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## GROWTH-FRIENDLY DICTATORSHIPS

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GIACOMO DE LUCA, ANASTASIA LITINA,  
AND PETROS G. SEKERIS



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# Growth-Friendly Dictatorships

Giacomo De Luca\*    Anastasia Litina<sup>†</sup>    Petros G. Sekeris<sup>‡</sup>

## Abstract

This research argues that in highly unequal societies, a rent-seeking and self-maximizing dictator may be supported by a fraction of the population, despite the absence of special benefits to these societal groups. Importantly, it is the stakes of the dictator in the economy, in the form of capital ownership, that drive the support of individuals. In highly unequal societies ruled by a capital-rich dictator endowed with the power to tax and appropriate at will, the elites will support dictatorial policies given that they can generate higher growth rates than the ones obtained under democracy. This support arises unconditionally to special benefits to the elites and despite the total absence of checks and balances on the dictator.

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\*University of York, United Kingdom. E-mail: giacomo.deluca@york.ac.uk

<sup>†</sup>University of Luxembourg, Faculty of Law, Economics and Finance. E-mail: anastasia.litina@uni.lu

<sup>‡</sup>Belgian National Research Fund (FNRS) post-doctoral researcher at CRED, University of Namur, Belgium. E-mail: psekeris@fundp.ac.be

# Growth-Friendly Dictatorships

## **Abstract**

This research argues that in highly unequal societies, a rent-seeking and self-maximizing dictator may be supported by a fraction of the population, despite the absence of special benefits to these societal groups. Importantly, it is the stakes of the dictator in the economy, in the form of capital ownership, that drive the support of individuals. In highly unequal societies ruled by a capital-rich dictator endowed with the power to tax and appropriate at will, the elites will support dictatorial policies given that they can generate higher growth rates than the ones obtained under democracy. This support arises unconditionally to special benefits to the elites and despite the total absence of checks and balances on the dictator.

# 1 Introduction

Unlike democracies, dictatorial regimes centralize the powers in the hands of a single and often corrupt ruler, whose survival hinges on the support of particular societal groups. Accordingly, the policies implemented under dictatorships respond to the incentives of a limited number of individuals, at the expense of the rest of the population.

Despite this misalignment of incentives, dictatorships have recurrently been observed throughout history since the potentially dissatisfied masses often prove unable to translate their disagreement into an effective threat to the central regime. In 2010, one could discern 29 highly authoritarian regimes (negative polity IV score) controlling the lives of more than 2 billion people. Understanding the mechanisms that account for support of societal groups for dictatorships is a challenging task.

This research argues that in highly unequal societies, a rent-seeking and self-maximizing dictator may be supported by a fraction of the population, despite the absence of special benefits to these societal groups. Importantly, it is the stakes of the dictator in the economy, in the form of capital ownership, that drive the support of individuals. In highly unequal societies ruled by a capital-rich dictator endowed with the power to tax and appropriate at will, the elites will support dictatorial policies given that they can generate higher growth rates than the ones obtained

under democracy. This support arises unconditionally to special benefits to the elites and despite the total absence of checks and balances on the dictator. The support for a dictator is decreasing with the degree of equality in the economy.

To unveil the purely economic incentives associated with the support for a dictatorial regime, this research builds on Alesina and Rodrik's (1994) seminal work. In our paper democracy is model as in their framework. Namely, the government implements the median voter's preferred policy which can yield inefficiently low growth rates because of the median voter's incentives to implement an over-redistributive policy. We amend Alesina and Rodrik's (1994) model by grafting a self-interested dictator who is entitled to extract any fraction of the tax proceeds he wishes.<sup>1</sup> In addition, the dictator redistributes the tax proceeds net of extraction to the whole population under the form of a productivity augmenting public good.

This simple framework allows for a direct comparison between democracies and dictatorships. When self-interested dictators have strong vested interests in the country's economy, they have incentives to stimulate the economy. This, in turn, grants the dictator the support of a share of subjects who prefer the authoritarian option to the alternative of a democratic polity, that delivers lower growth rates.

The contribution of this research lies in describing the fundamental economic

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<sup>1</sup>The rent extraction behavior of dictators has been stressed in influential works on dictatorships (Bueno de Mesquita et al. 2003, Lee 2003).

incentives behind the support for a dictatorship. We show that in societies featuring a high concentration of capital, and provided the ruling body has high stakes in the economy, part of the capital owners value dictatorship more than democracy. We argue that the persistence of some dictatorships can be rooted in the substantial backing of wealthy capital owners. Since different regimes have different implications for growth, our work suggests that the relationship between capital distribution and growth is both affected and affects the endogenous emergence of political institutions.

