbent relative to the standard. The timing is summarized in Figure 2.

Let $\{A_0, \cdots, A_t, \cdots\}$ be a sequence of technology levels. A *political equilibrium* is a sequence of policy decisions $\{\lambda_0, \cdots, \lambda_t, \cdots\}$ which are taken in a Markov-perfect equilibrium of the game. A Markov-perfect equilibrium path specifies the performance standard, $\bar{\lambda}_t$, the electoral outcome, $\eta_t(\lambda_t, \bar{\lambda}_t)$, and the policy implementation, λ_t, for all t. A stationary political equilibrium has $\lambda_t = \lambda$ at each t.

From Propositions 1 and 2, we know that the level of technology together with the policy choice determine all variables of economic interest. Equilibrium outcomes, hence, depend critically on the sequence of technology levels or, more generally, on the nature of technological progress. We start by analyzing outcomes in a stationary economy, with $A_t = A$.

Proposition 3 (Stationary Policy Compromises) *Suppose* $A_t = A > 0$ *and* $\omega_t = \omega \geq 0$. *Define*

$$F(\lambda) \equiv \frac{(1-\beta)}{\beta} B(\lambda_L) - \frac{B(\lambda)}{\beta} + w(\lambda), \tag{8}$$

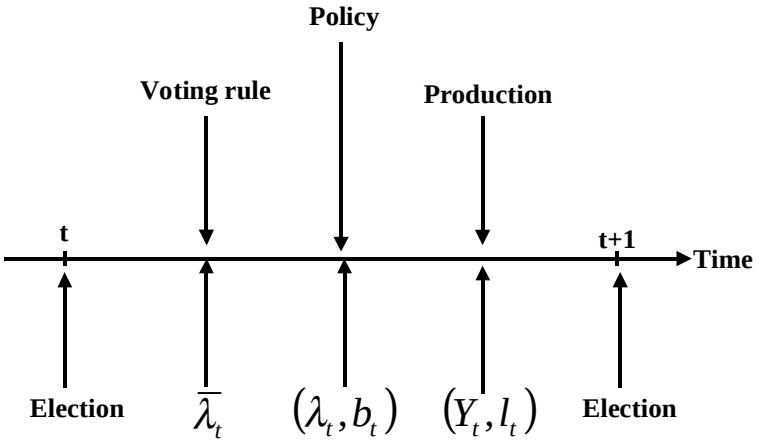

Figure 2: The time line.

and let $\hat{\lambda}$ *be the solution to*

$$F(\hat{\lambda}) = m + \omega. \tag{9}$$

A stationary political equilibrium with $\lambda_t = \lambda$ *exists. Equilibrium policy is characterized by*

1. $\lambda = \lambda_H$ *whenever* $\hat{\lambda} \geq \lambda_H$;
2. $\lambda = \hat{\lambda}$ *whenever* $\lambda_L < \hat{\lambda} < \lambda_H$;
3. $\lambda = \lambda_L$ *whenever* $\hat{\lambda} \leq \lambda_L$.

Proof. Let $\bar{\lambda} > \lambda_L$ be a stationary performance standard. The value function of the incumbent politician is

$$v_t(\lambda_t) = m + \omega - \tau + B(\lambda_t) + \beta\eta(\lambda_t, \bar{\lambda}) \max v_{t+1}(\lambda_{t+1}) + \beta(1 - \eta(\lambda_t, \bar{\lambda}))v_{k,t+1}.$$

The politician can choose a policy below the standard. If so and if a challenger is willing to run, he is replaced by the challenger and has the continuation

payoff of a citizen. We denote this by $v_{k,t+1} = \sum_{l=t+1}^{\infty} \beta^l u_l^{k(l)}$ where $k(.) \in \{w, e\}$. Alternatively, he can choose a policy at or above the standard and be reelected. The payoffs associated with these two options are denoted $v_D(.)$ and $v_C(.)$, respectively. Formally,

$$\lambda_t < \bar{\lambda} \quad \Rightarrow \quad v_D(\lambda_t) = m + \omega - \tau + B(\lambda_t) + \beta v_{k,t+1} \tag{10}$$

$$\lambda_t \geq \bar{\lambda} \quad \Rightarrow \quad v_C(\lambda_t) = m + \omega - \tau + B(\lambda_t) + \beta \max v_C(\lambda_{t+1}). \tag{11}$$

