DISCUSSION PAPER SERIES

No. 5062

POLITICAL PREDATION AND ECONOMIC DEVELOPMENT

Jean-Paul Azam, Robert H Bates
and Bruno Biais

INSTITUTIONS AND ECONOMIC PERFORMANCE

Centre for Economic Policy Research

www.cepr.org

Available online at: **www.cepr.org/pubs/dps/DP5062.asp**

ISSN 0265-8003

POLITICAL PREDATION AND ECONOMIC DEVELOPMENT

Jean-Paul Azam, Toulouse University
Robert H Bates, Harvard University
Bruno Biais, Toulouse University (GREMAQ/CNRS, IDEI) and CEPR

Discussion Paper No. 5062
May 2005

Centre for Economic Policy Research
90–98 Goswell Rd, London EC1V 7RR, UK
Tel: (44 20) 7878 2900, Fax: (44 20) 7878 2999
Email: cepr@cepr.org, Website: www.cepr.org

CEPR Discussion Paper No. 5062

May 2005

ABSTRACT

Political Predation and Economic Development*

Economic growth occurs as resources are reallocated from the traditional sector to the more productive modern sector. Yet, the latter is more vulnerable to political predation. Hence, political risk hinders development. We analyse a politico-economic game between citizens and governments, whose type (benevolent or predatory) is unknown to the citizens. In equilibrium, opportunistic governments mix between predation and restraint. As long as restraint is observed, political expectations improve and the economy grows. Once there is predation, the reputation of the current government is ruined and the economy collapses. If citizens are unable to overthrow this government, the collapse is durable. Otherwise, a new government is drawn and the economy can rebound. Equilibrium dynamics are characterized as a Markov chain. Consistent with stylized facts, equilibrium political and economic histories are random, unstable and exhibit long-term divergence. Our theoretical model also generates new empirical implications on the joint dynamics of income inequality, output and political variables.

JEL Classification: D82, H11, O00 and O17
Keywords: economic development, political economy, political predation and reputation

Jean-Paul Azam
IDEI, Toulouse University
Place Anatole France
31000 Toulouse Cédex
FRANCE
Email: jean-paul.azam@univ-tlse1.fr

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=107817

Robert H Bates
Department of Government
Harvard University
Littauer Center M-29
Cambridge, MA 02138
USA
Tel: (1 617) 496 0919
Fax: (1 617) 495 0438
Email: rbates@latte.harvard.edu

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=116314

Bruno Biais
IDEI, Toulouse University
Place Anatole France
31000 Toulouse Cédex
FRANCE
Tel: (33 5) 61 12 85 98
Fax: (33 5) 61 12 86 37
Email: biais@cict.fr

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=111911

*Many thanks for useful comments to Macartan Humphreys, Thomas Mariotti and seminar participants at the Center for the Study of African Economies, Oxford University, and the IIES, Stockholm University, especially Fabrizio Zilibotti.

Submitted 27 April 2005

Political Predation and Economic Development

1. Introduction

Empirical studies of economic development and growth offer strong evidence of long term divergence across countries (Pritchett, 2000, Allen, 2001, and Maddison, 1995). Furthermore, growth paths are diverse (Pritchett, 2000) and unstable (Easterly et al, 1993), while changes in growth rates tend to be unpredictable (Hausmann et al, 2002). This paper shows that taking into account political risk and predation can contribute to understanding these patterns.

In developing our argument, we make use of a variant of the standard model of a two sector economy (e.g., Lewis, 1954). Development results from the transition of resources from the less productive sector, which we will call the informal or traditional sector, to the more productive, which we call the formal or modern. Citizens in the traditional sector are self-employed and work in farming, in household labor, or in artisanal production. In the modern sector, production takes place in firms that utilize new technologies and physical capital on a relatively large scale.[1] Firms in the modern sector also rely on certification and information techniques, provided by financial intermediaries and accountants, which enhance their ability to make use of sophisticated contracts (see Hicks, 1969). While these methods enhance their productivity, they also make firms more visible and more vulnerable to exactions by politicians. In contrast, informal activities are less visible, and it is more costly and less rewarding for the government to expropriate them (De Soto 1989). This paper explores how the resultant differences in political predation risk alter the growth paths of economies.

To capture the impact of political risk, we introduce a government that may – or may not – be predatory. Benevolent governments never predate. In contrast, predatory governments extract rents from the modern sector by utilizing a well

[1] Note however that our model does not rely on economies of scale, and thus differs from another important class of two–sector models of development, starting with Rosenstein Rodan (1943); Murphy, Shleifer and Vishny (1989 a and b) have more recently developed this line of research, emphasizing economies of scale and market size.

known range of instruments (e.g. Bates 1981, Lal 1983): altering the exchange rate, impeding access to key markets, raising prices in factor markets (for labor, for capital, and for services, such as electricity or transport) or altering the prices for the goods they sell to the benefit of customers. Alternatively, the government may demand payments from firms, i.e. engage in corruption; or it may seize their assets, i.e. nationalize firms and industries.

To explore the impact of political choices, we consider a discrete time, infinite horizon model. Initially, nature draws the type of the government: benevolent or opportunistic. Then, at each period, citizens choose whether to operate in the informal or formal sector. The citizens are not perfectly informed about the government's type. Using past observations, they rationally update their beliefs about the likelihood of predation. As citizens lower their assessment of political risk, they become more willing to enter the more productive but more risky modern sector.

In each period, the government, if opportunistic, decides whether or not to predate. In an environment of asymmetric information, the government's choice provides a signal of its type. While predation generates immediate resources for the opportunistic government, restraint enhances political optimism, encouraging citizens to enter the formal sector. The opportunistic government, rationally anticipating the response of the citizens, trades off the immediate costs of restraint against the benefits of future predation. Its strategy takes the form of mixing between predation and restraint. The a priori distribution of the government's type, combined with its policy choice determines the assessment of political risk.[2]

As long as the government does not predate, political optimism increases, resources flow to the modern sector and the economy grows. Citizens rationally anticipate predatory governments to mimic the behavior of benevolent ones, however. They are not certain whether the history of restraint reveals the presence of a benevolent government or merely reflects the efforts of a predatory one to "fatten" the modern sector before engaging in predation. The corresponding political risk lowers the growth rate and size of the economy. It also shapes the distribution of income. Because wages in the modern sector can be expropriated, they include a risk premium. Thus there is a wedge between the compensation promised in the modern sector and that obtained in the traditional sector. This

[2] That policy risk arises endogenously, reflecting the strategies of political and economic agents, differentiates our analysis from others where political predation stems from exogenous random policy reversals or changes in the government (Alesina and Tabellini, 1989, Rodrik, 1991).

risk premium, which is decreasing in the political reputation of the government, lowers the profits of the modern sector firms.

While we consider an infinite horizon model, we show there is an endogenous horizon to the politico–economic game played by the citizens and the government. After a sufficiently long period of restraint, the probability that the government is benevolent becomes quite high. Citizens then allocate such a large portion of their resources to the modern sector, that the government, if predatory, cannot resist the temptation to predate immediately.

The analysis yields a variety of growth paths. If the government is benevolent, the economy reaches full development at the endogenous horizon of the game. If the government is opportunistic, it will predate, in equilibrium, at some point between the beginning of the game and this horizon. When citizens observe predation, they infer that the current government is predatory and the economy collapses. But citizens try to resist predation, and overthrow the predator. If they are successful, a new government comes in power and the economy can rebound and start a new potential development path. If the government stays in power, political confidence is lost, and the economic collapse lasts as long as the government remains in power.

The equilibrium dynamics of the politico–economic system are characterized by a Markov chain. We solve for its transition matrix and ergodic distribution. Both the extreme states – where the type of the current government is known – and the interior states – where the citizens are gradually learning about the government's type – have positive probability in the ergodic distribution. Correspondingly, persistent divergences arise, as different economies typically are in different states, following different political and economic random histories, even if they are characterized by the same initial parameters.

Thus the dynamics of our model recreate the patterns of "hills" and "mountains" observed by Pritchett (2000). Pritchett (2000) suggests one should: "examine the economic, political, institutional and policy conditions that accompany ... break points" in growth paths. Our model offers a theoretical framework for such an examination, and yields implications for the relationships between economic and political variables around these break points.

The next section reviews the literature on political risk, institutions and economic development to which our analysis is directly related. Section 3 presents our model of economic development and political risk. Section 4 presents the politico–economic histories arising in equilibrium. Section 5 discusses the empirical implications of our analysis. Section 6 offers some concluding comments. The proofs are the appendix.

2. Literature

Our paper complements the institutionalist theories of politics and development and offers a somewhat different perspective. To forestall predation, this literature holds, institutional innovations – the creation of parliaments or central banks, for example – render political restraint a subgame perfect equilibrium (e.g., North and Weingast 1989). Political institutions thus provide assurances to economic agents; for given the incentives fostered by such institutions, predation lies off the equilibrium path and never takes place. We take a somewhat different approach. We include institutions of restraint in our model, although in a simplified way: we assume that the stronger these institutions, the greater the ability of the citizens to overthrow the government, when it is found to be predatory. In spite of such institutions, predation can take place on the equilibrium path. We also show that, in spite of the risk of predation, economic agents can behave in ways that generate economic growth. Maybe more surprisingly, we show that stronger institutions do not necessarily make predation less likely. In our model, the strength of the resistance to predation depends on the strength of the institution and of the size of the population expropriated by the predator, i.e., the fraction of the labor force employed in the modern sector. The stronger the institutions, the greater the ability of the people to fend off predation. Hence, strong institutions invite opportunistic governments to predate early, before the civil society has become sufficiently strong to overthrow them.

The seminal institutionalist theories of politics and development have been recently complemented by a very interesting stream of research emphasizing the consequences of initial conditions on institution building and, eventually, economic development (Engerman and Sokoloff (1997) and Acemoglu et al, 2001, 2002, 2004). An implication from their work is that, in countries which did implement good institutions early, economic development took place, while in countries which failed to do so, economic development did not occur or was delayed. While this theory definitely captures an important aspect of the data, our model points to an additional interpretation. The equilibrium dynamics we characterize give rise to random politico–economic histories, and the ergodic probability vector places positive weight on different levels of long term development. This raises the possibility that divergence could, in part, reflect different realizations of random sample paths, generated by the same equilibrium (or qualitatively similar equilibria.) This interpertation is consistent with the empirical finding by Hausmann, Pritchett and Rodrik (2004) that most growth accelerations are not preceded by major changes in economic policies or institutional arrangements.

Our analysis also emphasizes that, along with the institutions which set the rules of the political game, the preferences and actions of the government, as well as the beliefs of the citizens, play a major role. Countries with similar institutions but different political expectations or different government types will have different economic and political histories. Economic historians have long recognized that while many Latin American countries adopted formal institutions similar to those in the United States, their growth paths have diverged in part because of the divergence in the preferences and conduct of governments and in the expectations they formed as a result of their conduct (see e.g., Engerman and Sokoloff, 1997, and Engerman, Haber and Sokoloff, 2000). And while long resistant to explanations based on such idiosyncratic features as the nature of particular leaders, social scientists have been forced to concede that long run differences may in fact relate to the choices of "founding" regimes (Bratton, Mattes et al. 2004). Thus Acemoglu et al (2003) relate the impressive steady growth of Botswana to the policy choices of Presidents Khama and Masire, in addition to that country's pre–colonial institutions. In our framework, their political leadership can be interpreted as reflecting a good draw from the distribution of political types – one that promoted the divergence of Botswana's growth path deom that of many of its neighbors. In contrast, the recent economic and political history of Zimbabwe can be interpreted as a promising development path, characterized by economic growth and improved expectations, violently interrupted by political predation, followed by economic collapse. The logic of our model, whereby the type of the government is key, is also quite in line with the empirical results Jones and Olken (2004), who offer strong evidence that the identity of the political leader matters significantly for growth.

Our analysis is also related to the insightful analysis of Besley (1997). In both papers the government can be predatory; fearing the prospects of predation, economic agents refrain from entering; and after predation, they exit the more productive sector. The two papers also exhibit important differences, however. In Besley (1997), there are no informational asymmetries about the type of the government, and predation does not occur on the equilibrium path.[3] In contrast,

[3]Besley (1997) calls for extensions of his analysis incorporating imperfect information and political uncertainty. Our paper takes a step in that direction.

in our model, a positive probability of predation remains along the no-predation path. And because the equilibrium path is stochastic our model generates a variety of possible growth paths and long term divergence in GDP per capita.

Our model also complements an interesting body of research analyzing the case where there is asymmetric information about the type of the government, see e.g., Rodrik (1989), Perotti (1995) and Cherian and Perotti (2001). Our focus and analysis are different from theirs, however. Rodrik (1989) focuses on policy reversals and shows that good governments signal their types by implementing larger reforms than in the first best. Perotti (1995) shows how the benevolent government breeds confidence by following a gradual privatization policy and underpricing the shares. Cherian and Perotti (2001) study option pricing when tax prone governments seek to attract investors by temporarily refraining from high taxes. Our analysis complements these because we focus on different issues – such as the transition from the traditional to the modern sector, political instability and long–term divergence – and because we explicitly characterize the equilibrium dynamics of the politico–economic system, both in terms of short–term transitions and in terms of long term distribution.

We now turn to our argument.

