

# Dictators, development, and the virtue of political instability

Ronen Bar-El

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**Abstract** A large body of literature stresses the benefits of regime stability for economic growth in poor countries. This view, however, discounts the gains from threats to regime security when populations living under dictatorial regimes cannot benefit from the disciplining of political competition available to voters in democracies. This paper applies a model of economic growth to study the sources of the differences in economic performance and repression policy among dictatorships as well as the parallel in dictatorial regimes of the benefits achieved through political competition in democracies. Threats to the security of dictatorial regimes are shown to be a means of benefiting the population through the responses of the regime.

**Keywords** Dictatorship · Growth · Political stability · Repression

**JEL Classification** D74 · H11 · H50 · O10 · O40

## 1 Introduction

Governments in low-income countries are more often than not authoritarian or dictatorial. In contrast to poor dictatorships, China, which suffered a record famine in the 1950s, has evolved to enjoy a very successful economy. Other dictatorships, like the Persian Gulf Emirates, have always been economically successful.<sup>1</sup>

I shall apply a model of economic growth to study the sources of the differences in economic performance and repression policy among varying dictatorships. It will be shown that differences among dictatorships in national income and growth performance as well as in the extent to which the general population benefits from national income are related

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<sup>1</sup>Sah (1991) and Barro (1996) point out that some dictators promote growth while the personal objectives of others conflict with growth promotion.

R. Bar-El (✉)

The Department of Economics and Management, The Open University of Israel, Raanana, Israel  
e-mail: [ronenba@openu.ac.il](mailto:ronenba@openu.ac.il)

to the extent to which the ruler discounts the future. This, in turn, determines the taxation and capital accumulation policy. The productivity per worker, although related to the degree to which the ruler taxes national income, is also related to the social infrastructure present in the country (see Hall and Jones 1999) as well as to the regime's political ideology and to the abundance of other production factors (like natural resources). The model also emphasizes the parallel of insurgency in a dictatorial regime to the benefits achieved through political competition in democracies. Threats to the security of dictatorial regimes are shown to be a means of benefiting the population through policy responses of the regime.

The characteristic feature which distinguishes dictatorial regimes from democracies is the use of repression and restrictions on formal political competition in order to stay in power<sup>2</sup> (see the survey by Mueller 2003, Chap. 18; Wintrobe 2004; Tullock 2005). To achieve this objective the dictator must gain control of the political as well as of the military elites since, as Tullock (2005) argues, a coup d'état, an overthrow from inside the government, is much more common than a popular uprising. Moreover, if riots do break out, a well-trained military force will have no problems crushing it. Nevertheless, as Hume (1870) pointed out, a ruler can rule the people by the power of his police and army, but he can't rule the police and army by that power.<sup>3</sup>

The use of repression and the restrictions on formal political competition create an information problem for the dictator as he lacks the knowledge of true support among the general population. The dictator therefore buys the loyalty of the political and military elites and uses repression against the others.<sup>4</sup> The use of repression also maintains the opinion among the people around the dictator that the probability of a successful overthrow is low. The continuation of the dictator's incumbency seems to be a most useful way to obtain legitimacy<sup>5</sup> (see Tullock 2005).

Although "pork barrel politics" is also implemented in democracies, it seems that the use of national resources to benefit the ruler and the ruling elite is more common in autocracies.<sup>6</sup>

I shall describe the personal optimizing behavior of a dictator who appropriates (or taxes) income for his personal consumption and also allocates resources for public investment which increase future income. The dictator's concern with growth is expressed in a utility function that encompasses dynastic aspirations for succession. The rate of the growth de-

<sup>2</sup>Authoritarian regimes need not, however, necessarily be malevolent. The repressive dictatorial regimes of sub-Saharan Africa (see Charles Rowley 2000) can, for example, be compared with the benevolent authoritarian regime that has made Singapore a high-income developed economy.

<sup>3</sup>See Tullock (2005).

<sup>4</sup>Wintrobe (1998) describes the choice between buying loyalty and repression that confronts an authoritarian ruler. Evidence confirming Wintrobe's categorizations of behavior of authoritarian regimes is provided by Islam and Winer (2004). For a case where only extreme repression is chosen, see Verwimp (2003).

<sup>5</sup>As Tullock (2005) points out, legitimacy of a dictatorial regime does not necessarily mean that the regime is popular; it only means that common citizens, as well as high officials, believe that the probability of a successful deposition of the dictator is low, and therefore they will be less tempted to participate in conspiracies against the dictator. The Communist dictatorships in the former eastern block were quite stable but only due to the use of heavy doses of repression. Once the repression was removed they collapsed. Nevertheless, some of the harshest repressors like Stalin and others were very popular among the general population.