If no challenger is willing to run, the incumbent is reelected by default no matter what he does (and so, he implements the bribe maximizing policy every period). The politician chooses $\lambda_t = \bar{\lambda}$ if and only if the following three conditions are satisfied

$$v(\bar{\lambda}) = \max_{\lambda_t} v_C(\lambda_t), \tag{12}$$

$$v(\bar{\lambda}) \geq v_D(\lambda_L) = m + \omega - \tau + B(\lambda_L) + \beta v_{k,t+1}, \tag{13}$$

$$v(\bar{\lambda}) \geq v_P(\lambda_L) = \frac{w(\lambda_L) - \tau}{1 - \beta}, \tag{14}$$

where $v(\bar{\lambda}) = \frac{m+\omega-\tau+B(\bar{\lambda})}{1-\beta}$ is the value of keeping office for ever. If any of these conditions fail, the politician implements $\lambda_t = \lambda_L$. Condition (12) is satisfied whenever $\bar{\lambda} > \lambda_L$ since $B'(.) \leq 0$ for $\lambda \geq \lambda_L$. Condition (13) ensures that an incumbent will conform to the standard. It is satisfied whenever

$$B(\bar{\lambda}) \geq (1 - \beta)B(\lambda_L) - \beta(m + \omega - \tau) + (1 - \beta)\beta v_{k,t+1}. \tag{15}$$

Furthermore, $\lambda_t = \bar{\lambda}$ for all $t \Rightarrow v_{k,t+1} = \frac{w(\bar{\lambda})-\tau}{1-\beta}$. This and equation (15) imply that

$$F(\bar{\lambda}) \equiv \frac{(1 - \beta)}{\beta} B(\lambda_L) - \frac{B(\overline{\lambda})}{\beta} + w(\overline{\lambda}) \leq m + \omega. \tag{16}$$

The function $F(.)$ is strictly increasing in the interval $[\lambda_L, \lambda_H]$. Condition (14) says that the payoff associated with political office has to be greater then the payoff derived from private sector employment ($v_P(\lambda_L)$) when the bribe maximizing policy is implemented every period. This ensures a positive supply of challengers. The condition is satisfied whenever

$$G(\overline{\lambda}) \equiv w(\lambda_L) - B(\overline{\lambda}) \leq m + \omega. \tag{17}$$

Clearly, $F(\lambda) - G(\lambda) > 0$ for $\lambda \in (\lambda_L, \lambda_H]$ and $F(\lambda_L) = G(\lambda_L)$. The supply constraint (17) is, hence, implied by the incentive compatibility constraint (16).

Suppose $m + \omega > F(\lambda_L)$. Voters' payoffs increase with λ, and they choose the standard, $\bar{\lambda}$, to be as high as possible subject to condition (16), i.e., $\lambda = \hat{\lambda}$ whenever $m + \omega \leq F(\lambda_H)$. We note that all participants are indifferent to policies at or above λ_H. To complete the argument, we note that $m + \omega \leq F(\lambda_L)$ implies $\lambda_t = \lambda_L$ ■

Proposition 3 identifies three scenarios, which can be illustrated by means of Figure 3. The Figure shows the temptation of a politician to deviate as a function of the proposed policy, $F(\lambda)$. This temptation is larger the further the proposed policy is from λ_L. The equilibrium occurs where the temptation is precisely balanced against the rewards of political office $(m + \omega)$.

In the best case scenario, full liberalization and honesty can be sustained as a stationary equilibrium (at point A). This happens when

$$(\mathbf{H}) \quad B(\lambda_L) \leq \frac{\beta}{1-\beta}(m + \omega - w(\lambda_H)).$$

Condition (H) requires that the maximum bribe that can be collected $(B(\lambda_L))$ is less that the payoff to perpetual honesty and permanent tenure. In a worst case scenario, equilibrium displays extreme inefficiency and high levels of corruption (at point B). This happens when

$$(\mathbf{L}) \quad m + \omega + B(\lambda_L) \leq w(\lambda_L).$$

Condition (L) requires that the maximum payoff that can be extracted from corrupt politics is less than the wage income earned in the private sector when licences are restricted to λ_L. It is clear that the worse scenario cannot occur with voluntary participation: when condition (L) is satisfied, no one wants to run for office.