Our study contributes to two broad research questions.

First, we enrich the literature investigating the links between political systems and economic performance. Early on, Alesina and Rodrik (1994) and Persson and Tabellini (1994) established in parallel that unequal societies may constrain economic growth because of the median voter's excessive willingness to redistribute wealth through high levels of taxation. These theories therefore predict that in democracies economic growth is an increasing function of the median voter's wealth levels. These models integrally focused on democratic regimes, thus disregarding the consequences of a dictatorial rule. Olson (1993) argues that long-lived dictators with vested interests in the economic performance of the country (i.e. stationary bandits) promote economic growth compared to short lived dictators (i.e. roving bandits). Building on Olson's (1993) work, McGuire and Olson (1997) and Niskanen (1997) compare

the economic performance of democracy and dictatorship. Both articles conclude that because of the rent-seeking activity of the dictator, the democratic regime will always outperform the dictatorial one. Two recent studies reach similar conclusions even when considering benevolent autocrats (Shen 2007, Gradstein 2007). Studying elitist dictatorial regimes, Lee (2003) shows that when higher tax rates imply lower growth rates, dictatorship always produces lower economic performance than democracy. Besley and Kudamatsu (2008) mainly focus on dictatorial regimes, but do compare democracies to dictatorships and derive the conditions making the latter more preferable in terms of economic growth. Yet, in Besley and Kudamatsu (2008) democracy is conceptualized as the population voting over a dictator and allowing him to appropriate public funds, rather than having checks and balances forbidding a democratically elected leader from acting as a bandit.

Four more contributions in the literature of comparative political economy relate to our work without, however, directly comparing dictatorships with democracies. Acemoglu (2008) studies the economic performance of oligarchies (rule by the elite). He argues that while oligarchies may achieve better economic growth in the short run due to a more efficient use of capital, democracies generate better economic outcomes in the long run through the free entry of non-elite individuals into the productive class of capitalists. Oechslin (2010) focuses on non-democratic regimes and shows

that the relationship between tax-revenues and growth may be hump-shaped. The underlying reason is that in the presence of high governmental revenues, the viability of the regime will be jeopardized by potential challengers, thus reducing the current government's time horizon and associated growth-enhancing investments. Gehlbach and Keefer (2011) focus on institutionalized ruling parties as a commitment device used (under some conditions) by autocrats to provide a sound economic environment for investors, thereby reaching democracies' levels of private investment. Finally, Davis (2010) suggests institutional flexibility - the ability to adopt and develop new institutions - as a key driver of long term economic growth. The flexibility of democratic decision making sustains the evolution of institutional quality, thus allowing democracies to outperform non-democratic regimes.

With respect to the existing studies we analyze the individual preferences for a political system depending on the capital distribution in the society. As in the previous literature, we find that a dictatorship is never preferred to a democracy for the society at large, but it grants larger payoffs for capital-rich individuals in societies featuring enough concentration of capital. Although we do not explicitly model the regime survival as in Oechslin (2010), to our knowledge, this is the first study showing that a share of the population, not benefiting from any special treatment by the dictator and not directly involved in the regime (e.g. as clients, party members, or



military bodies), strictly prefers a rent-seeking dictator to democracy. Interestingly this result holds despite the absence of checks and balances on the dictator who, by appropriating public funds, adversely affects the economy.<sup>2</sup>

The second research question motivating this study concerns the longevity of dictatorships. Despite the misalignment of incentives between the ruler and the subjects, dictatorships may last surprisingly long. Scholars have proposed different mechanisms addressing this puzzle. One strand of this literature stresses the inability of the dissenters to overcome the collective action problem to mount a successful rebellion (Acemoglu et al. 2004, Granovetter 1978, Kuran 1989, 1995, Lohmann 1994, and Ellis and Fender 2011). Besides repression (Roemer 1985, Acemoglu et al. 2010), dictators resort to alternative strategies to defuse potential opposition. A series of studies emphasize the role of cooptation policies to reduce outside pressure on the regime ( Gandhi and Przeworski 2006, Wintrobe 1998, Bueno de Mesquita et al. 2003; Debs 2007, Sekeris, 2011). Although these studies are valuable to improve our understanding of the functioning of dictatorships, the present study shows that the longevity of dictatorship may simply originate in the self-interested backing by wealthy individuals fearing higher fiscal pressure under democracy.