<sup>6</sup>I refrain here from describing the dictator as corrupt since the dictator is the government. More generally, on corruption within the bureaucracy and by government officials, see, for example, Easterly (2001) and Abed and Gupta (2002). The view expressed in this paper is consistent with the absence of ethics rather than corruption in government (see Charap and Harms 1999; Hillman 2004).

termines the future income that the successor will have available when making the same budgetary allocation decisions that confront the present ruler. The decisions made by a ruler depend on his subjective discount factor and also on the extent of the threats that insurgents<sup>7</sup> pose to the regime. Without insurgents, the ruler behaves in the standard manner of maximizing revenue, and in accordance with his time preference divides the revenue between personal present consumption and public investment to increase future income. However, the presence of insurgents introduces the possibility of regime change and leads the ruler to seek regime security.<sup>8</sup> The security of the regime can be increased by diversion of some of the resources in order to repress the insurgents. Although using repression, dictators are also concerned with their popularity among the general population (Wintrobe 1998, 2004). The analysis which follows emphasizes the immense importance of economic performance and public support for the stability of the regime.<sup>9</sup> The cost of effort directed to overthrowing the regime increases with the support among the general population for the regime.<sup>10</sup> The dictator can therefore also increase regime security by increasing the welfare of the population through increased present consumption (poverty alleviation)<sup>11</sup> or growth. The likelihood that insurgents will be successful in overthrowing a regime decreases as the welfare of the population increases.<sup>12</sup> The presentation of the behavior of the dictator in a poor country contrasts with other analyses where the conflict introduced by insurgents has been more often than not portrayed as necessarily socially undesirable.<sup>13</sup> The insurgents substitute for the political competitors that would be present were the government to be democratically contested. Just as political competition can result in socially more beneficial policies in a democracy so can an authoritarian regime react to the appearance of insur-

<sup>7</sup>Although the model describes an internal conflict between a dictator and insurgents, I don't necessarily describe a situation of an armed conflict. As Tullock (2005) points out, a dictator must always take into account the possibility of an attempted overthrow that more often than not will be in the form of a coup d'état from inside the government rather than in the form of a mob storming into the dictator's palace.

<sup>8</sup>In introducing the tradeoff between rent extraction and the survival of the regime, the model is similar to Grossman and Noh (1990, 1994).

<sup>9</sup>Sanhueza (1999) shows in an empirical study that widespread popular discontent with leaders in autocratic regimes highly increases their hazard rate.

<sup>10</sup>Mao Tse-tung and Griffith (2005) emphasize the importance of earning popular support in order to invoke what he calls "people's war." A friendly population is of immense importance to internal opposition, providing shelter, supplies, financing, and intelligence to the insurgents. On the other hand, Goldhagen (1996) argues that popular support enabled the Nazi regime in Germany to eliminate internal opposition in its early days without heavy investment in repression by using informal informers.

<sup>11</sup>O'Kane (1984) and Londregan and Poole (1991) show in an empirical study that poverty breeds coups. Campos and Root (1996) found empirical evidence for a positive relation between economic performance and regime stability. Based on the empirical evidence, Overland et al. (2005) constructed a model which relates economic growth to political instability. However, they do not explicitly model internal conflict and their results require numerical simulations.

<sup>12</sup>The model introduces three distinguished types of agents: the ruler, the opposition, and the people. Therefore the activity of the opposition and the repression do not directly reduce production. In that respect, the model is similar to Roemer (1985), Engineer and Usher (1987), and Usher (1989), and contrasts with Grossman (1991) who emphasized that time allocated either to soldiering or insurrection, although it could be allocated to production, is socially wasteful.

<sup>13</sup>Easterly and Levine (1997) showed that political instability explains cross-country differences in growth rates. Rodrik (1999) found that domestic conflicts are a key to understanding the growth collapse which many countries have experienced since the mid-1970s. Murdoch and Sandler (2002) found a negative impact of internal conflicts not only in a country at war but also in the neighboring countries.

gents by changing policies to benefit the population with the purpose of increasing regime popularity.<sup>14</sup>

Section 2 sets out the model describing internal insurgents who pose a threat to the security of the regime of an authoritarian ruler. Using the model, the differences in economic performance and repression among dictatorships are extensively discussed. Section 3 describes the behavior of the authoritarian ruler when there is no threat to his regime. Section 4 compares the outcomes in the two types of regimes. Conclusions are summarized in the final section.

## 2 The contested dictatorship

Since I wish to describe benefits from both contemporary poverty alleviation and growth, I use an overlapping generations model in which a self-serving dictator maximizes his own welfare which spans two periods.<sup>15</sup> The dictator rules for one period with plans to pass incumbency in the second period to a son or other dynastic successor. The ruler can plan, when old or retired, to share in future consumption of the family dynasty or alternatively, the ruler could just as well plan to rule until death and internalize the benefits to a family dynasty that will perpetuate family rule.

The ruler chooses the level of taxation (or appropriation).<sup>16</sup> Resources are used for (i) family or personal consumption, (ii) repression of insurgents, and (iii) productive public investment which increases future income through growth. The ruler derives utility from present family consumption and from the total national income provided to or bequeathed to the next generation of dynastic or family rulers, who will again make a decision regarding taxation and the allocation of revenues.<sup>17</sup>

I am describing a country with a rich ruling elite family but with low per-capita income and no private capital markets or private investment. Growth derives exclusively from the ruler's allocation of resources to productive public investment. There is complete information. The population is aware that public investment increases future national income, and is also aware that there will be benefits from growth through the future allocation of budgetary resources when, in the next period, the ruler faces the same allocation decisions. However, there is uncertainty about who the future ruler will be. The presence of insurgents is a source of regime insecurity. Successful insurrection would end the ruler's incumbency and would end the family dynasty. The ruler's utility function is defined over present consumption, the probability of being in office in the subsequent period, and the next period's national income.