Conditions (L) and (H) define the upper and lower limit of regulation in a stationary, corruptible democracy. Intermediate situations demonstrate that equilibrium policy is, typically, a compromise between disparate interests. Voters want full liberalization $(\lambda_t = \lambda_H)$. Politicians want to preserve

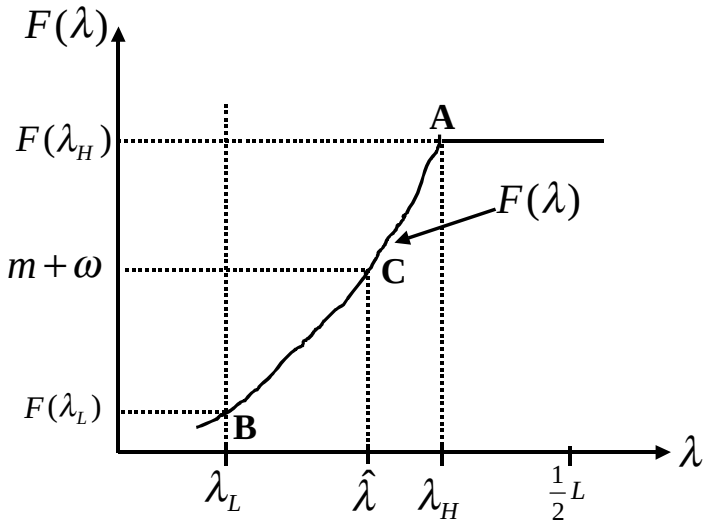

Figure 3: Political equilibrium

regulation to protect their unofficial income and prefer to implement $\lambda_t = \lambda_L$ every period but realize that doing so will jeopardize reelection prospects. Proposition 3 shows that a dynamic democracy achieves a compromise solution ($\hat{\lambda}$) and neither side gets its most-preferred policy implemented in equilibrium (point C in Figure 3). Voters agree to live with inefficient regulation and corruption. A "zero-tolerance" rule is counterproductive: it suffices to note that the performance standard $\bar{\lambda} = \lambda_H$ will lead to $\lambda = \lambda_L$ and every politician will fail to be reelected, as in Coate and Morris (1999). This result is similar to Persson et. al. (1997, Proposition 1). Politicians conform to the standards set by voters because they want to be reelected. In conclusion, electoral control cannot, in general, ensure honesty and efficient economic policies because voters find it in their best interest to reelect corrupt politicians as long as they are not too corrupt. The fact that inefficient regulation persists and politicians are corrupt are the two sides of the same coin of policy compromise.

4.1 The Extent of Compromise

Proposition (3) shows that democratic societies frequently need to compromise on economic policy. To derive the proposition, we have made many simplifying assumptions in the interest of clarity. In reality, societies differ in many respects that crucially affect the extent of compromise. We consider some of these differences below.

1. **Good and bad leaders:** Proposition 3 shows that efficiency of economic policy depends on the personal characteristics of elected politicians. Indeed, condition **(H)** can be read as a "folk theorem" of political efficiency: for m large enough, equilibrium policy is efficient. The intuition is clear. A politician, who values office highly is more anxious to please his constituency. A similar role is played by the discount rate, although $\beta \to 1$ may not be sufficient to insure efficient outcomes. We have assumed that politicians are all the same, and, as members of the species *homo economicus*, are all equally corruptible. Political history is replete with stories of good and bad leaders (including kings and queens who were not subject to electoral discipline) so, in reality, politicians differ greatly in the m-factor. Our analysis suggests that megalomania induces honesty, and that voters, therefore, would like to elect "high-m" leaders. As a consequence, they are likely to modify the performance standard in order to find and keep such a leader. Similarly, political dynasties appear to be a reality, in rich as well as in poor countries, and may well be an important factor in explaining non-myopic behavior and in avoiding "Lame Duck" effects (Alesina and Spear, 1988). We do not provide the formal analysis here, but we notice that the design of systems that select honest individuals to public office in a world populated by enough dishonest ones may be costly in terms of political and economic instability.[16]

2. **Political salaries:** Proposition 3 establishes that well-paid politicians are likely to be more honest because it raises their desire to be

[16] For analysis along these lines, see Tirole (1996) and Banks and Sundaram (1993).

reelected.[17] An interesting trade-off between the m-factor and high salaries arises if politicians differ in the extent to which they trade-off power for money. In this case, it can be counter-productive to offer very large salaries to heads of state, because this attracts the money-mad rather than the power-mad politician. Lord Acton's much quoted phrase begins with "Power corrupts". The design of incentive-compatible electoral systems should account for the fact that power only corrupts those who do not value it sufficiently. In addition, paying high salaries to politicians is costly to voters and so it is an open question if they are willing to pay the price of honest politics and efficient economic policies. A fully liberalized economy is allocative efficient and so there is a substantial surplus, compared to a corrupt democracy, from which voters can finance a high salary. The surplus is, however, only large enough to pay the price of honesty if the politician values the future enough. We return to this issue below in the discussion of Proposition 4.