3. A simple model of economic development and political risk

3.1. Citizens and governments

We consider a discrete time, infinite horizon model where time t goes from 1 to infinity. The actors in our model – each rational and risk neutral – include a unit mass continuum of private citizens and an agent that possesses the power to engage in predation. The potential predator can be the current government, or another political player, who might attempt to seize power and expropriate other people's wealth. For simplicity, we hereafter refer to the potential predator as the government. Prior to the game, nature selects the government's type. For simplicity we only consider two possible actions for the government: it can either predate, and expropriate the wealth of the private agents, or it can refrain from predation. While providing an oversimplified view of political choices, this simplification lets us to focus on the important problem of political risk. With probability π_0, the government is relatively benevolent and never predates. With the complementary probability $(1-\pi_0)$, the government is opportunistic. It chooses whether to predate or show restraint to maximize its own discounted expected profits.

3.2. The modern sector and the traditional sector

In line with Lewis (1954) and others (e.g., Harris and Todaro, 1970), we consider a two-sector economy. The traditional sector is less productive than the modern (which we also term the formal) sector of the economy. Firms operating in the modern sector are more productive, in part because they benefit from access to superior technologies and better infrastructure. Economic development occurs as resources move from the traditional sector to the modern sector.

Denote by β_t the fraction of agents operating in the modern sector at time t, and by $1-\beta_t$ the fraction of agents operating in the traditional sector. For simplicity, output in the traditional sector is simply equal to $1-\beta_t$, i.e., the marginal product in the traditional sector is constant and normalized to one. Output in the modern sector is: $Y(\beta_t)$. The production function $Y(.)$ is continuous, increasing and concave. For simplicity, we consider only one input: labor. We assume the modern sector is more productive than the traditional sector, i.e., $Y'(\beta) \geq 1, \forall \beta \in [0,1]$. Thus efficiency requires that all the population work in the modern sector. To simplify the analysis we also impose some regularity conditions: Y satisfies the Inada condition that $\lim_{\beta \to 0} Y'(\beta) = \infty$. We also assume that: $Y'(1) = 1$, which implies that, when all agents work in the modern sector, the marginal productivity is equalized in the two sectors. As will be seen below, this assumption will also imply that, with positive levels of political risk, the optimal value of β remains strictly lower than 1.

A tractable parametrization for the production function is: $Y(\beta_t) = k(\beta_t)^\alpha$. This corresponds to the standard Cobb Douglas function: $Y(\beta_t) = AK^{1-\alpha}{\beta_t}^\alpha$, specialized to the case where capital is constant. For that function, the condition that $\lim_{\beta \to 0} Y'(\beta) = \infty$ holds. The assumption that $Y'(1) = 1$ implies that $\alpha k = 1$ and the assumption that the production function is increasing and concave implies: $\alpha \in [0,1]$.

3.3. The first best benchmark

The first best allocation is the solution of:

$$Max_{\beta_t \in [0,1]} Y(\beta_t) + (1-\beta_t).$$

Concavity of the production function implies that the second order condition holds. Under our assumption that $Y'(1) = 1$, the optimum is pinned down by the first order condition: $Y'(\beta) = 1$, and $\beta = 1$.

When there is no risk of predation, competitive equilibrium implements the first best allocation in a decentralized way. Citizens working in the traditional sector obtain their marginal productivity, equal to one. Such jobs can be thought as self–employment in the informal sector. Citizens employed in the modern sector receive the wage: w. As long as $\beta < 1$, equilibrium requires that workers be indifferent between taking a job in the modern sector and being self–employed in the traditional sector, implying that $w = 1$.[4] The modern sector firms, are supposed to be competitive. They choose how many workers to hire, taking the wage as given:

$$Max_{\beta_t \in [0,1]} Y(\beta_t) - \beta_t w.$$

Substituting in this program the equilibrium wage, the objective becomes: $Y(\beta_t) - \beta_t$, and the optimality condition yields the first best allocation. With political risk, however, equilibrium allocations can differ from the first best, as shown below.

3.4. The risk of political predation

The greater efficiency of the formal sector comes at the cost of greater political risk. Whether because the firms are larger, less mobile, or more visible, an opportunistic government finds it not only more lucrative but also less costly to prey upon output from the formal sector. To capture its vulnerability in the simplest possible way, we assume that, when the government chooses to predate at time t, it endeavors to capture the entire output of the modern sector: $Y(\beta_t)$. If it is succesful, the profits of private firms are entirely expropriated and wages in the modern sector are not paid. In contrast, we assume that output in the traditional sector is protected from political predation. Thus, the risk of political predation can deter citizens from leaving the safe traditional sector, to enter the more productive modern sector.

At the beginning of each period, citizens make the initial move, choosing whether to work in the traditional sector or in the formal sector. The predatory agent then chooses opportunistically whether to seize the output of the latter sector or to refrain from predation. The strategy of the opportunistic government is therefore described by the probability that it refrains from predation at

[4] This indifference condition is sufficient but not necessary when $\beta = 1$.

time t, denoted by μ_t. If the opportunistic government never predates at time t, then $\mu_t = 1$. If it always engages in predation, $\mu_t = 0$. The intermediary case ($0 < \mu_t < 1$) corresponds to a mixed strategy. Figure 1 portrays the sequence of play.[5]

While citizens are initially uncertain about the government's type, they rationally update their prior expectation after observing its behavior. Because their actions play the role of a signal, predatory agents possess an incentive to pool with inoffensive ones, initially refraining from predation so as to enhance their reputation and subsequently secure a larger gain.

3.5. Political instability

When comparing gains during one period and during the next period, the potential predator discounts the latter at rate δ_G (< 1). While δ_G can be interpreted as a standard discount rate, it can also be interpreted as the probability that the government will still be in office at the following period. In that interpretation, with probability $1 - \delta_G$ there is an exogenous political shock, such as, e.g., an invasion, or the death of the political leader. In that case a new government is in charge at time $t + 1$, with initial reputation: π_0.[6] As far as the mathematical analysis of the model is concerned the two interpretations, in terms of discount rate or in terms of exogenous political shock, are equivalent.

The choices of the opportunistic government also reflect the prospects that their predatory actions will be successful. We allow for the possibility that the government could be overthrown when it is found to be predatory. Thus, we assume that, when the government predates, with probability ν it is overthrown, while with probability $1 - \nu$ it is not overthrown and retains its ill got gains.

[5] δ_G can also be interpreted as the probability that the government will still be in office at the following period. With probability $1 - \delta_G$, a new government is in charge at time $t + 1$, with initial reputation: π_1^1. Recasting the problem in this manner does not change the equilibrium strategies of the players. The only difference is that, in this version of the model, with probability: $(1-\pi_1)\delta_G^{t-1}(1-\delta_G)\ \Pi_{s=1}^t \mu_s$ the government was opportunistic but was ousted from power before it had the oppportunity to predate.

[6] Mozambique offers an example (see Jones and Olken, 2004). Its historical leader, Samora Machel, was a predatory autocrat. Consistent with our theory, under his leadership Mozambique had very low gdp per capita. In 1986, Samora Machel died, which can be interpreted as an exogenous shock, as in our model. Joaquin Chissanao became the new national leader, which can be interpreted as a new draw, as in our model. Consistent with our model, as this new leader did not follow predatory policies, gradual growth obtained.

When the predator is overthrown, a new government comes in power (with initial reputation π_0), the modern sector is not expropriated, and wages are paid. In contrast, when the government successfully predates and stays in power, modern firms are expropriated and modern sector wages are not paid. It is natural to assume that resistance to predation is increasing in the number of people who are expropriated, i.e., in the fraction of the population employed in the modern sector, β_t. Hence, we assume that ν is a continuous and increasing function of β_t. Accordingly, we denote it by $\nu(\beta_t)$. By analogy with the production function, a simple parametrization of the probability that the government is overthrown when it predates is:

$$\nu(\beta_t) = \gamma \beta_t^{\eta}.$$

where γ and η are constants in $[0,1]$, measuring the effectiveness of resistance to predation. When $\gamma = 0$, the government can safely predate, without any risk of being overthrown. When, $\gamma = 1$ and $\beta_t = 1$, then the government is always overthrown when it predates.

4. Equilibrium Politico–Economic Histories

The joint evolution of predation and entry in the formal sector, arises as the equilibrium outcome of the dynamic game played by the citizens and the potential predator. At each point in time, t, the private sector and the government choose their optimal actions: μ_t and β_t. In this section, we characterize their perfect Bayesian equilibrium strategies. Each agent takes actions that are optimal, given its rational interpretation of past observations and its rational anticipations about the optimal actions taken in the continuation games. We first show how citizens update their beliefs about the type of the government, based on its observed behavior. Second, we analyze the dynamics of entry in the modern sector, in line with the evolution of political expectations. Third, we analyze the resultant growth paths. As political expectations improve, and citizens enter the modern sector, output per capita increases and, as shown below, the distribution of income alters. Third, we characterize the dynamic strategy of the government.

4.1. The dynamics of political risk

Denote by π_{t-1} the updated probability that the government is predatory, given the sequence of moves from time 1 to time $t-1$. Denote by λ_t the probability that the government will show restraint at time t given the information set of the agents in the economy:

$$\lambda_t = \pi_{t-1} + (1 - \pi_{t-1})\mu_t. \tag{4.1}$$

The dynamics of π_{t-1} as a function of μ_t and the sequence of moves is given in the next lemma:

Lemma 1: *As soon as the government predates, π_{t-1} goes to 0, permanently. If the government has not predated at time $1, ...t-1$, the probability that it is benevolent is:*

$$\pi_{t-1} = \frac{\pi_0}{\pi_0 + (1 - \pi_0)\mu_1 ... \mu_{t-1}}.$$

Lemma 1 implies that, on the no–predation path, the probability that the government is benevolent increases, i.e., the reputation of the government improves over time. On the other hand, when the government predates, its reputation is permanently destroyed.

4.2. Private sector choices

Citizens who choose to operate in the traditional sector receive their marginal product, equal to 1. Those who choose to operate in the modern sector at time t receive their wage w_t, if the government does not predate, or if, after attempting to predate, it is overthrown. Again, equilibrium in the labour market implies that citizens be indifferent between self–employment in the informal sector and employment in the modern sector. Hence:

$$w_t = \frac{1}{\lambda_t + (1 - \lambda_t)\nu(\beta_t)}. \tag{4.2}$$

When political risk is large, there is a large probability that the government will predate and wages won't be paid. To compensate for this risk, employees must be promised a relatively high wage in the case where the government does not predate. This risk premium generates a wedge between the wage promised in the modern sector and the traditional or informal sector; the greater the political risk, the greater larger this wedge.

Taking the wage rate as given, the modern sector firms choose how many workers to hire to maximize expected profits:

$$Max_{\beta_t \in [0,1]} (\lambda_t + (1 - \lambda_t)\nu(\beta_t))(Y(\beta_t) - \beta_t w_t).$$

Note that political risk reduces expected profits in the modern sector by raising both the equilibrium wages and the probability that profits will be expropriated. Substituting in the equilibrium wage, expected profits in the modern sector are:

$$(\lambda_t + (1 - \lambda_t)\nu(\beta_t))Y(\beta_t) - \beta_t.$$

The solution of this program is given in the next lemma:

Lemma 2: *If $\lambda_t = 1$, then all citizens operate in the modern sector. If $\lambda_t = 0$, then all citizens operate in the traditional sector. For interior values, the fraction of citizens employed in the traditional sector is β_t is an increasing function of λ_t:*

$$\beta_t = B(\lambda_t). \tag{4.3}$$

As shown in the proof of the Lemma, for interior values of , the fraction of the population operating in the formal sector is given by the first order condition:

$$Y'(\beta_t) = w_t = \frac{1}{\lambda_t + (1 - \lambda_t)\nu(\beta_t)},$$

which simply equates the marginal productivity of labor to wages in the modern sector. In our politico–economic game, the greater the political risk, the greater the wages necessary to attract agents in the modern sector. As the probability that there will be no predation (λ_t) varies from 0 to 1, the fraction of the population working in the formal sector ($B(\lambda_t)$) increases from 0 to 1. Since the modern sector is more productive than the traditional one. GDP per capita is increasing in λ_t, i.e., it is decreasing in political risk.

As mentioned above, an example of production function is: $Y(\beta_t) = k(\beta_t)^\alpha$ while a parametrization for the probability that citizens can succesfully resist predations is $\gamma\beta_t^\eta$. In the simple square root case where $\alpha = \eta = \frac{1}{2}$, we obtain a closed form solution for the fraction of the population working in the formal sector, as a function of the probability of restraint, as stated in the following corollary:

Corollary 1: *When $\alpha = \eta = \frac{1}{2}$, the fraction of the population working in the formal sector is:*

$$B(\lambda_t) = [\frac{1}{\lambda_t} - \frac{1-\lambda_t}{\lambda_t}\gamma]^{-2}.$$

4.3. The program of the opportunistic government

We now analyze the problem from the point of view of the opportunistic government. Once the government has predated, its reputation is ruined; citizens permanently exit the vulnerable modern sector, and there is no further predatory gain. Denote by J_t the value function of the opportunistic government if it has not predated until time t. The expected utility of the government when it engages in predation is the product of the probability that the government will stay in power and the output it can then expropriate. Denote this expected gain by $\varphi(\beta_t)$:

$$\varphi(\beta_t) = (1 - \nu(\beta_t))Y(\beta_t),$$

To facilitate the computations, we assume that φ is continuous and concave. In the square root parametrization used in the example above:

$$\varphi(\beta) = 2(\beta^{\frac{1}{2}} - \gamma\beta),$$

which is indeed concave.