<sup>14</sup>Campos and Nugent (2002) find no evidence for a causal negative relation between political instability and economic growth. In a later paper Campos and Nugent (2003) find a positive causal relation between political instability and investment that is particularly strong in low-income countries.

<sup>15</sup>I do not distinguish here between roving and stationary bandits. An authoritarian ruler can be of the roving or stationary bandit type, expressed in appropriation of public resources for personal benefit.

<sup>16</sup>While appropriation is portrayed as taking place through the setting of a tax rate, the actual form of appropriation may take the form of financial repression, inflationary financing, and government monopsony in purchase of export commodities, or appropriation of development aid intended to improve the welfare of the poor.

<sup>17</sup>Note that we are not necessarily modeling formal monarchies but rather informal family authoritarian succession, as, for example, has occurred in recent times in North Korea, Syria, the Congo, Togo, and elsewhere, and was planned to occur in Iraq under Saddam Hussein.

The insurgents maximize their net expected payoff from toppling the existing regime. Applying revolutionary effort is costly for the insurgents but the greater the popular support for the insurgency, the lower the marginal costs of acts of insurrection (it is easier, for example, to hide among the population). The better off the population—through present consumption or through growth—the lower the popular support for the insurgents. The ruler likewise can affect the probability of success of the insurgency by using budgetary resources for repression. Hence the ruler has two means of increasing regime stability.

The ruler and the insurgents play a two-stage game.<sup>18</sup> In the first stage, the ruler chooses at time  $t$  resources used in repression  $e_{r,t}$ , and in the second stage of the game the insurgents choose their effort level  $e_{o,t}$ . The outcome of the contest between the ruler and the insurgents is expressed in the manner of rent-seeking contest in the ruler's probability of survival, which is the measure of regime security and is denoted by<sup>19,20</sup>

$$S_t \equiv \frac{e_{r,t}}{e_{r,t} + e_{o,t}}. \quad (1)$$

National income is produced using labor, which is normalized to unity, and accumulated capital stock,  $G_t$ . Taxation (or appropriation) reduces the tax base and reduces labor supply.<sup>21</sup> The production function consequently is

$$y_t = P(1 - \tau_{t-1})G_t^\varepsilon, \quad (2)$$

where  $P$  is a productivity parameter and  $0 < \varepsilon < 1$ . Capital in the next period is

$$G_{t+1} = BG_t^{\nu_1} g_t^{\nu_2}, \quad (3)$$

where period 1's public investment is  $g_t$ ,  $B > 0$ , and  $G_t$  is the period 1's inherited capital stock, with  $0 < \nu_1, \nu_2 < 1$  and also  $\nu_1 + \varepsilon\nu_2 < 1$ .

The tax rate is  $\tau_t$  and the total resources available to the ruler in period 1 is  $\tau_t y_t$ . The ruler maximizes utility at time  $t$ , defined by present own-consumption  $C_{R,t}$ , the probability of regime survival  $S_t$ , and future income  $y_{t+1}$  available through growth.<sup>22</sup>

$$U_{R,t}(C_{R,t}, S_t, y_{t+1}) = \ln C_{R,t} + \beta \ln S_t + \beta \ln y_{t+1}, \quad (4)$$

where  $\beta$  is the subjective discount factor and  $0 < \beta < 1$ . In short, the ruler is assured of present own personal consumption but benefits from future income only with the probability that the regime survives to be transferred to the dynastic successor.

<sup>18</sup>I assume complete information. I also assume the ruler has a strategic advantage over the opposition since he determines the policy to which the opposition reacts. He also benefits from an advantage in information collection as well as in resource recruitment. The ruler therefore chooses the level of taxation and public investment, and also prepares and activates repressive measures before any insurgency takes place, taking into account the reaction of the opposition. The insurgents then react to the policy taken by the ruler, as expected.

<sup>19</sup>The outcomes are determined in a manner similar to a rent-seeking contest with a Tullock (1980) contest-success function.

<sup>20</sup>To obtain analytical results, I must use functional specification.

<sup>21</sup>This formulation captures the excess burden of taxation. For an alternative formulation based on disincentives of the weak in a society to be consistently productive when the strong can appropriate the output of the weak, see Hillman (2004).

<sup>22</sup>I assume a utility level equal to zero in the case of a successful insurrection.

The benefit gained by general population from the dictator’s policy at time  $t$  is defined over present and future consumption, which equal to the corresponding after-tax national income. With complete information, the population knows the future income  $y_{t+1}$  associated with the ruler’s present decision regarding investment and growth; hence we have:

$$U_{p,t}(c_{p,t}, c_{p,t+1}) = c_{p,t} c_{p,t+1}^\phi, \tag{5}$$

where  $\phi$  is the rate at which the population discounts future consumption.