3. **Level effects and centralization:** From equation (9), we see that $\hat{\lambda}$ decreases with A and L: societies with higher income and larger populations have to concede more to dishonest politics. The intuition is straightforward. An increase in income raises the stakes because politicians can potentially extract much larger bribes. They are, therefore, more likely to defect from a given standard. Realizing this, voters are willing to accept more restrictions and higher levels of corruption in equilibrium. Political centralization that increases the size of the economy controlled by a particular politician can, therefore, result in more inefficient economic regulation and higher levels of corruption. This provides a reasonable theory of why politics is less corrupt in Luxemburg than in India and why corruption might be relatively low in societies with decentralized government structures, but can hardly help us understand why Denmark is less corrupt than Malawi.

[17] In a cross-country study, Van Rijckeghem and Weder (2001) find a negative correlation between civil service wages (relative to wages in manufacturing) and the level of corruption. Hence, there is some empirical support to the proposition that official wages can be used to combat corruption.

4. **Enforcement and political reforms:** Societies can limit corruption by investing in better institutions of enforcement, penalties and rewards (Rose-Ackerman, 1999, chapter 5 and 8). This would, in some cases, amount to constitutional reforms[18] and, as pointed out by Haggard (2000, p. 48), recent constitutional changes in Japan and Colombia have at least in part been motivated by a desire to make economic policy making more efficient. Suppose ε is the degree of enforcement of anti-corruption laws and other aspects of the political and legal environment that make it costly to collect bribes. The politician's unofficial income then becomes

$$B(\lambda) = (1 - \varepsilon)\lambda b(\lambda).$$

Clearly, an increase in ε reduces the unofficial income for a given λ. This increases equilibrium λ because defection becomes relatively less profitable. Realistically, political or bureaucratic reforms, which increase ε, are resource costly, and, therefore more likely to be instituted in richer societies. This is undoubtedly one factor behind the observed negative correlation between corruption and national income. Unfortunately, institutions of enforcement are themselves prone to corruption (Acemoglu and Verdier, 2000).

5. **Democratic institutions:** We assume that democratic institutions are fully developed and that voters can choose an election rule, η, with $0 \leq \eta(.) \leq 1$. This may be optimistic for several reasons. Societies where ruling politicians can subvert the democratic process by stuffing ballot boxes must work with a less powerful threat of termination because $\eta(\lambda_L) = \eta_L > 0$. Societies with low turn-outs, voter apathy or costs of coordination among voters cannot promise large rewards because $\eta(\widehat{\lambda}) = \eta_H < 1$. These problems are likely to arise in very different societies, but have similar (adverse) effects on the quality of economic policy. The facts, as summarized by Treisman (2000), suggest that corruption is less likely in countries with longer traditions of

[18] Persson et al. (1997; 1998) analyze how separation of powers can reduce corruption. Myerson (1993) shows that the design of the electoral system itself has also important implications for corruption levels.

democracy and with (Anglo-Saxon) common law systems, giving some empirical support to the suggestion that a well-developed democracy can help combat corruption.

5 Growth and Politics

A larger economy presents greater temptations, and politicians stand to gain more from selling favors. This suggest that it may be harder for voters to maintain and improve standards of honesty in public office in a growing economy. In this section, we consider this issue and show, in Proposition 4, that productivity growth can contribute to sustain efficient economic policies.

We consider an economy with constant productivity growth,

$$A_{t+1} = (1+g)A_t \quad 0 \leq g \leq \frac{1-\beta}{\beta}. \tag{18}$$

From Proposition 1, we recall that all variables of interest are proportional to A_t:

$$Y_t = A_t Y(\lambda_t); \quad w_t = A_t w(\lambda_t); \quad \pi_t = A_t \pi(\lambda_t); \tag{19}$$

and

$$B_t(\lambda_t) = A_t B(\lambda_t). \tag{20}$$

We assume that voters link the politician's official income, ω_t, to productivity using the following indexation rule:

$$\omega_t = \theta A_t, \quad \theta \geq 0. \tag{21}$$

Proposition 4 (Stable Politics) *Suppose* $A_t = (1+g)^t A_0$, *with* $0 < g \leq \frac{1-\beta}{\beta}$ *and* $\omega_t = \theta A_t$. *A stationary political equilibrium* $\lambda_t = \hat{\lambda}$ *can be sustained for* $\hat{\lambda} \in [\lambda_L, \lambda_H]$ *if and only if*

$$\theta - w(\hat{\lambda}) \geq \frac{(1-\beta(1+g))B(\lambda_L) - B(\hat{\lambda})}{\beta(1+g)}. \tag{22}$$