While an empirical test our theoretical model is beyond the scope of the present

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<sup>2</sup>The adverse effect of corruption on the economy has been theoretically and empirically established (Mauro 1995, 1998; Gupta et al. 1998).

work, we reviewed the empirical literature on the impact of political institutions on economic growth to assess how our theory reconciles with the existing evidence. The empirical literature on the topic is rich and controversial. Early on, Limongi and Przeworski (1993) claimed that the very correlation between the degree of democratization and economic growth could not be clearly established. Similarly, Gehlbach and Keefer (2011) relying on descriptive statistics do not find statistically significant differences between the two types of regimes in matters of private investments. Mulligan et al. (2003) concluded that no systematic differences in matters of economic policies could be discerned between democratic and authoritarian regimes. Two recent studies show a positive impact of democracy on growth (Papaioannou and Siourounis 2008, Persson and Tabellini 2009), while Tavares and Wacziarg (2001) show that democratic regimes hamper capital accumulation and reduce economic growth. Finally, Barro (1996) discerns a non-linear relationship between regime type and economic growth, with dictatorships being associated with intermediate growth rates.

With respect to the empirical literature, our research highlights features disregarded thus far: we identify capital distribution as a key determinant for the existence and the extent of support for a dictatorship. Whether a country features a stable democracy or hosts a dictatorship may therefore be intricately linked to the distribu-

tion of capital in the society. Since capital distribution also shapes economic growth, failing to appropriately incorporate this variable in empirical models may distort or even invalidate the predicted relationship between political regimes and economic growth.

The remainder of the paper is organized as follows. Section 2 presents the formal theoretical model. Section 3 discusses about the link between capital distribution and the support for a dictatorship. Finally, section 4 concludes.

## 2 The Model

Consider an endogenous growth model where the regime type can either be a democracy or a dictatorship. Agents are heterogeneous in their initial endowments of capital and labor. If the regime is democratic, then the median voter is determining the tax rate and thus implicitly the growth rate of the economy. If the economy is ran by a dictator, then the dictator is determining both the tax rate of the economy and the amount of rents that he extracts from the economy. Except for the decision maker's personal characteristics, we are thus assuming that the only difference between a democracy and a dictatorship lies in the (in)ability of the (former) latter to appropriate public funds.

In the following sections, the structure of the economy is described under both

regimes and by comparing them, we derive the implications for the growth rate of the economy as well as for societal groups that support one regime versus the other.

## 2.1 Firms

In every time period, there is a number of  $j$  identical firms, producing the final good of the economy. Capital and labor are employed as the primary factors of production. Following Barro (1990) it is assumed that production is further enhanced by public services,  $G_t$ , and in addition non-diminishing returns to capital and public services together are assumed, thereby allowing for endogenous growth. Thus, the production function of the representative firm  $j$ , is given by

$$Y_{jt}(K_{jt}, L_j) = A_t K_{jt}^a L_{jt}^{1-a} G_t^{1-a}, \quad (1)$$

where  $A_t$  is a technological parameter and  $G_t$  is the public good provided by the ruler which is financed by taxing individuals in the economy at the rate  $\tau$ . To save on notation and given that firms are identical, the  $j$  subscript is assumed away and similarly the time subscript. In particular

$$G = \theta \tau K. \quad (2)$$

To finance the public good, the ruler taxes proportionally the capital owners

at a flat rate  $\tau$  and the budget is balanced in every time period. If the regime is democratic, it is assumed that the entire tax proceeds are devoted to the provision of the public good. If, however the economy is ruled by a dictator, he extracts a share  $(1 - \theta)$  of the tax revenue, and therefore  $\theta\tau K$  denotes the remaining fraction of the revenue that is allocated to the provision of the public good.<sup>3</sup>

Factor markets are competitive and therefore individuals are remunerated for their productive factors at the market prices  $w$  and  $r_t$ , as derived by the following optimization of the firm

$$\max_{K,L} AK^a L^{1-a} G^{1-a} \quad (3)$$

which yields

$$r = aAk^{a-1}G^{1-a} = aA\theta^{1-a}\tau^{1-a} \equiv r(\tau, \theta) \quad (4)$$

and

$$w = (1 - a)Ak^a G^{1-a} = (1 - a)A(\tau\theta)^{1-a}k = \omega(\tau, \theta) \quad (5)$$

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<sup>3</sup>This assumption captures the institutional gap distinguishing democracies from non-democracies, as largely emphasized by the literature. More importantly, by relaxing this assumption and allowing for the possibility of a corrupt democratic regime, would further reinforce our main findings associated with the support of the dictatorship by different societal groups.