Alternatively, we can define the utility of the general population at time  $t$  in terms of national income and the tax rate:

$$U_{p,t}(\tau, y_t, y_{t+1}) = (1 - \tau)^{1+\phi} y_t y_{t+1}^\phi. \tag{6}$$

The objective of the insurgents is to maximize their net expected payoff<sup>23</sup> from a regime change defined by

$$U_{o,t}(e_{o,t}) = A \left( \frac{e_{o,t}}{e_{r,t} + e_{o,t}} \right) - \psi(e_{o,t}). \tag{7}$$

$A$  measures the determination or intrinsic motivation of the insurgents.<sup>24</sup> The last term,  $\psi(e_{o,t})$ , is the cost of effort directed at overthrowing the regime defined by

$$\psi(e_{o,t}) = s_{r,t} e_{o,t}, \tag{8}$$

where  $s_{r,t}$  is the extent of support in the ruler among the general population at time  $t$ .

I assume that each individual who belongs to the general population has a position,  $I^i$ , regarding the minimal level of utility the ruler must provide. I further assume that those positions are uniformly distributed over the interval  $[0, \bar{I}]$ . We can interpret the position as stemming from an ideological stand, with  $I^i = 0$  expressing a radical support for the existing regime and  $I^i = \bar{I}$  expressing very weak support. All of the individuals whose minimal utility requirement is provided by the ruler become proponents of the existing regime, while all the others become supporters of the opposition. Therefore, we can define the support for the regime at time  $t$  by

$$s_{r,t} = \frac{U_{p,t}(\tau, y_t, y_{t+1})}{\bar{I}}. \tag{9}$$

By inserting (6) and (9) into (8) we define the opposition’s cost function by

$$\psi(e_{o,t}) = \frac{(1-\tau)^{1+\phi} y_t y_{t+1}^\phi}{\bar{I}} e_{o,t}. \tag{10}$$

From (7), the effort expended by the insurgents in the second stage of the game is determined by

$$A \frac{e_{r,t}}{(e_{r,t} + e_{o,t})^2} - \left( \frac{(1 - \tau)^{1+\phi} y_t y_{t+1}^\phi}{\bar{I}} \right) = 0 \tag{11}$$

<sup>23</sup>I assume a payoff equal to zero in the case of an unsuccessful insurrection.

<sup>24</sup>See also Hirshleifer (1991).

with

$$e_{o,t} = -e_{r,t} + \sqrt{\frac{A\bar{I}e_{r,t}}{(1-\tau)^{1+\phi}y_t y_{t+1}^\phi}}. \tag{12}$$

From (12), we see that the opposition is active (the effort is strictly positive), only for a sufficiently high level of determination:

$$A > \left(\frac{(1-\tau)^{1+\phi}y_t y_{t+1}^\phi}{\bar{I}}\right)e_{r,t}. \tag{13}$$

The ruler can therefore achieve total security through a repression level

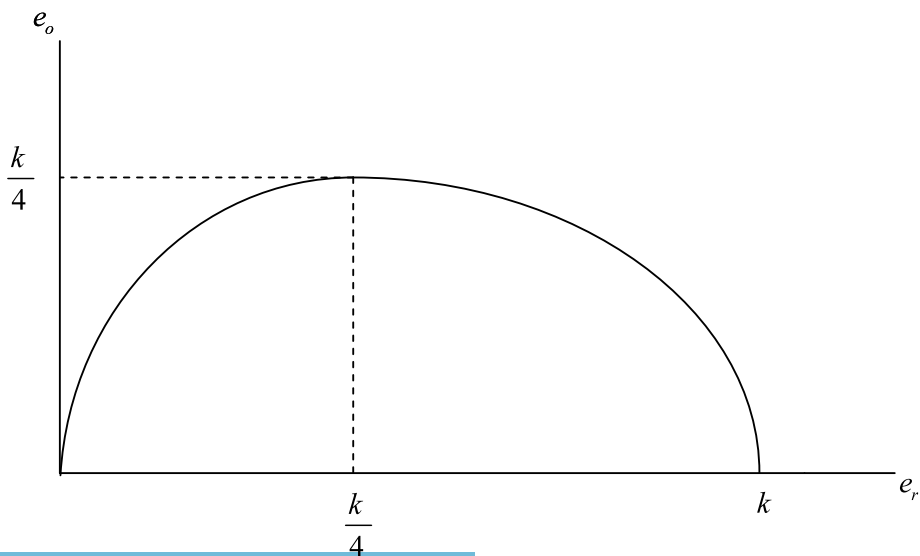
$$e_{r,t} = \frac{A\bar{I}}{(1-\tau)^{1+\phi}y_t y_{t+1}^\phi} \equiv k. \tag{14}$$

However, repression is costly. Reflecting the tradeoff that the ruler confronts, there is convergence to zero repression as the benefits to the population increase.