Proof. A stationary policy is an equilibrium if, and only if, it can be sustained by the associated election rule (see Proposition 3), and $\hat{\lambda} > \lambda_H$

is a stationary equilibrium whenever λ_H is. Let $\hat{\lambda} \in [\lambda_L, \lambda_H]$. Consider the election rule

$$\hat{\eta}(\lambda_t, \hat{\lambda}) = \begin{cases} 1 & \text{iff} \quad \lambda_t \geq \hat{\lambda} \\ 0 & \text{otherwise} \end{cases} .$$

The politician chooses $\hat{\lambda}$ at each t if, and only if, $v_t^p(\hat{\lambda}) \geq v_t^p(\lambda_L)$ at each t. This is equivalent to

$$\frac{m}{1-\beta} + A_t \frac{B(\hat{\lambda}) + \theta}{1-\beta(1+g)} \geq m + A_t \left(B(\lambda_L) + \theta + \frac{\beta(1+g)w(\hat{\lambda})}{1-\beta(1+g)} \right) \tag{23}$$

at each t. Rearranging equation (23) yields

$$\frac{\beta m}{1-\beta} + A_t q(\widehat{\lambda}) \geq 0. \tag{24}$$

where $q(\widehat{\lambda})$ is defined by collecting the relevant terms in equation (23). Since $\lim_{t\to\infty} A_t = \infty$ from equation (18), inequality (24) holds at each t if, and only if, $q(\widehat{\lambda}) \geq 0$. This yields condition (22) ■

Proposition 4 sets out an indexation rule for each performance standard and growth rate. The index rule is expressed as a premium over the private sector wage. The wage premium, $\mu(g, \lambda) = \theta - w(\lambda)$, is increasing in λ, and decreasing in the growth rate, g. The latter captures the beneficial effect of growth. Imagine $\mu = 0$, so that political salaries are no larger than private sector wages. Simply allowing politicians to keep their private sector job while in office could achieve this. The best stationary policy that can be sustained (λ_0) satisfies

$$B(\lambda_0) = (1 - \beta(1+g))B(\lambda_L).$$

$B(.)$ is a decreasing function for $\lambda \geq \lambda_L$ and we see that higher productivity growth implements more efficient policies, even if political salaries command no premium. We notice that a large enough wage premium can deliver efficiency, i.e.,

$$\mu_H = \frac{1-\beta(1+g)}{\beta(1+g)} B(\lambda_L) \Rightarrow \lambda_t = \lambda_H \text{ for all } t.$$

Are tax-payers willing to pay for efficient policies? The answer is yes whenever

$$(\mathbf{E}) \quad Y(\lambda_H) - Y(\lambda_0) \geq \frac{(1-\beta(1+g))^2}{\beta(1+g)} B(\lambda_L).$$

It follows that efficient policies becomes more affordable with high productivity growth. Whenever $g = \frac{1-\beta}{\beta}$, the efficient policy (λ_H) can be implemented in political equilibrium by paying politicians the going market rate and voters are indeed (just) willing to do that (i.e., condition (E) is satisfied with equality).

Proposition 4 evaluates stationary equilibria. There are other, non-stationary equilibria if $\mu < \mu_H$. This includes paths with monotonically declining levels of liberalization, and increasing corruption where the limiting value is defined by equation (22). These paths are equilibria because the net gain of compliance takes the form $\frac{\beta m}{1-\beta} + A_t q(\hat{\lambda})$. The relative importance of m is higher when A_t is low. In early phases of growth, voters can exact much higher standards of performance from their elected leaders. These paths show increasing equilibrium corruption – which we may think of as a "good old days" property: politics was more honest when the world was young. It also provides an (alternative) explanation for the observation made by Olson (1982) that societies tend to grow more inefficient over time as special interest group politics becomes more entrenched.