In this context, the value function of the government is defined by the following Bellman equation:

$$J_t = Max_{\mu_t \in [0,1]}\{(1 - \mu_t)\varphi(\beta_t) + \mu_t \delta_G J_{t+1}\}.$$

As long as the opportunistic government shows some restraint, i.e., as long as $\mu_t > 0$, the first order condition states that the government is indifferent between immediate predation and restrain. Thus, on the no–predation path:

$$J_t = \varphi(\beta_t) = \delta_G J_{t+1}.$$

This equality emphasizes the link between the value function of the government and the current level of development of the modern sector. Indeed, the latter determines how much the government can obtain if it predates immediately, thus anchoring its value function.

4.4. Equilibrium strategies

Although we consider an infinite horizon game, a finite horizon emerges endogenously. Intuitively, as the number of periods without predation increases, the updated probability that the government is benevolent increases. This increased optimism generates an increase in the fraction of the population operating in the formal sector. The expansion of the modern economy, in turn, raises the attractiveness of predation for the opportunistic government. At some point the temptation has grown so large that an opportunistic government can no longer resist. At this point, it predates.

To establish this more formally, first define β^* as the level of development of the formal sector such that the opportunistic government is indifferent between predating now and waiting, anticipating that full development will take place at the next period:

$$\beta^* = Min\{\beta, \varphi(\beta) = \delta_G \varphi(1)\}.$$

Because φ is continuous and because $0 = \varphi(0) \leq \delta_G \varphi(1) \leq \varphi(1)$, β^* exists. Because φ is concave and increasing at 0, φ is increasing between 0 and β^*. Furthermore, β^* is strictly lower than 1. These features of φ and β are illustrated in Figure 2.

Second, define π^* as the level of the probability that the government is benevolent, such that a fraction β^* of the citizens is willing to enter the modern sector, even while anticipating that the government, if opportunistic, would predate for sure, i.e., $\beta^* = B(\pi^*)$. Since B is increasing it is invertible. Hence, we can write π^* as:

$$\pi^* = B^{-1}(\beta^*).$$

The next proposition directly stems from the definition of β^* and π^*.

Proposition 1: *When the probability that the government is benevolent reaches π^*, then a Nash equilibrium of the continuation game is that an opportunisic government always predates ($\mu_t = 0$) and a fraction β^* of the citizens choose to enter* *the formal sector. If there is no predation at time t, then the economy reaches full development at the next period, i.e., $\beta_{t+s} = 1, \forall s \geq 1$.*

In the square root parametrization, we obtain closed form solutions for $\beta^*$and π^*as a function of the exogenous parameters:

Corollary 2: *When $\alpha = \eta = \frac{1}{2}$:*

$$\beta^* = (\frac{1 - \sqrt{1 - 4\gamma(1-\gamma)\delta_G}}{2\gamma})^2 \text{ and } \pi^* = \frac{1-\gamma}{\frac{1}{\sqrt{\beta^*}} - \gamma}.$$

We now turn to analyzing the equilibrium strategies that arise when the agents come rationally to believe that the probability that the government is benevolent reaches π^*. We denote by T the corresponding, endogenous, horizon of our politico–economic game. In period T, after observing $T-1$ periods without predation, the probability that the government is benevolent reaches π^*.[7] Thus, at time T, by construction, the value function of the government is:

$$J_T = \delta_G \varphi(1).$$

Before time T, the government follows a mixed strategy and thus is indifferent between predation and restraint. Hence:

$$J_{T-1} = \varphi(\beta_{T-1}) = \delta_G^2 \varphi(1).$$

Iterating:

$$J_{T-k} = \varphi(\beta_{T-k}) = \delta_G^{k+1} \varphi(1).$$

As noted in the following Lemma, this expression pins down the value function of the opportunistic government and the fraction of the population operating in the modern sector on the no–predation path.

[7] Because we work in discrete time, we face an integer number problem: at time $T-1$, the conditional probability that the government is opportunistic is strictly below π^*, and at time T it is (generically) strictly above. To avoid technicalities, we neglect the integer problem, and work as if at time T the updated probability that the government is opportunistic just reached π^*.

Lemma 3: *On the no–predation path, $\forall t \leq T$, the opportunistic government value function is:*

$$J_t = \delta_G^{T+1-t}\varphi(1), \tag{4.4}$$

and the fraction of the population working in the modern sector is:

$$\beta_t = \varphi^{-1}(\delta_G^{T+1-t}\varphi(1)). \tag{4.5}$$

The mixed strategy indifference condition implies that the value function of the opportunistic government on the no–predation path is the present value of its payoff at the endogenous final date T, as stated in equation (4.4). This value function increases with time. The indifference condition also implies that the fraction of the population operating in the modern sector is $\varphi^{-1}(J_t)$. Since $\varphi(.)$ is increasing between 0 and β^*, β_t also increases with time, on the no–predation path. In the square root example, Lemma 3 implies the following corollary (which can be obtained similarly to Corollary 2):

Corollary 3: *In the square root parametrization, the value function of the opportunistic government on the no-predation path is:*

$$J_t = 2\delta_G^{T+1-t}(1-\gamma),$$

while the fraction of the population employed in the modern sector is:

$$\beta_t = (\frac{1-\sqrt{1-4\gamma(1-\gamma)\delta_G^{T+1-t}}}{2\gamma})^2 .$$

The corollary illustrates that the value function of the opportunistic goverment increases when the government is less impatient, when the modern sector is more profitable, and when the ability of citizens to resist expropriation is lower. The corollary also illustrates that both the value function of the government and the fraction of the population employed in the modern sector increase with time.

Turning to the dynamics of political risk, Equation (4.3)), expresses the fraction of the population operating in the modern sector in a given period as a function of the probability that there will be no predation during the period. Since this function is increasing, it can be inverted, which yields:

$$\lambda_t = B^{-1}(\beta_t).$$

Substituting the equilibrium fraction of the population employed in the modern sector from equation (4.5), we obtain the following lemma:

Lemma 4: *After t-1 periods without predation, the citizens evaluate the probability of no current predation to:*

$$\lambda_t = B^{-1}(\varphi^{-1}(\delta_G^{T+1-t}\varphi(1))),$$

which is increasing in t.

Summarizing the above results, given the nature of the mixed strategy equilibrium in which the opportunistic government balances between predation and restraint, the modern sector gradually increases in size. Correspondingly, so too does per capita income. So does the ability of the civil society to resist expropriation and overthrow a predatory government. During this process, political risk decreases. Our theoretical analysis thus offers an equilibrium interpretation for the jointly endogenous evolution of the economy and the polity: On the no–predation path, one observes development. But note: even with successful development, in equilibrium, as long as $t < T + 1$, predation can occur.

Returning to the square root parametrization, taking similar steps as in Corollary 2, and relying on Corollary 3, the value of λ_t can be explicitly computed:

Corollary 4: *In the square root parametrization, the probability that there is no predation at time* t*, if there was no predation before is:*

$$\lambda_t = \frac{1-\gamma}{\frac{1}{\sqrt{\beta_t}} - \gamma} = \frac{\frac{1}{\gamma} - 1}{\frac{2}{1-\sqrt{1-4\gamma(1-\gamma)\delta_G^{T+1-t}}} - 1}.$$

To complete the characterization of equilibrium strategies, we need to determine the strategy of the opportunistic government and the political beliefs, i.e., the evolution of μ_t and π_{t-1} on the no predation path. This is achieved by relying on the implications of Bayes rule for the dynamics of beliefs (Lemma 1), and combining the analysis of private sector choices (Lemma 2) with that of the government strategy (Lemma 3 and Lemma 4).

Proposition 2: *There exists an equilibrium whereby after a sufficiently long time without predation the updated probability that the government is benevolent* *reaches π^*. On the no–predation path, the equilibrium probability that the opportunistic government refrains from predation is:*

$$\mu_t = \frac{\lambda_1 ... \lambda_t - \pi_0}{\lambda_1 ... \lambda_{t-1} - \pi_0} = \frac{\Pi_{s=1}^{t} B^{-1}(\varphi^{-1}(\delta_G^{T+1-s}\varphi(1))) - \pi_0}{\Pi_{s=1}^{t-1} B^{-1}(\varphi^{-1}(\delta_G^{T+1-s}\varphi(1))) - \pi_0}, \forall t > 1 \text{ and } \mu_1 = \frac{\lambda_1 - \pi_0}{1 - \pi_0},$$

while the equilibrium probability that the government is benevolent is:

$$\pi_{t-1} = \frac{\pi_0}{\lambda_1 ... \lambda_{t-1}} = \frac{\pi_0}{\Pi_{s=1}^{t-1} B^{-1}(\varphi^{-1}(\delta_G^{T+1-s}\varphi(1)))}, \forall t > 1,$$

4.5. The dynamics: equilibrium divergence and unstable growth

In equilibrium, the dynamics of the political and economic variables can be modeled as a discrete Markov Chain, with $T + 2$ states. The underlying state variable is the number of periods without predation, or, equivalently the updated probability that the current government is benevolent. Correspondingly, we label the states by the tenure of the non predatory state. State 1 means that it is the first period during which the government is in office, either because the game is just starting or because the previous government has been overthrown and a new one has just been drawn. Similarly, state 2 means that, the government currently in place was new last period and did not predate then. We also label by 0 the state where the government has already been observed to predate and has not been overthrown.

- In **state 0** the government is known to be predatory. Accordingly no citizen dares to enter the politically vulnerable modern sector. Hence $\beta = Y = 0$.
- In **state 1** , the probability that the government is benevolent is π_0 and the fraction of the population working in the modern sector is: $\beta_1 = B(\lambda_1)$.
- **State** $t \in \{2, ..., T\}$ arises after the government has been observed to show restraint during $t - 1$ periods. In that case, the probability that the government is benevolent is π_{t-1} and the fraction of the population working in the modern sector is: $\beta_t = B(\lambda_t)$.

- **State** $T+1$ arises after the government has been observed to show restraint during T periods. In that case, the government is known to be benevolent, and full development obtains, with $\beta_{T+1} = 1$.

The analysis above, and in particular on Proposition 2, implies the transition probabilities that attach to the each state. Interpreting δ_G as the probability that there is no exogenous political shock:

- Once the economy reaches state 0, it is trapped there, until the government is overthrown because of an exogenous event, such as an invasion or a coup. This can occur, in each period, with probability $1-\delta_G$. If such an exogenous shock happens, the economy moves to state 1.
- From state $t \in \{1, ..., T\}$ the economy can go to state 1 if there is an exogenous political shock, which happens with the probability $1 - \delta_G$. Otherwise, if there is no exogenous political shock and if the government shows restraint, the economy moves to state $t+1$. This transition happens with probability $\delta_G \lambda_t$. This corresponds to the case where the economy gradually develops. If there is no exogenous shock and the government is observed to predate, the economy collapses. If the predatory government is overthrown, the economy moves to state 1, where it gets a fresh start. This sequence of events happens with probability $\delta_G(1-\lambda_t)\nu(\beta_t)$. If the predatory government stays in power, the collapse is durable, as the economy moves to state 0. This sequence of events happens with probability $\delta_G(1 - \lambda_t)(1 - \nu(\beta_t))$.
- Once the economy reaches state $T + 1$, full development obtains. Full development persists with probability δ_G. If there is an exogenous political shock, which happens with probability $1 - \delta_G$, the economy moves back to state 1.

The dynamics of this Markov chain are illustrated in Figure 3. As illustrated in the figure, the Markov chain is irreducible, i.e., starting from any of the states it is possible to get to any of the other states. It is also aperiodic. Therefore it admits a unique ergodic distribution. The transition probability matrix, which we denote by M, is:

$$M = \begin{pmatrix} \delta_G & 1-\delta_G & 0 & 0 & . & . & 0 \\ \delta_G(1-\lambda_1)(1-\nu(\beta_1)) & (1-\delta_G)+\delta_G(1-\lambda_1)\nu(\beta_1) & \delta_G\lambda_1 & 0 & . & . & 0 \\ . & . & . & . & . & . & . \\ \delta_G(1-\lambda_t)(1-\nu(\beta_t)) & (1-\delta_G)+\delta_G(1-\lambda_t)\nu(\beta_t) & 0 & . & \delta_G\lambda_t & . & 0 \\ . & . & . & . & . & . & . \\ \delta_G(1-\lambda_T)(1-\nu(\beta_T)) & (1-\delta_G)+\delta_G(1-\lambda_T)\nu(\beta_T) & 0 & . & . & \delta_G\lambda_T & 0 \\ 0 & 1-\delta_G & 0 & . & . & . & \delta_G \end{pmatrix}. \tag{4.6}$$

The ergodic distribution is the probablity vector P such that: $MP = P$. It is given in the next proposition:

Proposition 3: *In the ergodic distribution, the $T+2$ possible states of the economy have with equal weight.*

The proposition implies that most of the time (T periods out of $T+2$), the agents in the economy are unsure about the exact type of the government. It has not been observed to predate, and thus some fraction $\beta_t \in]0, \beta^*]$ of the agents choose to operate in the modern sector. $\frac{1}{T+2}$ of the time, however, the government is known to be predatory, and no one dares to enter the politically vulnerable sector. Also, $\frac{1}{T+2}$ of the time, the government is known to be benevolent, and the economy has reached full development.