The reaction function of the insurgents to an increase in repression is shown in Fig. 1 and has the property that

$$\frac{\partial e_{o,t}}{\partial e_{r,t}} = -1 + \frac{1}{2} \sqrt{\frac{A\bar{I}}{(1-\tau)^{1+\phi}y_t y_{t+1}^\phi e_{r,t}}}, \tag{15}$$

which is positive when  $A > 4\left(\frac{(1-\tau)^{1+\phi}y_t y_{t+1}^\phi}{\bar{I}}\right)e_{r,t}$  and negative otherwise. At low levels of repression, the marginal benefit from exerting revolutionary effort is high, since overthrowing the regime is relatively easy. As the regime becomes more repressive, the marginal benefit declines.



**Fig. 1** The insurgent’s reaction function

The equilibrium for the first stage of the game follows from the ruler's objective at time  $t$  to maximize

$$\ln(\tau_t y_t - g_t - e_{r,t}) + \beta \ln \left( \sqrt{\left( \frac{e_{r,t} (1 - \tau_t)^{1+2\phi} y_t (P(BG_t^{v_1} g_t^{v_2})^\varepsilon)^\phi}{A\bar{I}} \right)} \right) + \beta \ln((1 - \tau_t) P(BG_t^{v_1} g_t^{v_2})^\varepsilon) \quad (16)$$

and hence the first-order conditions with respect to  $g_t$ ,  $\tau_t$ , and  $e_{r,t}$  are:

$$\frac{C_{R,t} \beta \varepsilon v_2 (2 + \phi) - 2g_t}{2C_{R,t} g_t} = 0, \quad (17)$$

$$\frac{2y_t (1 - \tau_t) - \beta (3 + 2\phi) C_{R,t}}{2C_{R,t} (1 - \tau_t)} = 0, \quad (18)$$

$$\frac{\beta C_{R,t} - 2e_{r,t}}{2e_{r,t} C_{R,t}} = 0. \quad (19)$$

It follows that

$$\tau_t^* = \tau^* = \frac{\nu - \beta(3 + 2\phi)}{\nu}, \quad (20)$$

$$g_t^* = \frac{\beta \varepsilon v_2 (2 + \phi) y_t}{\nu}, \quad (21)$$

$$e_{r,t}^* = \frac{\beta y_t}{\nu}, \quad (22)$$

where  $\nu \equiv 2(1 + \beta(2 + \phi)) + \beta \varepsilon v_2 (2 + \phi)$ .<sup>25</sup>

From (20) the population's present consumption is

$$c_{p,t}^* = \frac{\beta(3 + 2\phi)}{\nu} y_t, \quad (23)$$

and from (20)–(22) the ruler's present consumption is

$$C_{R,t}^* = \frac{2y_t}{\nu}. \quad (24)$$

With the insurgents' reaction function as shown in Fig. 1, the ruler determines the insurgents' level of effort. The ruler chooses between two socially unproductive expenditures: his own consumption and repression. The constraints are tax revenue (or budgetary resources) and the regime's popularity, both of which affect the likelihood of successful insurrection. We see in particular that the more resources available to the ruler, the greater the repression. From (12) and (20)–(22) we see that the effort exerted by the insurgents is

$$e_{o,t}^* = -\frac{\beta y_t}{\nu} + \sqrt{\frac{A\bar{I}\beta}{\nu \left[ \frac{\beta(3+2\phi)}{\nu} \right]^{1+\phi} \left( \frac{\beta(3+2\phi)}{\nu} P(BG_t^{v_1} \left( \frac{\beta \varepsilon v_2 (2+\phi)}{\nu} \right)^{v_2})^\varepsilon \right)^\phi y_t^{\phi \varepsilon v_2}}}. \quad (25)$$

<sup>25</sup>The second order conditions hold for all positive specifications of parameters (see Appendix A).



Regime security is obtained from (1), (22), and (25):

$$S_t = \sqrt{\frac{[\beta(3 + 2\phi)]^{(2\phi+1)} (P(BG_t^{\nu_1} (\beta\varepsilon\nu_2(2 + \phi))^{\nu_2})^\varepsilon)^\phi y_t^{(2+\phi\varepsilon\nu_2)}}{A\bar{I}\nu^{(2+2\phi+\phi\varepsilon\nu_2)}}}. \quad (26)$$

From (26) we obtain that the security of the regime increases with  $\beta$  (the ruler's subjective discount factor). We also see from (26) that the security of the regime declines with the intrinsic motivation of the insurgents,  $A$ , as well as with  $\bar{I}$ , which reflects a decline of the support for the regime among the general population. In addition, regime security increases with national income as the regime increases investment in growth and repression, as well as the population's consumption.

The steady state level of capital stock, under the assumption of an internal solution, is obtained by substituting (2) and (21) into (3) and eliminating the time indexes:

$$G^* = B^{\frac{1}{1-\nu_1-\varepsilon\nu_2}} \left( \frac{P\beta^2\varepsilon\nu_2(2 + \phi)(3 + 2\phi)}{\nu^2} \right)^{\frac{\nu_2}{1-\nu_1-\varepsilon\nu_2}}. \quad (27)$$

Equations (20)–(24) and (26)–(27) express the tradeoffs which the ruler faces.

There is a tradeoff between repression and improving the well-being of the population through present consumption or future growth: an increase in  $\phi$ , the subjective discount factor of the population on future consumption, which reflects that the support of the general population in the regime is more sensitive to the utility of the population, decreases the tax rate and increases investment at the expense of present consumption for the ruler and repression.