5.1 Growth Shocks and Politics

In Proposition 4, we evaluate stationary policies that arise in the presence of systematic growth. Erratic growth may result in unpleasant politics, with policy reversals during phases of transition. To see this, imagine an economy which has a constant level of technology until period t: $A_{t-i} = A_0 = 1$ for $i < t$. Suppose that the wage premium is $\frac{1-\beta}{\beta} B(\lambda_L)$, ensuring that $\hat{\lambda}_{t-i} = \lambda_H$. In period t, there is a large and positive technology shock, and $A_t = 1+g > 1$. The shock is unanticipated. What is the likely effect on policy outcomes? It is important whether the shock is permanent, or transitory, and likely to reverse itself. To keep things simple, suppose

$$A_{t+k} = \begin{cases} 1+g & \text{with probability } p \geq 0 \\ 1 & \text{with probability } 1-p. \end{cases}$$

In period t, the maximum bribe is $B(\lambda_L)(1+g)$, which is larger than usual. The politician defects and sets $\lambda_t = \lambda_L$, if

$$\begin{aligned} & m + (1+g)(B(\lambda_L) + \theta) + \frac{\beta}{1-\beta}(1+pg)w(\lambda_H) \\ > \quad & \frac{m}{1-\beta} + (1+g)\theta + \frac{\beta}{1-\beta}(1+pg)\theta. \end{aligned} \tag{25}$$

Substituting for $\theta = w(\lambda_H) + \frac{1-\beta}{\beta}B(\lambda_L)$, we see that $\lambda_t = \lambda_L$ if

$$(1-p)gB(\lambda_L) > \frac{\beta m}{(1-\beta)}.$$

Policy reversals are likely when p is small. That is, positive economic shocks can lead to political instability and to inefficient policies, if they are perceived to be temporary. Better technologies generate more output, and increase the potential revenue from bribes. If technology shocks are seen to be transient, corrupt politicians seize the day and collect the larger bribe. Put another way, the cost of honesty (μ_H) is higher in booms, and the official wage needs to vary more than the economic cycle to ensure efficient policy-making. Another implication is that more inefficient economic policy tends to be implemented during (temporary) booms than during (temporary) recessions. Since inefficient economic policy by itself reduces output this phenomena can be interpreted as active Keynesian stabilization policy driven by the desire of corrupt politicians to collect bribes. If technological changes are seen to be permanent, they do not alter the *intertemporal* incentives of politicians, because they can stay in office and reap the benefits from a richer economy.

Societies in transition must handle changes in economic structure, often at the same time as changes in political systems are required. We note, here, that the feedback from economics to politics may be paradoxical: positive economic shocks can lead to inefficient political outcomes and expectations of better economic conditions in the future can help liberalization getting started only to see the effort reversed at a later day. It also provides a setting to understand political instability and high government turnover, which accompany the transition to better functioning economic systems.

6 Conclusions and Further Issues

In this paper, we analyze how corrupt politicians may implement and preserve inefficiently high levels of regulation, and the extent to which voters can control the resulting inefficiency. We show, in Proposition 3, why we expect to observe compromise politics; and in Proposition 4 that more efficient outcomes can be attained by an appropriate design of performance standards and official rewards to office holders. We address a few questions. There are many more, and we indicate a few important issues below.

- **Persistent Corruption:** Proposition 4 is a positive result, suggesting that societies can, in some cases, eliminate political corruption by appropriate choices of carrot and stick. Why, then, does corruption persist, especially but not exclusively in poor countries? We evaluate one type of corruption – political corruption. This is corruption at the highest level. Corruption is possible at virtually every level of government, starting from file-pushing clerks and tax or customs inspectors (Besley and McLaren, 1993). This makes it difficult to compare or collect evidence. It is also a likely explanation of why simple and cheap rules cannot eliminate corruption on the spot. The approach employed by Acemoglu and Verdier (1998; 2000) is directly concerned with such issues. They evaluate a situation where bureaucratic intervention is necessary to correct some distortion at the microeconomic level. Bureaucrats can be tempted by bribes. It is possible to achieve honesty but the cost of compliance at every level can be so large that taxpayers prefer some corruption.

- **Politics and growth:** Inefficient politics are likely to be particularly costly to societies in transition, where growth is anything but smooth. Section 5.1 evaluates the likely effect of economic shocks on political outcomes. The effects are negative – temporary growth in productivity leads to adverse political outcomes, because they increase the rewards to corruption. We concentrate on situations where growth is exogenous, and not affected by political mistakes or diversion of resources to rent-seeking. In reality, bad policies can have growth effects, by affecting

the incentives to invest in, or adopt, new technologies[19] or by making it attractive to engage in rent-seeking.[20] This implies, of course, that bad policy choices and corruption itself can have a persistent, negative impact on the economy. At the same time, even corrupt politicians are unlikely to make very bad mistakes, because they would rather take their cut from a growing pie.

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