In our analysis above, we assumed that, even if the country has reached full development ($\beta = 1$), there is still some risk that, because of an exogenous shock, the government will be overthrown, and a new government will come in power, with a relatively low reputation. This assumption may not be appropriate for the industrialized western democracies. For these countries, it might be more adequate to assume a lower risk of exogenous political shock. To account for this, assume that, when the economy has reached full development and is in state $T+1$, then the probability of exogenous political crises goes down and δ_G goes up to $\bar{\delta}_G$. Note that this does not change the equilibrium of our politico–economic game. It simply increases the probability of the full development state in the ergodic distribution. The corresponding ergodic distribution is given in the following proposition:

Proposition 4: *If the probability of exogenous political shocks go down to $1-\bar{\delta}_G$ in the full development case, then the equilibrium ergodic distribution is:*

$$p_{T+1} = \frac{\frac{1-\delta_G}{1-\bar{\delta}_G}}{T+1+\frac{1-\delta_G}{1-\bar{\delta}_G}} \text{ and } p_t = \frac{1}{T+1+\frac{1-\delta_G}{1-\bar{\delta}_G}}, t \in \{0, 1...T\}.$$

Moreover, as $\bar{\delta}_G$ goes to one, the long term probability of state $T+1$ goes to one, i.e., full development becomes an absorbing state.

4.6. Numerical example

A numerical analysis of the square root parametrization illustrates the properties of the equilibrium. Start with an a priori probability of governmental benevolence $\pi_0 = 1\%$, and set the discount rate of the government δ_G at .945, and the ability of civil society to resist predation γ at .55. Solving for the endogenous horizon of the politico–economic game, we find that $T = 4$: after observing 3 periods without predation, the updated probability that the government is benevolent reaches π^*, which in this case is worth .48, and the fraction of the population operating in the modern sector reaches β^*, which in this case is .46. The Markov Chain has 6 states, labelled: 0, 1, 2, 3, 4, and 5. The transition probability matrix is:

$$M = \begin{pmatrix} \delta_G & 1-\delta_G & 0 & 0 & 0 & 0 \\ \delta_G(1-\lambda_1)(1-\nu(\beta_1)) & (1-\delta_G)+\delta_G(1-\lambda_1)\nu(\beta_1) & \delta_G\lambda_1 & 0 & 0 & 0 \\ \delta_G(1-\lambda_2)(1-\nu(\beta_2)) & (1-\delta_G)+\delta_G(1-\lambda_2)\nu(\beta_2) & 0 & \delta_G\lambda_2 & 0 & 0 \\ \delta_G(1-\lambda_3)(1-\nu(\beta_3)) & (1-\delta_G)+\delta_G(1-\lambda_3)\nu(\beta_3) & 0 & 0 & \delta_G\lambda_3 & 0 \\ \delta_G(1-\lambda_4)(1-\nu(\beta_4)) & (1-\delta_G)+\delta_G(1-\lambda_4)\nu(\beta_4) & 0 & 0 & 0 & \delta_G\lambda_4 \\ 0 & 1-\delta_G & 0 & 0 & 0 & \delta_G \end{pmatrix}$$

$$= \begin{pmatrix} .945 & .055 & 0 & 0 & 0 & 0 \\ 0.48 & .233 & .287 & 0 & 0 & 0 \\ 0.434 & .238 & 0 & .327 & 0 & 0 \\ 0.378 & .241 & 0 & 0 & .380 & 0 \\ 0.30 & .236 & 0 & 0 & 0 & .460 \\ 0 & .055 & 0 & 0 & 0 & .945 \end{pmatrix}.$$

The economy spends one sixth of the time in each of the two extreme states, where there is either full developement ($\beta = 1$) or no development at all ($\beta = 0$). Two thirds of the time, the economy is in one of the transient states, 1,2,3 or 4, where there is progressive learning about the type of the government.

What happens if the ability of the civil society to resist predation increases? To answer this question, we keep all the parameters the same, save γ which we raise from .55 to .6 and then to .66. Solving for the equilibrium endogenous horizon, we find that, as the ability of the civil society to resist predation increases, T becomes shorter: for $\gamma = .6$, $T = 3$, while for $\gamma = .66$, $T = 2$. (The corresponding dynamics of β_t and μ_t on the no predation path are illustrated in Figure 4.)

Why does T decline? As γ increases, the cost of waiting increases for the government. Indeed, waiting implies an increase in β, and correspondingly an increase in the probability of being overthrown after predation. Thus the government, if opportunistic, tends to predate faster. This is illustrated in Figure 4, Panel A, which shows that, before the endogenous horizon of the game, the probability that the opportunistic government shows restraint is lower when γ is large. Note too however that when γ is large, observing that predation did *not* take place conveys a strong signal about the benevolence of the government. Hence, π_t is updated strongly on the no predation path. Sharper increases of π_t on the no predation path imply that it reaches π^*more rapidly. That's why the endogenous horizon of the game is shorter for higher values of γ. Thus, greater values of γ lead to more contrasted political and economic histories: predation tends to occur earlier, but the civil society reacts more strongly, and the economy grows faster when predation has not been observed.

Figure 4, Panel B, illustrates the evolution of the fraction of the population employed in the modern sector, along the no predation path. Consistent with the opportunistic government's greater inclination to predate, before the endogenous horizon of the game, the size of the modern sector (and hence GDP per capita) is lower when γ is large, i.e., when institutions are stronger.

Alternatively, what if all the parameters are as in the base case, except that δ_G the probability that there is no exogenous political shock is lowered to .883? In that case, the equilibrium endogenous horizon is shortened to $T = 3$. Again, in this environment, the absence of predation is a stronger signal, as it is quite costly for the opportunistic government. Hence, the updated probability that the government is benevolent reacts more strongly to the observation that there has been no predation.

5. Empirical implications

5.1. Growth

Motivating our theoretical effort is the empirical literature on growth. Allen (2001), Maddison (1995) and Pritchett (1997) find strong long term divergence across nations. Our model offers a theoretical interpretation of this empirical finding. If one interprets the economic and political histories of different countries as different realizations of the path of the Markov Chain, Proposition 3 implies that, in the long run, the economies will be at different stages of development, with different output levels and different political expectations. In this interpretation, divergence and the lack of development of certain countries does not imply that these countries have some especially bad initial conditions or structural characteristics. They are just one realization of the wide array of possible random paths, of which the developed economies are just another realizations. Alternatively, one could view countries as structurally different. In the context of our model, this would correspond to different deep parameters. Such structural differences will give rise to different equilibria, with different Markov Chains. This strengthens the result that there wil be long term divergence among nations. In particular, different parameters will lead to different values of the endogenous horizon of the politico–economic game T, and correspondingly different proportions of time spent in the transition states 1 to T.

Another important empirical finding is that observed economic and political histories are more cahotic, unstable and unpredictable than predicted by standard growth models (Easterly et al, 1993, Pritchett, 2000 and Hausmann et al, 2002). Pritchett (2000) identifies several distinct patterns. Some countries, which he refers to as "hills" experience steady growth. In other countries, which he refers to as "mountains," positive and rapid initial growth, is followed by economic decline. Note how the dynamics of the present model recreate such patterns:

Hills: In equilibrium, as the period of time without predation lengthens, political confidence, i.e. the probability that the government is benevolent (π_{t-1}) increases. The probability that the government will refrain from predation (λ_t) also increases. Correspondingly the fraction of the population choosing to operate in the modern sector rises. This leads to an increase in GDP. If the government is not predatory, this growth path is not interrupted. This evolution is consistent with the patterns of "hills" observed by Pritchett (2000). Along that path the economy eventually reaches full development. This fits the economic and political history of the most successful developed economies, such as e.g., the United States or the United Kingdom.

Mountains: If the government is not benevolent, however, predation eventually occurs on the equilibrium path. In that case, confidence in the current government permanently disappears, and gdp per capita drops. But people resist predation. The probability that they are successful is increasing in the size of the modern sector or, equivalently in our equilibrium, in the number of previous periods without predation. If, after predating, the government remains in power, GDP and the fraction of the population working in the modern sector permanently drop. This corresponds to the pattern of "mountains", identified by Pritchett. In contrast, if the people fend off predation and overthrow the government, the drop in political confidence and GDP is only transient. If the new government refrains from predating, its reputation improves. As political confidence builds up, people come back to the modern sector and the GDP starts growing again.

While the equilibrium dynamics generated by our model are consistent with the patterns of GDP growth identified empirically by Pritchett, our analysis also suggests that these economic dynamics should be closely correlated with political dynamics. Pritchett (2000) did not include political variables in his empirical study. Thus, it would be interesting to complement his work to study if changes in growth paths are associated with political events. Interesting evidence pointing in this direction has recently been obtained by Jones and Olken (2004). They find empirically that the death of autocrats leads to improvements in growth. This is consistent with our theoretical analysis, where such deaths would give rise to a transition from state 0 to state 1, and correspondingly the switch from durable stagnation to a potential growth path. It would also be interesting to study how political resistance to predation, and its success or failure, is related to previous and subsequent growth.

5.2. Wealth distribution

In addition to its implications for growth, our model also generates implications for distribution. As noted above, the existence of political risk introduces a differential in the equilibrium wage of those working in the modern and traditional sectors of the economy: a person must be reimbursed for the added risk of job loss due to predation. And the consequent reduction in profits acts as drag on the growth rate of the economy. The existence of this differential and the implications for growth have been documented in such classics as (Little, Scitovsky et al. 1970). The differential also plays an important role in the classic two sector model of Harris and Todaro (1970). The new insight, and testable implication, offered by our theoretical analysis is that this differential should be related to the risk of political predation.

5.3. Political dynamics

Our analysis also delivers new empirical implications on political dynamics. As shown in the previous section, the stronger the institutions, the earlier the opportunistic government predates, and the stronger the improvement in political expectations and hence the economic growth following the absence of predation. Furthermore, the dynamics of political expectations is asymmetric. When governments adopt good, non predatory policies, political expectations improve gradually. When governments predate, political expectations are brutally downgraded.

Employing data drawn from a panel of 141 countries and 40 years (1950-1990), Presworksi et al. (2000) classify countries as either democratic or authoritarian and explore transitions between the two states. They find that in poorer countries, transitions to authoritarianism relate to reductions in the rate of growth (p. 109), that in wealthier countries, "democracies never die" (p. 111), and that the result is the generation of a cross sections in which a greater portion of high income countries possess democratic governments. These empirical findings are in line with the logic of our theoretical model, in particular Proposition 4.

5.4. Case studies

While a systematic empirical analysis of these implications is beyond the scope of the present paper, it is useful to confront our theoretical analysis to a few cases. African countries offer telling examples of hills, mountains and mountains followed by hills (in Pritchett's terminology), illustrating the importance of political events for growth paths

5.4.1. Zimbabwe

Since its independence in 1979, Robert Mugabe has been the only ruler of Zimbabwe. As long as its government refrained from excessive predation, Zimbabwe experienced reasonable growth. Unfortunately, there was a sudden outburst of politica predation in 2000. The government brutally invaded commercial farms, and their productivity dropped by 70 percent. The Mugabe government siphoned foreign exchange earnings from tobacco exports, banks and insurance companies. It confiscated private caches of corn grain. In three years, Zimbabwe's GDP per capita fell by 30 percent. Opposition and labor groups launched general strikes in 2003 to pressure Mugabe to retire early; but security forces brutally repressed the opponents. The evolution of real GDP per capita in Zimbabwe is depicted in Figure 5, Panel A.

In terms of our model, this corresponds to a period of initial growth, lasting as long as the government showed restraint, followed by sudden predation. Also in line with our theoretical analysis are the facts that some expropriated citizens tried to resist, but were not succesfull, so that output dropped sharpky and durably.

5.4.2. Botswana

If the case of Zimbabwe sadly corresponds to the case of growth followed by durable collapse which can arise in our model, that of Botswana corresponds to the gradual growth path which arises in equilibrium when the government does not predate. The evolution of real GDP per capita in Botswana is depicted in Figure 5, Panel B.

Rather than predating upon the nation's mineral wealth, the government has treated that wealth prudentially. Botswana's diamond deposits were discovered in the district where the president was born; at his urging, the government transferred rights over the deposits to the nation. The government politically empowered a team of technocrats – including the nephew of a former Governor of the Bank of England – to "sterilize" the profits of the mineral boom. Through the vigorous scrutiny of investment projects, the technocrats ensured that the investment of these profits would not distort the macro-economy (Harvey 1985; Stedman 1993; Acemoglu, et al. 2003). While never turned out of office, the ruling party in Botswana faces pen competition at the polls. The opposition campaigns freely and gains a strong backing from those working in the towns. The governing party draws strong backing from the Tswana whose traditional leaders, many based in the rural areas, must attend public meetings in which their policies are open criticism and challenge. Both in town and in the countryside, then, the government faces the prospect of open challenge should it turn predatory. That it has not chosen to do so appears to have lead to an upward revision of investor beliefs that it is non-predatory, and thus to rapid growth.

5.4.3. Uganda

Uganda offers another striking example of an equilibrium growth path consistent with the predictions of our model (see Figure 5, Panel C). Milton Obote came in power in 1967. In 1971, Obote was overthrown by his Chief of Staff, Idi Amin. As underscored by the expulsion of the Indian community and the seizure of their property, Idi Amin Dada used the power of the government to prey upon the private economy (Kasozi 1994; Hansen and Twaddle 1995; Kabwegyere 1995; Khadiagala 1995). In the terms of our model , this corresponds to a shift from state $t \geq 1$ (under Obote) to state 0 (in 1971). In line with our theoretical analysis, this shift induced a drop in output. In 1979, Tanzania invaded Uganda and toppled the government of Idi Amin. Following a seven year interregnum, Yoweri Museveni seized control of the government. In the terms of our model, this corresponds to an exogenous shock, bringing a new leader in power. Thus, once in state 0, in the framework of our model, Uganda returned to state 1. Museveni adopted policies of fiscal and monetary restraint. This led to a revision of expectations and the movement of resources into the more productive portions of the national economy. The result was a slow return to positive rates of growth in Uganda, which, in the terms of our model corresponds to a gradual transition from state 1 to states 2, 3, etc...