The ruler faces a tradeoff between his own present and future consumption: an increase in  $\beta$ , the ruler's subjective discount factor, leads to an increase of investment and a decrease of present personal consumption. Through an increase in future income, the ruler benefits himself as well as the population.<sup>26</sup>

The ruler also faces a tradeoff between his own present personal consumption and regime security: a decrease in the ruler's subjective discount factor increases the ruler's present personal consumption, while decreasing repression and the regime's survival probability.

## 2.1 The dictator's social dilemma and the differences among autocratic regimes

Most of the dictators throughout history share a common objective: to avoid a forceful deposition which more often than not results in exile or death to the dictator and his family. Despite the common objective of dictators and the common tools they use to achieve it we see that dictatorships differ from each other by their economic performance<sup>27</sup> as well as by the extent of repression they use.<sup>28</sup> The model presented in this section sheds some light on the differences among autocratic regimes.

<sup>26</sup>For comparative statics, see Appendices B and C.

<sup>27</sup>Some dictatorships, such as China, have been very successful in promoting growth and living standards for their citizens while others, such as Rwanda, Sudan, Chad, Guinea and others, have brought only poverty and economic decline to their populations.

<sup>28</sup>Some regimes can be classified as totalitarian regimes, which intervene heavily in the economic and social lives of their citizens, while others can be classified as tinpots, which repress and interfere in the lives of their citizens only modestly, up to a point which allows them to hold onto office and monopolize the fruits of political power (see also Wintrobe 1990).

The extent to which the ruler behaves as a predator plays an important role. The magnitude of the ruler's subjective discount factor reflects the extent to which the ruler cares for the future. A low value of  $\beta$  indicates the presence of a poor social infrastructure which is manifested by a ruler who diverts resources which could be used to create future benefits for its own present consumption (see Hall and Jones 1999).<sup>29</sup>

A low  $\beta$  leads to an increase in the ruler's own present consumption at the expense of higher taxes, lower investment in growth, and lower consumption for the general population (see also Appendices B and C). From (22) and (26), we also see a decrease in repression and the regime's security. From (2) and (27), we deduce that the steady state level of national income also decreases as investment decreases and taxation increases, which, in turn, lowers productivity per worker. These results describe a ruler which can be classified as a tinpot.

A larger value of  $\beta$  reflects a longer time horizon which results in a lower tax rate, increased investment in growth (see Appendices B and C) and, as a result, a higher level of national income and consumption by the population at the steady state.<sup>30</sup> Moreover, we also see from (22) that repression increases. This implies that dictators with long time horizons tend to insure the survival of their regimes with heavy doses of repression.<sup>31</sup>

We see that, *ceteris paribus*, the survival probability of a regime which values the future is expected to be relatively high as there are more resources available for repression. In addition, the regime enjoys the support of the general population due to the relatively high living standards.

The analysis shows the tradeoff a dictator has between present consumption and the survival of the regime. A dictator that is interested in providing himself with a glamorous lifestyle lowers future national income and undermines the survival probability of the dictatorial regime.<sup>32</sup> A low national income, especially when accompanied with a glamorous lifestyle of the ruler, does not enable the regime to spend vast resources on repression; moreover, it creates discontent among the general population. The combination of discontent from the dictator among the general population and low spending on repression are a proven recipe for a successful overthrow of the dictatorial regime (see Tullock 2005).<sup>33</sup>

Another important factor which affects the economic performance and the stability of the dictatorial regime is the amount of natural resources with which a country is endowed. Vast oil fields, for example, certainly facilitate good economic performance and stability of the regime. A ruler who is able to monopolize natural resources can act as a tinpot and yet hold on to power relatively easily,<sup>34</sup> while a dictator who rules a poor country may find it difficult

<sup>29</sup>Hall and Jones (1999) showed in an empirical study that a large amount of the variation in output per worker among countries is driven from differences in the social infrastructure. More specifically, they found that the low development level of countries like Nigeria in comparison to the USA stems from a poor social infrastructure.

<sup>30</sup>China serves as an example of a regime which places high weight on the future. It also has increased factor productivity by moving to a more capitalistic economy and has therefore become very successful. On the other hand, a country which is ruled by a dictator that establishes a poor social infrastructure and places low weight on the future is expected to be among the poorest countries, as some of the African countries are.

<sup>31</sup>Stalin, Hitler, Mao Tse-tung, and Pol Pot are notorious examples of rulers with a long time horizon who established murderous regimes.

<sup>32</sup>See also Tullock (2005).

<sup>33</sup>The poor economic performance of Louis the XVI, accompanied with very high living standards of the royal family, contributed to the outbreak of the French revolution (see Sargent and Velde 1995).

<sup>34</sup>The ruling elite of Saudi Arabia serve as a good example. They are known for their glamorous lifestyle but since they are able to monopolize the gains from the vast oil fields, they can sustain reasonable living standards for the general population while devoting resources to severe repression.

to act as a tinpot and yet stay in power. We therefore expect that a ruler of a stable regime in a poor country will be a totalitarian (for example, Papa and Baby Doc).