6. Conclusion

As students of development have emphasized (see e.g. Maddison, 2001, Pritchett, 1995, or Hausmann et al, 2004), a multiplicity of growth paths characterize the economic history of nations. Many now focus on the determinants of divergence. In this article, we have focused on the role of political risk in shaping the patterns of development. We have shown how the process of development jointly endogenously involves economic growth, improved political expectations and the enhanced ability of the civil society to resist predation. We have also shown that the equilibrium political and economic histories arising in the context are unstable, and that predation and collapse can follow growth, and be themselves followed by economic rebound.

The major driver in this process is political restraint. Even when predatory by nature, governments can alter expectations by behaving with restraint, thereby shaping the expectations of economic agents. Only liberal regimes that respect property rights, refrain from redistribution, and do not capriciously alter the rules of the game to their own economic advantage are more likely to achieve development.

But what of governments who have spoiled their reputations? Are their nations fated to remain poor? An implication of our argument is that such governments, having lost favorable reputations, will be unable to recover them. In such cases, growth will come only after major political changes, when new regimes - regimes with no apparent ties to the past - assume power. Of notable relevance to this argument is the finding by Haggard and Webb (Haggard and Webb 1994) that regime rather than policy change was the better predictor of successful economic adjustment in the late 20th Century.

If the determinants of development lie in politics, then might not remedy then lie in the shaping of political institutions? Our analysis cautions against the prescription of "best practice." Rather than focusing on institutions *per se*, we instead emphasize the ambience of expectations within which they lodge. Put another way: an institution that performs well in, say, North America would not, by our reasoning, achieve the same impact in Latin America (see Engerman and Sokoloff, 1997, and Engerman, Haber and Sokoloff, 2000). If only because the two regions possess different histories, economic agents will bring different expectations to the market place and the political arena. In the two settings, responses to the incentives that an institution may generate will therefore differ, and so too its impact on economic performance. Our analysis also shows that stronger institutions, enhancing the ability of the citizens to resist predation, can even precipitate predation. Indeed, confronted with such institutions, opportunistic governments can choose to expropriate early, before the private sector has become sufficiently strong to fend off predation.

Proofs

Proof of Lemma 1: If, at the first period, the government has not predated, then:

$$\pi_1 = \frac{\pi_0}{\pi_0 + (1-\pi_0)\mu_1}.$$

If, at the second period also, the government does not predate, then:

$$\pi_2 = \frac{\pi_0}{\pi_0 + (1-\pi_0)\mu_1\mu_2}.$$

Iterating, we obtain the value of the probability that the government is benevolent, updated along the no predation path, given in the lemma.

QED

Proof of Lemma 2:

Firms in the modern sector are competitive, and thus do not take into account the impact of each recruiting decision on global political risk. Hence, they choose β_t to maximize:

$$(\lambda_t + (1-\lambda_t)\nu)Y(\beta_t) - \beta_t,$$

taking ν as given.

When $\lambda_t = 1$, the objective is: $Y(\beta_t) - \beta_t$,and the optimum is $\beta_t = 1$. When $\lambda_t = 0$, the objective is: $-\beta_t$,and the optimum is $\beta_t = 0$. To characterize the optimum for interior values of λ_t first note that the derivative of the objective function with respect to β_t is:

$$(\lambda_t + (1-\lambda_t)\nu)Y'(\beta_t) - 1.$$

The second order condition holds since the production function is concave. The constraint $\beta_t \leq 1$ is not binding since:

$$(\lambda_t + (1-\lambda_t)\nu)Y'(1) - 1 = (\lambda_t + (1-\lambda_t)\nu) - 1 < 0, \forall \lambda_t < 1.$$

The constraint $\beta_t \geq 0$ is not binding since:

$$(\lambda_t + (1-\lambda_t)\nu)Y'(0) - 1 \geq 0, \forall \lambda_t > 0.$$

Hence, the optimum is pinned down by the first order condition, i.e

$$Y'(\beta_t) = \frac{1}{\lambda_t + (1-\lambda_t)\nu(\beta_t)}. \tag{6.1}$$

Given the regularity conditions we have assumed, there exists a solution to that equation: first note that Y' is continuous. Second note that Y' tends to infinity as β_t goes to 0, while $\frac{1}{\lambda_t+(1-\lambda_t)\nu(\beta_t)}$ remains finite. Third note that Y' is decreasing and reaches its minimum for $\beta = 1$. Finally note that:

$$Y'(1) = 1 \leq \frac{1}{\lambda_t + (1-\lambda_t)\nu(1)}.$$

There may be more than one solution to equation (6.1), in this case, by convention, we pick the largest one.

Finally, we analyze the behavior of β_t as λ_t varies. Note that the left–hand–side of (6.1) can be rewritten as:

$$\frac{1}{\nu(\beta_t) + \lambda_t(1-\nu(\beta_t))},$$

which is obviously decreasing in λ_t, while its right–hand–side, $Y'(\beta_t)$, is independent of λ_t. Hence, an increase in λ_t implies an increase in the value of β_t for which the two curves intersect.

QED

Proof of Corollary 1:

The equation defining β_t is:

$$Y'(\beta_t) = \frac{1}{\lambda_t + (1-\lambda_t)\nu(\beta_t)}.$$

In the square root case this is:

$$\frac{1}{\sqrt{\beta_t}} = \frac{1}{\lambda_t + (1-\lambda_t)\gamma\sqrt{\beta_t}}.$$

That is:

$$\sqrt{\beta_t} = \frac{\lambda_t}{1-(1-\lambda_t)\gamma}.$$

Hence:

$$\beta_t = (\frac{1}{\lambda_t} - \frac{1-\lambda_t}{\lambda_t}\gamma)^{-2}.$$

QED

Proof of Proposition 1:

By definition, when π_{t-1} reaches π^*, then a fraction β^* of the citizens enter the formal sector. Furthermore, since they anticipate that the opportunistic government always predates at this point in time, after observing no predation at time t, the citizens rationally update π_t to 1. Hence, if the opportunistic government waits another period before predating, his expected utility is: $\delta_G\varphi(1)$. Consequently, by construction of β^*, predating now is optimal for the opportunistic government.

QED

Proof of Corollary 2:

In the square root parametrization,

$$\varphi(\beta) = k(\sqrt{\beta} - \gamma\beta).$$

Thus, β^* is such that:

$$k(\sqrt{\beta} - \gamma\beta) = \delta_G k(1-\gamma).$$

That is,

$$\gamma\beta^* - \sqrt{\beta^*} + \delta_G(1-\gamma) = 0.$$

Denote, $x = \sqrt{\beta^*}$. It is the solution of the following quadratic:

$$\gamma x^2 - x + \delta_G(1-\gamma) = 0.$$

The discriminant is:

$$1 - 4\gamma(1-\gamma)\delta_G.$$

This is positive since $\gamma(1-\gamma) \leq \frac{1}{4}$ and $\delta_G \leq 1$. The quadratic has two roots:

$$\frac{1-\sqrt{1-4\gamma(1-\gamma)\delta_G}}{2\gamma} \text{ and } \frac{1+\sqrt{1-4\gamma(1-\gamma)\delta_G}}{2\gamma}.$$

The greater of the two roots is larger than one since:

$$\sqrt{1-4\gamma(1-\gamma)\delta_G} > 2\gamma - 1,$$

if:

$$1-4\gamma(1-\gamma)\delta_G > 4\gamma^2 - 4\gamma + 1,$$

that is:

$$-4\gamma(1-\gamma)\delta_G > -4\gamma(1-\gamma),$$

which holds since $\delta_G \leq 1$. Hence,

$$\beta^* = (\frac{1-\sqrt{1-4\gamma(1-\gamma)\delta_G}}{2\gamma})^2.$$

Now turn to the computation of π^*. Substituting π^* in the equation defining $B(.)$, and equating it to β^*:

$$B(\pi^*) = \frac{1}{[\frac{1}{\pi^*} - \frac{1-\pi^*}{\pi^*}\gamma]^2} = \beta^*.$$

That is:

$$\frac{\pi^*}{\sqrt{\beta^*}} = [1-(1-\pi^*)\gamma] = 1-\gamma+\gamma\pi^*.$$

Hence:

$$\pi^* = \frac{1-\gamma}{\frac{1}{\sqrt{\beta^*}}-\gamma}.$$

QED

Proof of Proposition 2: The proof proceeds in three steps:

First step: Relying on Lemma 1, (4.1) and Bayes' law, we obtain μ_t and π_{t-1} as a function of λ_t:

The probability of restraint at time 1 is:

$$\lambda_1 = \pi_0 + (1-\pi_0)\mu_1.$$

This implies that:

$$\mu_1 = \frac{\lambda_1 - \pi_0}{1-\pi_0}.$$

The proof proceeds by induction.

First we need to prove that the property holds at time 2, i.e., we must prove that:

$$\mu_2 = \frac{\lambda_1\lambda_2 - \pi_0}{\lambda_1 - \pi_0},$$

The probability of restraint at time 2 is:

$$\lambda_2 = \pi_1 + (1 - \pi_1)\mu_2.$$

Thus:

$$\mu_2 = \frac{\lambda_2 - \pi_1}{1 - \pi_1}.$$

From Lemma 1:

$$\pi_1 = \frac{\pi_0}{\pi_0 + (1 - \pi_0)\mu_1}.$$

Hence,

$$\mu_2 = \frac{\lambda_2[\pi_0 + (1 - \pi_0)\mu_1] - \pi_0}{(1 - \pi_0)\mu_1}.$$

Substituting in: $\lambda_1 = \pi_0 + (1 - \pi_0)\mu_1$ and $(1 - \pi_0)\mu_1 = \lambda_1 - \pi_0$,

$$\mu_2 = \frac{\lambda_2\lambda_1 - \pi_0}{\lambda_1 - \pi_0},$$

which completes the first step of the proof.

Second we need to prove that, if the property holds until time $t - 1$, i.e.,

$$\mu_\tau = \frac{(\lambda_1 ... \lambda_\tau) - \pi_0}{(\lambda_1 ... \lambda_{\tau-1}) - \pi_0}, \forall \tau < t,$$

then it also holds at time t. By definition of λ_t:

$$\mu_t = \frac{\lambda_t - \pi_{t-1}}{1 - \pi_{t-1}}.$$

From Lemma 1:

$$1 - \pi_{t-1} = \frac{(1 - \pi_0)\mu_1 ... \mu_t}{\pi_0 + (1 - \pi_0)\mu_1 ... \mu_t}.$$

Substituting in μ_t,

$$\mu_t = \frac{\lambda_t[\pi_0 + (1-\pi_0)\mu_1...\mu_{t-1}] - \pi_0}{(1-\pi_0)\mu_1...\mu_{t-1}}.$$

That the property holds for all time $\tau < t$,:

$$\mu_1 = \frac{\lambda_1 - \pi_0}{1-\pi_0}, \mu_\tau = \frac{(\lambda_1...\lambda_\tau) - \pi_0}{(\lambda_1...\lambda_{\tau-1}) - \pi_0}, \forall < 1\tau < t.$$

implies that:

$$\mu_1...\mu_{t-1} = \frac{\lambda_1 - \pi_0}{1-\pi_0}\frac{\lambda_1\lambda 2 - \pi_0}{\lambda_1 - \pi_0}...\frac{(\lambda_1...\lambda_{t-1}) - \pi_0}{(\lambda_1...\lambda_{t-2}) - \pi_0} = \frac{(\lambda_1...\lambda_{t-1}) - \pi_0}{1-\pi_0}.$$

Substituting $\mu_1...\mu_{t-1}$ into μ_t, the result obtains, i.e.,:

$$\mu_t = \frac{(\lambda_1...\lambda_t) - \pi_0}{(\lambda_1...\lambda_{t-1}) - \pi_0}.$$

We now turn to the analysis of π_{t-1}. As shown above in this proof,

$$\mu_1...\mu_{t-1} = \frac{(\lambda_1...\lambda_{t-1}) - \pi_0}{1-\pi_0}.$$

Substituting $\mu_1...\mu_{t-1}$ in π_{t-1}:

$$\pi_{t-1} = \frac{\pi_0}{\pi_0 + (1-\pi_0)\mu_1...\mu_{t-1}} = \frac{\pi_0}{\lambda_1...\lambda_{t-1}}.$$

Second step: Relying on the first step we prove that there exists a time T at which π_{t-1} reaches π^*. Since, is increasing in t:

$$\pi_{t-1} = \frac{\pi_0}{\lambda_1...\lambda_{t-1}} > \frac{\pi_0}{(\lambda_{t-1})^{t-1}} > \frac{\pi_0}{(\lambda_T)^{t-1}} = \frac{\pi_0}{(\pi^*)^{t-1}}.$$

Since π^* is a constant lower than 1, as t goes to infinity, $\frac{\pi_0}{(\pi^*)^{t-1}}$ grows unboundedly. Hence there exists a value of t such that π_{t-1} reaches π^*.

Third step: Combining Lemma 4, which gives λ_t as a function of the exogenous parameters, and the previous step of the proof, which gives μ_t and π_{t-1} as functions of λ_t, we obtain the strategy of the opportunistic government and the political beliefs of the citizens as a function of the exogenous parameters.

Substituting in the value of β_t from Lemma 3, we obtain the value of λ_t stated in the proposition:

$$\lambda_t = B^{-1}(\varphi^{-1}(\delta_G^{T+1-t}\varphi(1))).$$

Substituting $\pi_{t-1} = \frac{\pi_0}{\lambda_1 ... \lambda_{t-1}}$ in the value of λ_t given above:

$$\pi_{t-1} = \frac{\pi_0}{\lambda_1 ... \lambda_{t-1}} = \frac{\pi_0}{\Pi_{s=1}^{t-1} B^{-1}(\varphi^{-1}(\delta_G^{T+1-t}\varphi(1)))}.$$

Finally, substituting the value of λ_t into the value of μ_t, given above:

$$\mu_t = \frac{(\lambda_1 ... \lambda_t) - \pi_0}{(\lambda_1 ... \lambda_{t-1}) - \pi_0} = \frac{\Pi_{s=1}^{t} B^{-1}(\varphi^{-1}(\delta_G^{T+1-t}\varphi(1))) - \pi_0}{\Pi_{s=1}^{t-1} B^{-1}(\varphi^{-1}(\delta_G^{T+1-t}\varphi(1))) - \pi_0}.$$

QED

Proof of Proposition 3:

$$MP = P = \begin{pmatrix} p_0 \\ p_1 \\ . \\ p_t \\ . \\ p_T \\ p_{T+1} \end{pmatrix}.$$

Multiplying the first row of M by P, we obtain:

$$p_0\delta_G + p_1(1-\delta_G) = p_0 \iff p_0 = p_1.$$

Multiplying the second row of M by P, we obtain:

$$p_0\delta_G(1-\lambda_1)(1-\nu(\beta_1)) + p_1((1-\delta_G) + \delta_G(1-\lambda_1)\nu(\beta_1)) + p_2\delta_G\lambda_1 = p_2.$$

Substituting $p_0 = p_1$ and simplifying, we obtain: $p_0 = p_2$. Iterating, we find that all the elements of P are equal. Thus:

$$P = \begin{pmatrix} \frac{1}{T+2} \\ . \\ . \\ \frac{1}{T+2} \\ . \\ . \\ \frac{1}{T+2} \end{pmatrix}.$$

QED

References

Acemoglu, Daron, Simon Johnson, and James A. Robinson (2001 a) "The Colonial Origins of Comparative Development: An Empirical Investigation," American Economic Review, December, 91, 5, 1369-1401.

Acemoglu, Daron, Simon Johnson, and James A. Robinson (2003) "An African Success Story: Botswana," in I*n Search of Prosperity.* ed. D. Rodrik. Princeton: Princeton University Press.

Acemoglu, Daron, Simon Johnson, and James A. Robinson (2002) "Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution," Quarterly Journal of Economics, 117, November, 1231-1294.

Acemoglu, Daron, and Simon Johnson, 2004, "Unbundling nstitutions," Working paper, MITAlesina and Tabellini, 1989, External debt, capital flight and political risk, *Journal of International Economics*, 27, 199–220.

Alesina, A. and D. Rodrik (1994). "Distributive Politics and Economic Growth," *Quarterly Journal of Economics,* 109(2): 465-491.

Alesina, A. (1987). "Macroeconomic policy in a two-party system as a repeated game." Quarterly Journal of Economics 102: 651-678.

Alesina, A. and A. Drazan (1991). "Why Are Stabilizations Delayed?" American Economic Review 81: 1170-88.

Allen, R. (2001). "The Great Divergence in European Wages and Prices from the Middle Ages to the First World War." Explorations in Economic History 38: 411-47.

Aryeetey, E., J. Harrigan, et al., Eds. (2000). Economic Reforms in Ghana: The Miracle and the Mirage. Oxford, James Currey.

Barro, R. (1994). Democracy and Growth. NBER Working Paper No. 4909.

Bates, R. (1995). Democratic Transition in Africa: A First Report on an Empirical Project. Development Discussion Papers, Harvard Institute for International Development. Cambridge MA.

Bates, R. H. (1981). *Markets and States in Tropical Africa.* Berkeley and Los Angeles, University of California Press.

Bates, R. H. and P. Collier (1991). The Case of Zambia. Political and Economic Interactions in Economic Policy Reform. R. H. Bates and A. O. Krueger. Oxford, Blackwell.

Blumenthal, E. (1982). "Zaire: Rapport sur sa Credibilite Financiere Internationale." La Revue Nouvelle 77(11 November): 360-78.

Bratton, M., R. Mattes, et al. (2004). Citizen Perceptions of Democracy, Governance, and Political Crisis. New York, Cambridge University Press.

Beck, T., G. , A. Clarke, et al. (2000). New Tools and New Tests in Comparative Political Economy: The Database of Political Institutions: The Data Base of Political Institutions. Washington DC, The World Bank.

Besley, T., 1997, Monopsony and Time–Consistency: Sustainable Pricing Policies for Perennial Crops, *Review of Development Economics*, 1, 57–70.

Binswanger, H. and M.. Rozenzweig, 1993, Wealth, Weather Risk and the Composition of Agriculture Investments, *The Economic Journal*.

Cherian, J. and E. Perotti, 2001, "Option pricing and foreign investment under political risk," *Journal of International Economics*.

Cukierman, A., S. Edwards, et al. (1992). "Seigniorage and Political Instability." American Economic Review 82(June): 537-555.

Duflo, E., and C. Udry, 2003, Intrahousehold Resource Allocation in Côte d'Ivoire: Social Norms, Separate Accounts and Consumption Choices, Working paper, MIT.

Easterly, W., M. Krener, L. Prtichett and L. Summers (1993). "Good policy or good luck? Country growth performance and temporary shocks." *Journal of Monetary Economics*, 32, 459–483.

Engerman, S., and K. Sokoloff, (1997). "Factor endowments, institutions, and different paths of growths among New World economies: A view from economic historians of the United States." in *How Latin America fell behind*. S. Haber, ed., Stanford: Stanford University Press.

Engerman, S., S. Haber and K. Sokoloff, (2000). "Inequalities, institutions, and differential paths of growths among New World economies." in *Institutions, contracts and organizations*. C. Menard, ed., Cheltenham: Edward Elgar.

Gould, D. (1980). Bureaucratic Corruption and Underdevelopment in the Third World: The Case of Zaire. London, Pergamon Press.

Haggard, S. and S. B. Webb, Eds. (1994). Voting for Reform. New York, Oxford University Press for the World Bank.

Hansen, H. B. and M. Twaddle (1995). Uganda: The Advent of No-Party Democracy. Democracy and Political Change in Sub-Saharan Africa. J. Wiseman. London, Routledge.

Harris, J., J. Hunter, et al., Eds. (1995). The New Institutional Economics and Third World Development. London and New York, 1995.

Harris, J. and M. Todaro (1970). "Migration, Unemployment, and Development: A Two-sector Analysis." *American Economic Review* 40: 126-42.

Harvey, C. (1985). Banking Policy in Botswana: Orthodox but Untypical. IDS Working Paper. Sussex, Institute for Development Studies.

Hausmann, R., L. Pritchett and D. Rodrik (2004). "Growth accelerations." Working Paper, Harvard University.

Herbst, J. (1993). The Politics of Reform in Ghana. Berkeley and Los Angeles, University of California Press.

Hicks, J., 1969, Theory of economic history, Oxford University Press.

Jones, B., and B. Olken, 2004, "Do leaders matter? national leadership and growth since World War II," Working paper, Northwestern University.

Kabwegyere, T. (1995). The Politics of State Formation and Destruction in Uganda. Kampala, Fountain Publishers.

Kasozi, A. B. K. (1994). The Social Origins of Violence in Uganda, 1964-1985. Montreal, McGill-Queen's University Press.

Khadiagala, G. M. (1995). State Collapse and Reconstruction in Uganda. Collapsed States. I. W. Zartman. Boulder, Lynne Rienner.

Lal, D. ,1983, "The Poverty of 'Development Economics". London, The Institute of Economic Affairs.

Leith, C. and M. Lofchie (1991). The Case of Ghana. Economic and Political Interactions in Economic Policy Reform. R. H. Bates and A. O. Krueger. Oxford, Blackwell.

Lewis, 1954, "Economic Development with unlimited supplies of labor," *The Manchester School of Economic and Social Studies*, 22, 139–191.

Lipset, S. M. (1960). Political Man. Garden City NY, Doubleday.

Little, I. M. D., T. Scitovsky, et al. (1970). Industry and Trade in Some Developing Countries. Oxford, Oxford University Press.

Maddison, A., 2001, The World Economy: A Millenial Perspective, Paris, Development Center of the OECD.

Murphy, M., A. Shleifer, and R. Vishny, 1989a, "Income distribution, market size and industrialization," *Quarterly Journal of Economics*, 104 (3), 537-564.

Murphy, M., A. Shleifer, and R. Vishny, 1989b, "Industrialization and the big push," *Journal of Political Economy*, 97 (5), 1003-1026.

North, D. C. and B. R. Weingast (1989). "Constitutions and Commitment: The Evolutions of Institutions Governing Public Choice in Seventeenth-Century England." *Journal of Economic History* 69: 803-832.

North, D. C. and B. R. Weingast (1989). "Constitutions and Commitment: The Evolutions of Institutions Governing Public Choice in Seventeenth-Century England." Journal of Economic History 69: 803-832.

Przeworski, A., M. Alvarez, et al. (2000). Democracy and Development. New York, Cambridge University Press.

Perotti, E., 1995, "Credible privatization", *American Economic Review*, 85, 847–859.

Persson, T., and Tabellini, G., 1991, Growth, Distribution and Politics, *European Economic Review*, 36, 593–602.

Pritchett, L. (1995). Divergence, Big Time. Washington DCC.

Pritchett, L. (2000). "Understanding Patterns of Economic Growth." *The World Bank Economic Review* 14(2): 221-50.

Rodrik, D. (1991). "Policy Uncertainty and Private Investment in Developing Countries." *Journal of Development Economics* 36(2): 229-243.

Rodrik, D. (1989). "Promises, promises: Credible policy reform via signalling." *The economic Journal,* 99: 756-772.

Roll, R., and J. Talbott, 2001, Why many developing countries just aren't, Working Paper, UCLA.

Root, H. (1989). "Tying the King's Hands: Credible Commitments and Royal Fiscal Policy During the Old Regime." Rationality and Society 1(2): 240-258.

Rosenstein-Rodan, P., 1943, "Problems of industrialization in Eastern and South–Eastern Europe," *The Economic Journal*, 53, 202-211.

Schatzberg, M. (1988). The Dialectics of Oppression in Zaire. Bloomington Indiana, University of Indiana Press.

Schatzberg, M. C. (1997). Highjacking Change: Zaire's "Transition" in Comparative Perspective. Democracy in Africa. M. Ottaway. Boulder, Lynne Rienner.

Shillington, K. (1992). Ghana and the Rawlings Factor. London, Macmillan.

Stedman, S. J., Ed. (1993). Botswana: The Political Economy of Development. Boulder, Lynne Rienner.

de Soto, H. (1989). *The Other Path.* New York, Harper & Row.

Figure 1: The sequence of play

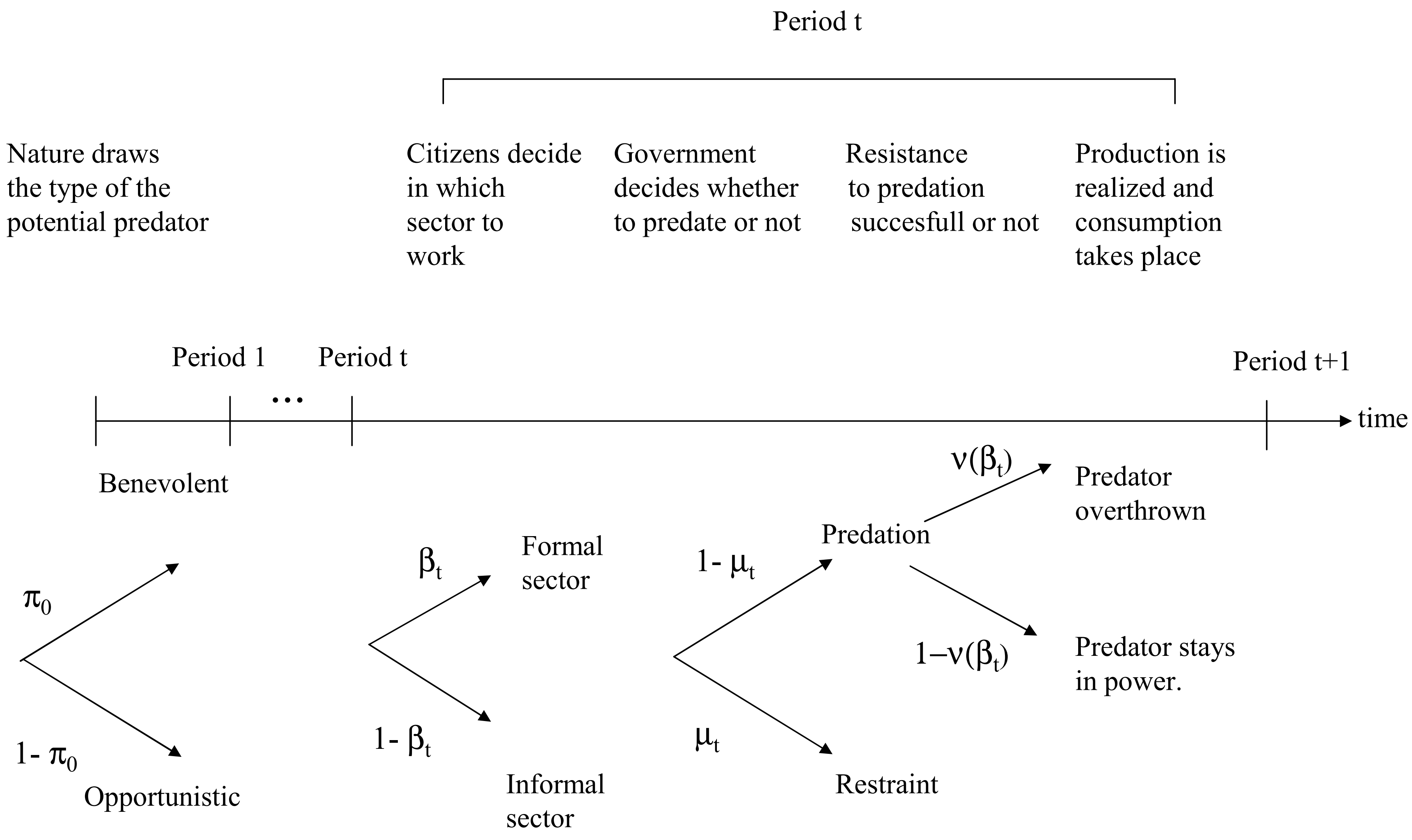


Figure 2: Expected profits from predation

Panel A: Determination of b*
when φ is increasing over [0,1]