Some characteristics which are intrinsically present in various types of regimes and which affect their economic performance and survival probabilities have not yet been addressed. These factors affect productivity, or what the model refers to as  $P$  (see Eq. 2). Higher factor productivity results in a higher consumption level both for the ruler and the general population, higher investment in growth, more repression and an increase in the regime's survival probability. Some factors relate to what Hall and Jones (1999) call social infrastructure: factors like the degree to which a regime encourages skill acquisition,<sup>35</sup> invention and technology transfer, and the extent to which individuals perceive the social returns of their actions as private returns (see North and Thomas 1973).

Political ideologies may also affect factor productivity. A Marxist-type dictatorship tends to disengage social returns from personal ones and, as a result, may reduce factor productivity, especially in the long run. A theocracy may also harm growth as it usually bans women from acquiring education.

Our analysis shows that although all dictators share the common objective of holding their positions,<sup>36</sup> they use different methods. *Ceteris paribus*, we expect that rulers of low income countries will be totalitarian and use heavy doses of repression to stabilize their regimes, while rulers of high income countries will find it easier to secure their regimes and to rely more on "loyalty buying" rather than on totalitarianism.<sup>37</sup>

### 3 The uncontested dictator

A self-serving dictator who does not face internal opposition and whose dynasty's incumbency is fully ensured chooses at time  $t$  taxation  $\tau_t$  and investment  $g_t$  to solve:

$$\max_{\tau_t, g_t} u_{R,t}(c_{R,t}, y_{t+1}) = \ln(c_{R,t}) + \beta \ln(y_{t+1}) \quad (28)$$

subject to:

$$c_{R,t} = \tau_t y_t - g_t, \quad (29)$$

$$G_{t+1} = B G_t^{\nu_1} g_t^{\nu_2}, \quad (30)$$

$$y_{t+1} = P(1 - \tau_t) G_{t+1}^\varepsilon. \quad (31)$$

As previously, the production function is subject to the disincentive effect of the ruler's appropriation for personal consumption. The ruler chooses:

$$c_{R,t}^* = \frac{1}{1 + \beta + \beta \varepsilon \nu_2} y_t, \quad (32)$$

<sup>35</sup>Bourguignon and Verdier (2000) demonstrate how the political elite would prevent the general population from acquiring education in order to prevent political participation.

<sup>36</sup>See Tullock (2005).

<sup>37</sup>The People's Republic of China serves as a good example: while being a poor country the regime was totalitarian and used heavy doses of repression to indoctrinate the people and preserve the regime (see Tullock 2005). Nowadays, as its national income is higher, the regime is much less totalitarian since there are more resources to be divided among the ruling elite while still increasing the present and future income of the common citizen.

$$g_t^* = \frac{\beta \varepsilon v_2}{1 + \beta + \beta \varepsilon v_2} y_t, \quad (33)$$

Equations (24) and (32) show that the ruler's personal consumption is greater when the regime is not contested. The population's consumption in period  $t$  is

$$c_{p,t}^* = \frac{\beta}{1 + \beta + \beta \varepsilon v_2} y_t. \quad (34)$$

The steady-state level of capital is

$$G^* = B^{\frac{1}{1-v_1-\varepsilon v_2}} \left( \frac{P \beta^2 \varepsilon v_2}{(1 + \beta + \beta \varepsilon v_2)^2} \right)^{\frac{v_2}{1-v_1-\varepsilon v_2}}. \quad (35)$$

We see from (32)–(35) that as the ruler becomes more future-oriented, he lowers the tax rate and increases investment, thus ensuring a higher steady-state national income and higher future consumption for the population.

#### 4 Regimes comparisons

We can now compare the different regimes.

**Lemma** Consider identical economies endowed with the same initial capital stock.

- (1) An uncontested self-serving dictator will allocate a greater share of national income to investment than a contested self-serving dictator only if  $\beta > \frac{\phi}{2+\phi}$ .
- (2) The population's consumption as a share of the national income is greater in an economy ruled by an uncontested self-serving dictator than in an economy ruled by a contested self-serving dictator only if  $\beta > \frac{2\phi+1}{1-\varepsilon v_2(1+\phi)}$ .

*Proof* (1) From (21) and (33), the difference between the share of national income allocated for investment under the regimes of the uncontested dictator and the share of national income allocated for investment under the contested dictator is

$$\frac{\beta \varepsilon v_2 [\beta(\phi + 2) - \phi]}{v[1 + \beta(1 + \varepsilon v_2)]},$$

which is positive only if  $\beta > \frac{\phi}{2+\phi}$ .

- (2) The result is obtained by subtracting (34) from (23). □

Using the above lemma, we can establish the following proposition:

**Proposition 1** The presence of insurgents can increase the steady-state population's consumption.

*Proof* See Appendix D □

If the ruler has a low subjective discount factor as reflected by a low value of  $\beta$ , while the insurgents' marginal costs exhibit high sensitivity to the ruler's policy, as reflected by a high value of  $\phi$ , the population's consumption under a regime of a contested dictator will

**Table 1** The population’s consumption with contested and non-contested dictatorship

$\varepsilon = \nu_1 = \nu_2 = 0.5$	$\beta = 0.5$	$\frac{c_p^c}{c_p^{uc}} = 1.3247$
$\phi = 0.1$		
$\varepsilon = \nu_1 = \nu_2 = 0.5$	$\beta = 0.7$	$\frac{c_p^c}{c_p^{uc}} = 1.0718$
$\phi = 0.1$		
$\varepsilon = \nu_1 = \nu_2 = 0.5$	$\beta = 0.8$	$\frac{c_p^c}{c_p^{uc}} = 0.9864$
$\phi = 0.1$		
$\varepsilon = \nu_1 = \nu_2 = 0.5$	$\beta = 0.9$	$\frac{c_p^c}{c_p^{uc}} = 0.9181$
$\phi = 0.1$		

be higher than under a regime of an uncontested dictator, since more resources are allocated for investment and the tax rate is lower. Table 1 demonstrates that if the dictator’s subjective discount factor is low enough, the presence of insurgents increases the consumption by the population. Nevertheless, if the dictator’s subjective discount factor is sufficiently high, the presence of insurgents lowers the population’s consumption, which implies that internal conflict can also be socially wasteful.

The results are expressed as  $c_p^c/c_p^{uc}$  (the consumption by the population living under a contested dictator divided by the consumption by the population living under an uncontested dictator).

### 5 Conclusions

This paper employs a model of economic growth and internal conflict to characterize the differences among dictatorships in economic performance and repression policy. The model also shows that threats on the political stability of a dictatorial regime may be advantageous to the population. In democratic regimes, political competition provides incentives for socially beneficial policies; in autocratic regimes, an increase in the probability of a successful insurgency fulfills the same function. The conclusions counter the view which stresses the desirability of regime stability.

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### Appendix A: Second order conditions

To simplify notations I will denote (16) by  $f(g_t, \tau_t, e_{r,t})$ . It is easily verified that

$$f_{gg} = -\frac{(2 + \beta\varepsilon\nu_2(\phi + 2))v^2}{4\varepsilon\nu_2\beta(\phi + 2)y^2} < 0 \tag{36}$$

$$f_{\tau\tau} = -\frac{(\beta(3 + 2\phi) + 2)v^2}{4\beta(3 + 2\phi)} < 0 \tag{37}$$

$$f_{e_{r,e_{r}}} = -\frac{(2 + \beta)v^2}{4\beta y^2} < 0. \tag{38}$$

I will define the Hessian matrix:

$$H = \begin{bmatrix} f_{gg} & f_{g\tau} & f_{ge_r} \\ f_{\tau g} & f_{\tau\tau} & f_{\tau e_r} \\ f_{e_r g} & f_{e_r \tau} & f_{e_r e_r} \end{bmatrix}. \quad (39)$$

It is easily obtained that

$$|H_2| = \frac{v^4(v - \beta)}{8\varepsilon v_2 \beta^2 (2\phi + 3)(\phi + 2)y^2} > 0 \quad (40)$$

and

$$|H_3| = -\frac{v^7(v - 1)}{16\varepsilon v_2 \beta^3 (3 + 2\phi)(\phi + 2)y^4} < 0, \quad (41)$$

which verifies the existence of a local maximum.

### Appendix B: Comparative statics: Equation (20)

By differentiating the optimal tax rate we obtain:

$$\frac{\partial \tau_t^*}{\partial \phi} = -\frac{\beta(4 + 2\beta + \beta\varepsilon v_2)}{v^2} < 0, \quad (42)$$

$$\frac{\partial \tau_t^*}{\partial y_t} = 0, \quad (43)$$

$$\frac{\partial \tau_t^*}{\partial \beta} = -\frac{2(3 + 2\phi)}{v^2} < 0. \quad (44)$$

### Appendix C: Comparative statics: Equation (21)

By differentiating (21) we obtain:

$$\frac{\partial g_t^*}{\partial y_t} = \frac{\varepsilon v_2 \beta (2 + \phi)}{v} > 0, \quad (45)$$

$$\frac{\partial g_t^*}{\partial \beta} = \frac{2\varepsilon v_2 (2 + \phi) y_t}{v^2} > 0, \quad (46)$$

$$\frac{\partial g_t^*}{\partial \phi} = \frac{2\varepsilon v_2 y_t \beta}{v^2} > 0. \quad (47)$$

### Appendix D: Proof of Proposition 1

Consumption by the population at the steady state under a regime of a self-serving dictator who does not face insurgents follows from substituting (35) and (2) into (34). Consumption by the population in the presence of insurgents follows from substituting (27) into (23).

By dividing consumption by the population under the two regimes, we find that insurgents increase the population's consumption if

$$(2 + \phi)^{k_1} (2\phi + 3)^{k_1+2} > \left( \frac{\nu}{(1 + \beta + \beta\varepsilon\nu_2)} \right)^{2k_1+2}, \quad (48)$$

where  $k_1 \equiv \frac{\varepsilon\nu_2}{1-\nu_1-\varepsilon\nu_2}$ .

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