Panel B: Determination of b*
when φ is not monotonic over [0,1]

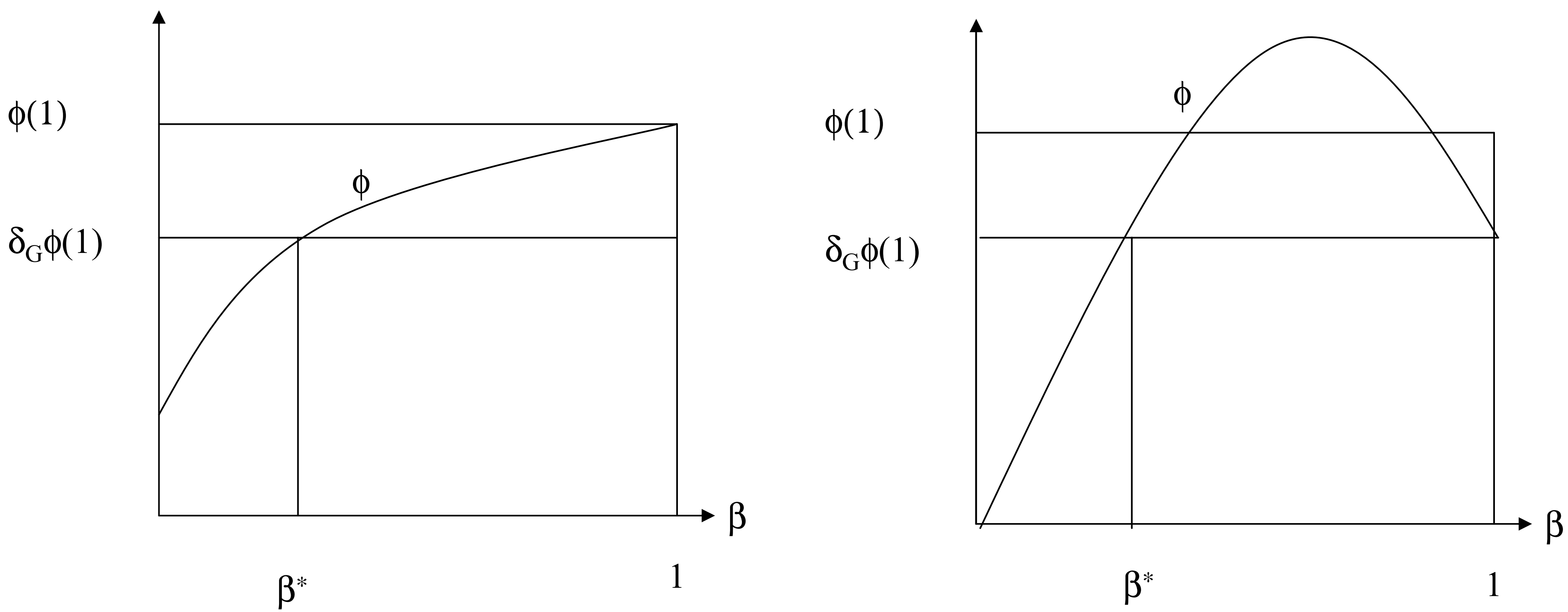


Figure 3: The Equilibrium Markov Chain

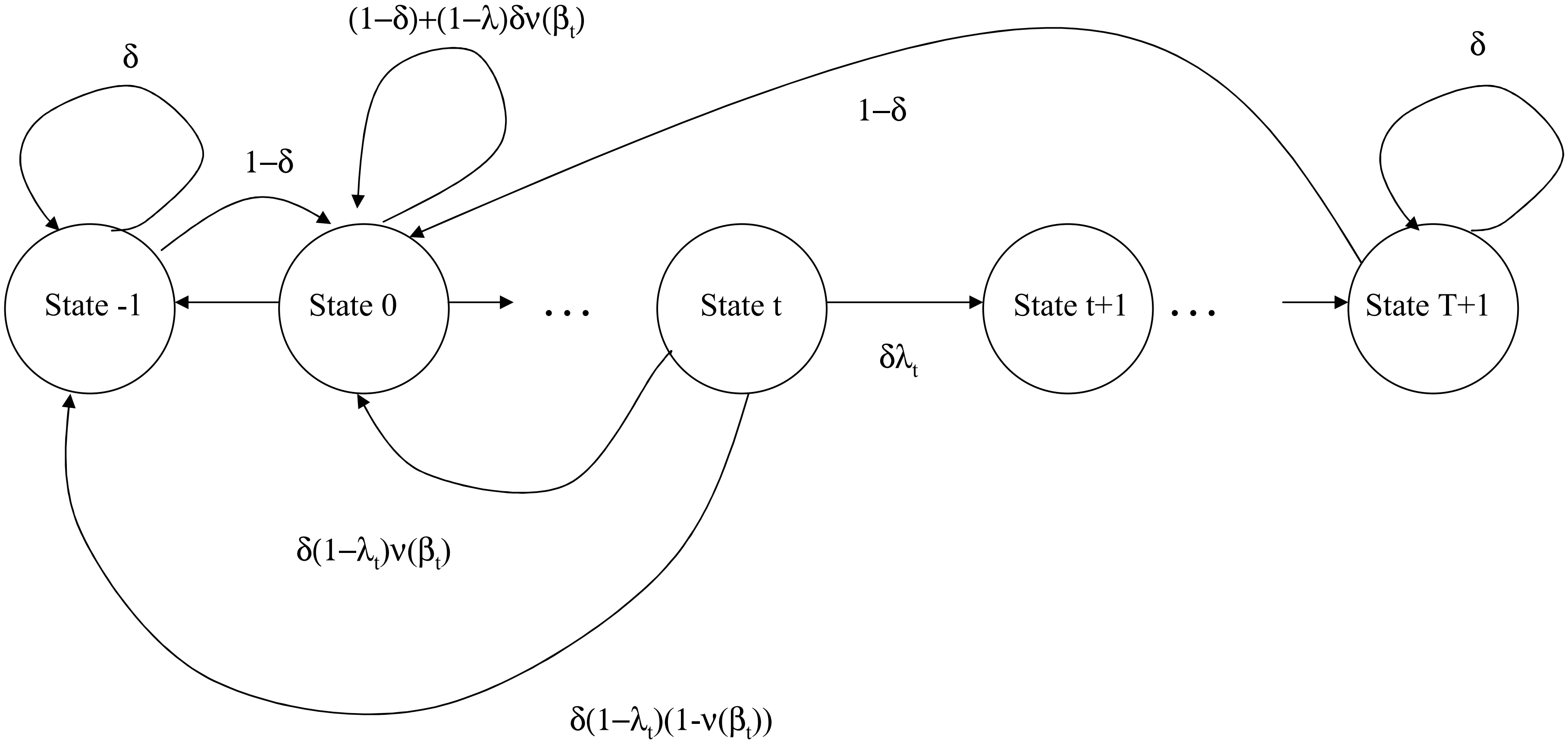


Figure 4, Panel A: Probability μ_t that the government, if opportunistic, will refrain from predation.
π_0=.1, δ_G=.945, $\alpha=\eta$=.5.

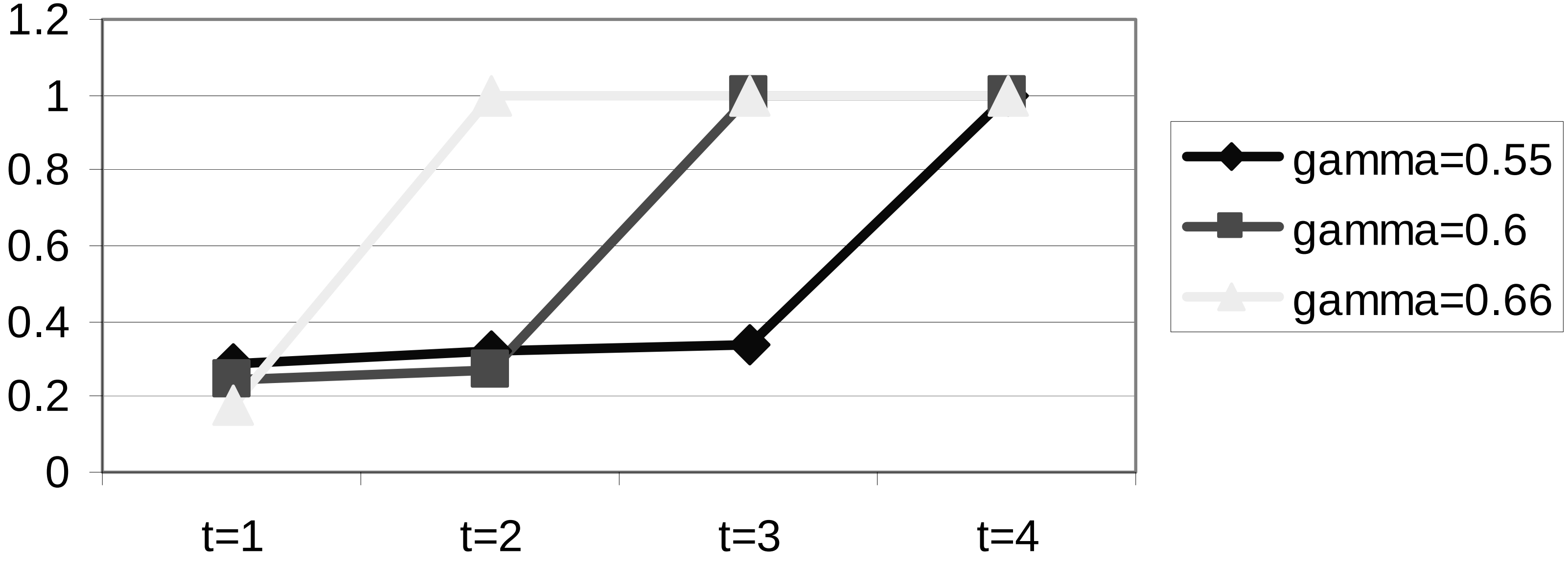
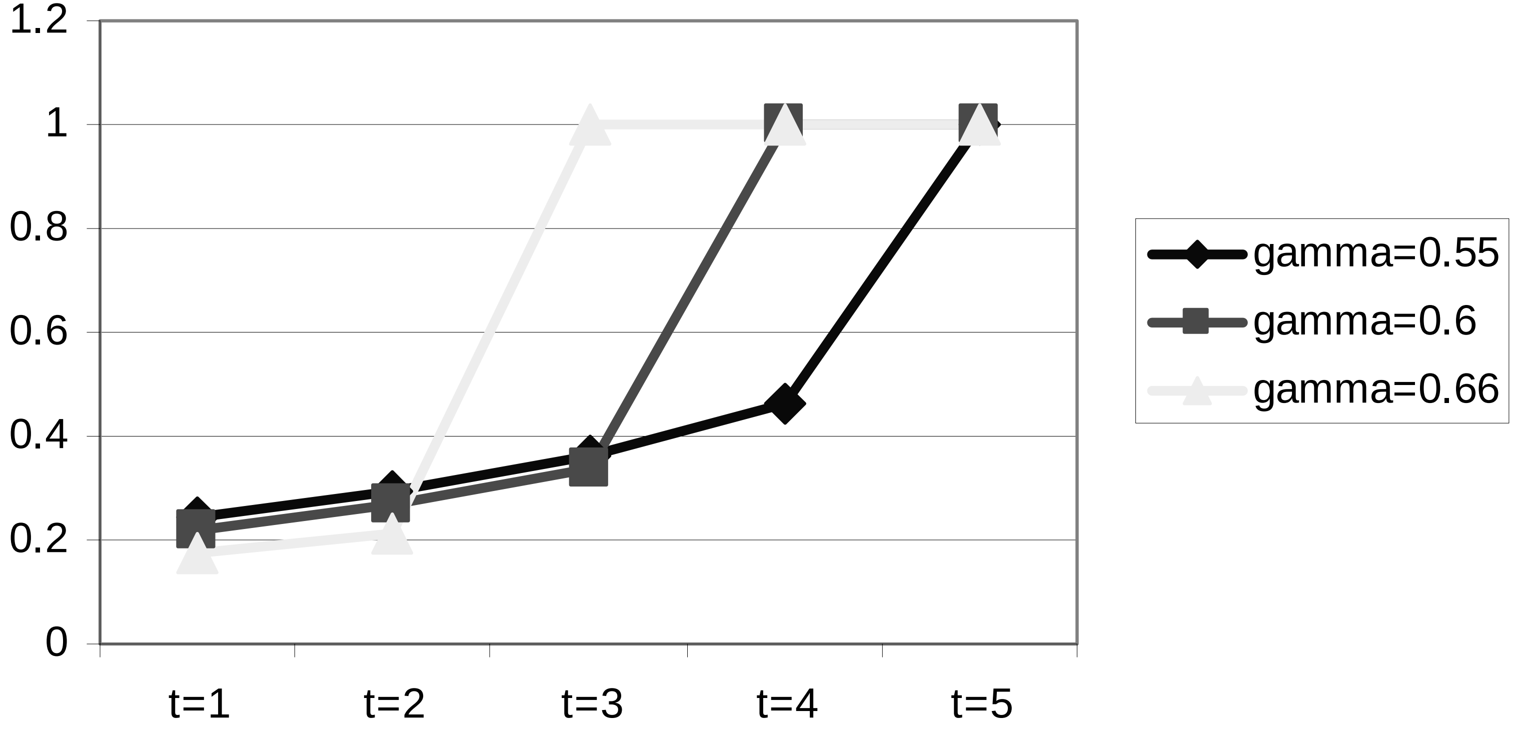


Figure 4, Panel B: Fraction β_t of the population operating in the modern sector. π_0=.1, δ_G=.945, α=η=.5.



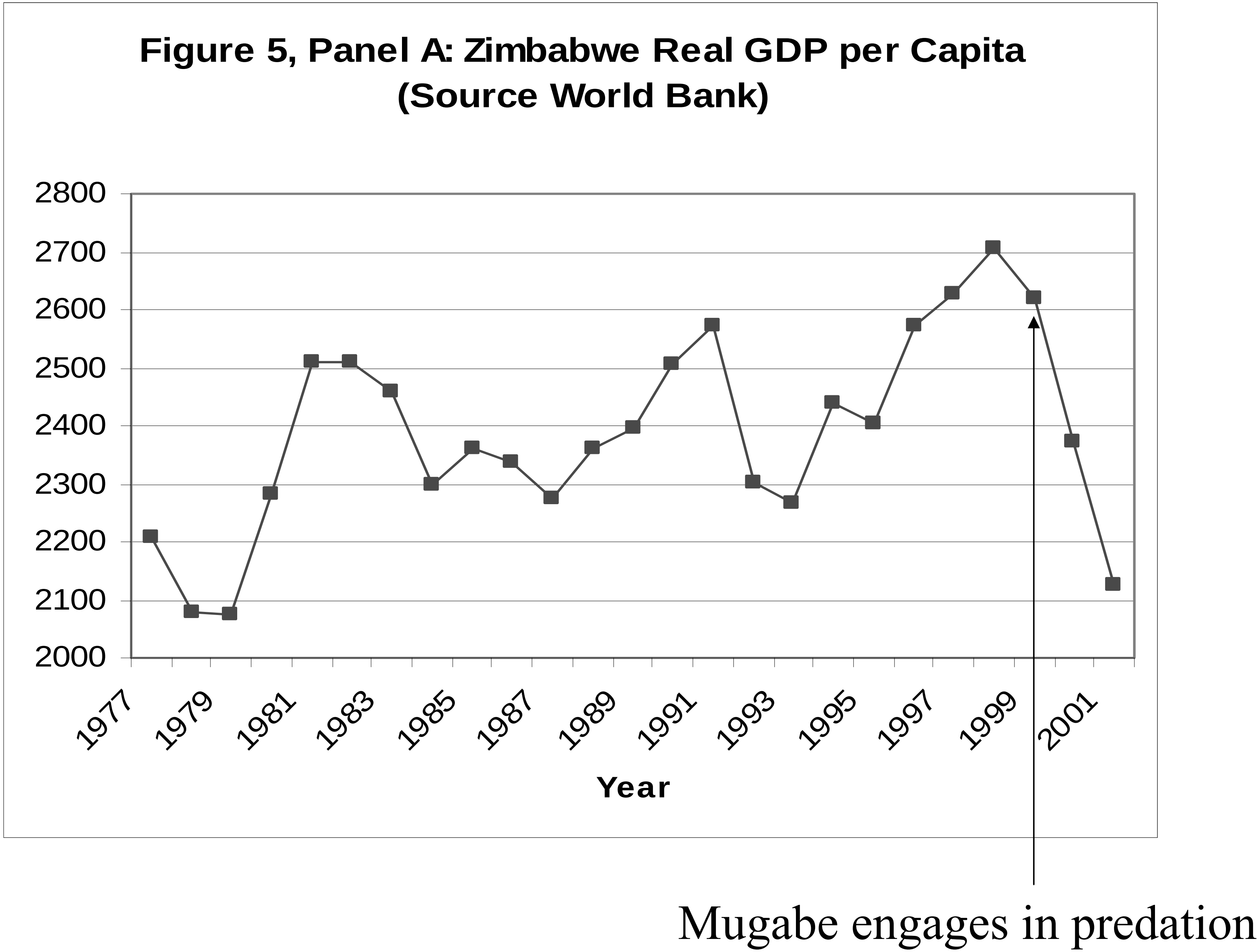
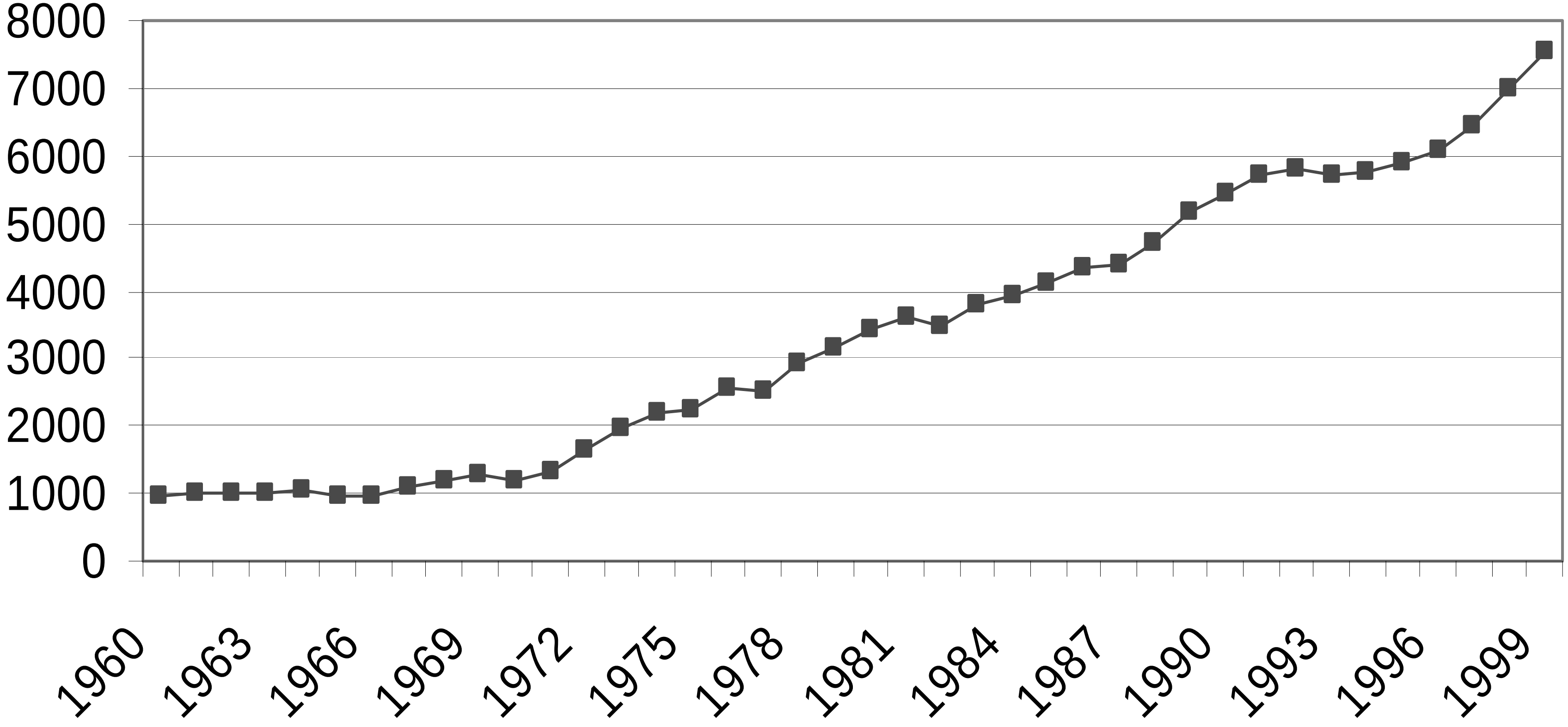
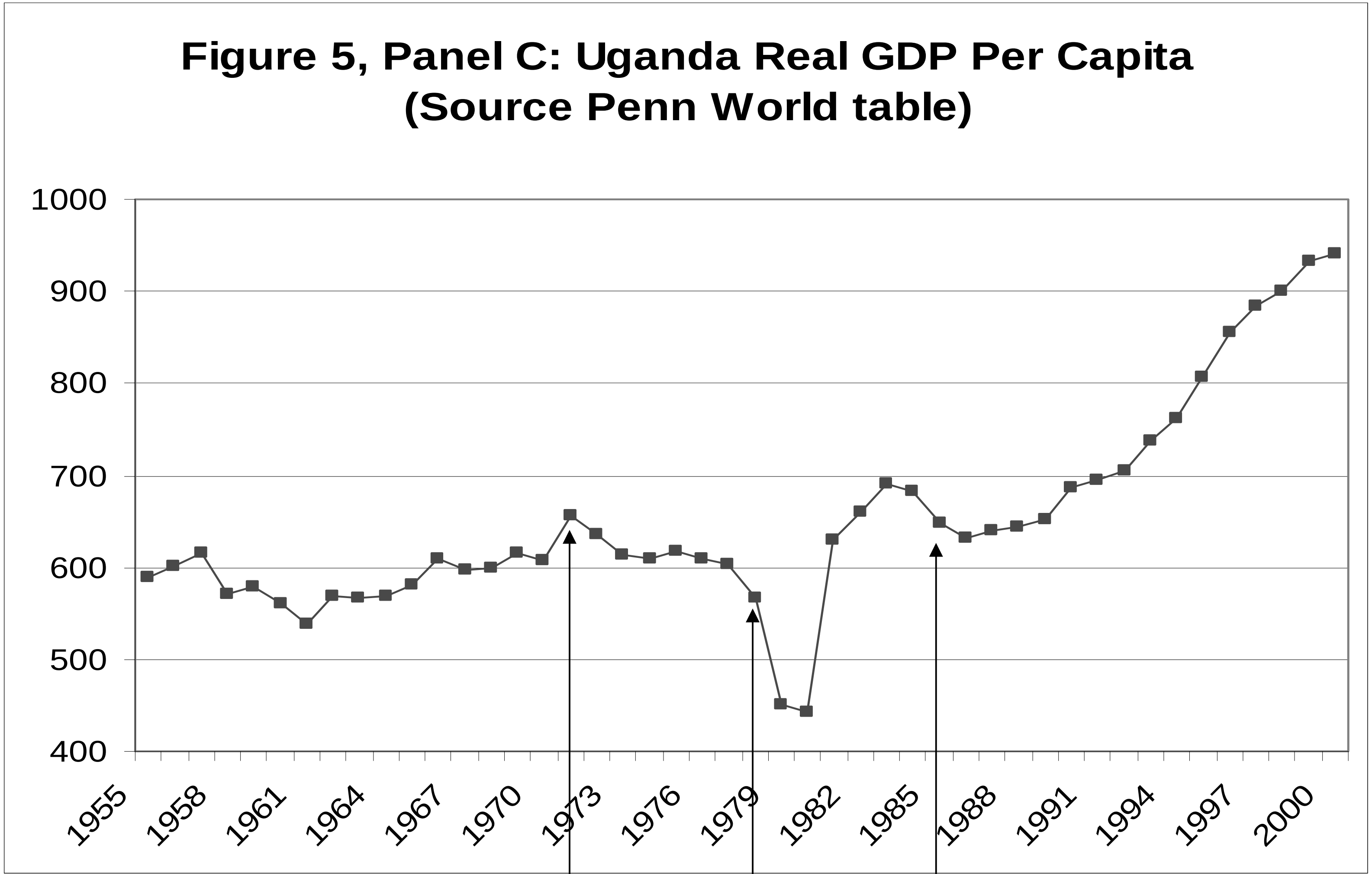


Figure 5, Panel A: Zimbabwe Real GDP per Capita (Source World Bank)

Figure 5, Panel B: Botswana Real GDP per Capita (Source Penn World Tables)





Idi Amin Dada overthrows Obote and engages in predation.

Museveni seizes power and refrains from predation

Tanzania invades Uganda