after replacing for equation (2). Note that  $k_t = K_t/L_t$  denotes the per capita capital on the economy. It is also assumed that the aggregate labor endowment in the economy is constant and normalized to unity. The economy's capital and labor income is given by,

$$y^k = rk = (aA\theta^{1-a}\tau^{1-a} - \tau)k \quad (6)$$

*and*

$$y^L = y - rk = (1 - a)A(\tau\theta)^{1-a}k \quad (7)$$

where the income from capital,  $y^k$ , is the income net of taxes and  $y^s$  is the income from labor. Note that once spending on the public good is accounted for, then the marginal product of capital,  $r$ , is independent from the capital stock thereby excluding the possibility of diminishing returns to capital. In addition, the marginal product of both capital and labor is increasing both in the tax rate  $\tau$  and decreasing in the extraction rate  $1 - \theta$  (increasing in  $\theta$ ), due to the increase in government spending for any given level of  $k$ .

In a democratic regime, a tax on capital affects directly the return to capital and therefore affects the incentives of individuals to accumulate wealth. In a dictatorial regime, a tax on capital has the same effect and additionally the incentive to accumulate capital is adversely affected by the extraction rate of the dictator,

$1 - \theta$ . Similarly, under both regimes a tax on capital is increasing wage income via increases on public good that increase workers' productivity, whereas under a dictatorial regime the extraction rate is adversely affecting the level of wages due to decreases on the level of public good provided.

The national income identity is thus derived by eqs. (2), (6) and (7),

$$y^k + y^L + \tau k = y \tag{8}$$

where  $\tau k$  is the total revenue from taxes in a democratic regime. In a dictatorial regime it could be more analytically expressed as  $\tau k = \tau \theta k + (1 - \theta)\tau k$ , where the first term of the RHS denotes the part of the revenue that is directed to the provision of the public good and the second term of the RHS denotes the income extracted by the dictator.

## 2.2 Individuals

There is a continuum of infinitely lived individuals, whose preferences are defined over consumption. Individuals differ only in their initial capital and labor endowment, and can thus be indexed according to their relative factor endowment,  $\sigma_i$ , defined as

$$\sigma_i = \frac{L_i}{K_i/K} \quad \text{where } \sigma_i \in [0, \infty), \tag{9}$$

where  $K$  is the aggregate capital stock of the economy. Capital rich individuals are designated by a low value of  $\sigma_i$  whereas poorly endowed individual (in capital), are designated by a high value of  $\sigma_i$ .

Individuals earn income both from labor and capital. Therefore, from eqs. (6) and (7) the income of an individual  $i$  is given by,

$$y^{K_i} + y^{L_i} = (r(\tau, \theta) - \tau)K_i + \omega(\tau, \theta)K_i\sigma_i.$$

Individuals maximize their intertemporal consumption,

$$\max_{c_i, K_{i0}}^{\infty} \log(c_i)e^{-\rho t} dt \tag{10}$$

s.t

$$\dot{k} = (r(\tau, \theta) - \tau)k_i + \omega(\tau, \theta)k_i\sigma_i - c_i \tag{11}$$

where  $c_i$  denotes consumption and  $\rho$  is the discount rate. Formulating the associating Hamiltonian and optimizing w.r.t  $c_i$  and  $K_i$  yields the following optimality condition,

$$\gamma_c = \frac{\dot{c}}{c} = r(\tau, \theta) - \rho - \tau. \tag{12}$$



## 2.3 The Growth Rate of the Economy

From eq. (12) and assuming the constancy of  $\tau$  over time, it is implied that  $\gamma_c = \gamma_k = r(\tau, \theta) - \rho - \tau \equiv \gamma(\tau, \theta)$ , i.e. all individuals accumulate at the same rate and therefore the growth rate of the economy as a whole is given by,

$$\gamma = aA\theta^{1-a}\tau^{1-a} - \rho - \tau. \quad (13)$$

A direct implication of this is that the relative factor endowment,  $\sigma_i$  will remain unchanged over time and therefore this implies that the median voter, which will be introduced in the following section in the context of a democratic regime, remains unchanged over time.

Consistent with the A&R prediction, the growth maximizing tax rate is obtained as,

$$\{\tau^*\} = \arg \max_{\tau} \gamma = (aA(1-a)\theta^{1-a})^{1/a} \quad (14)$$

thereby implying that,

$$\gamma_{\tau} \gtrless 0 \text{ iff } \tau \lesseqgtr (aA(1-a)\theta^{1-a})^{1/a}.$$

For low tax rates, the beneficial effect of the public good on productivity is the dominating effect and therefore the growth rate of the economy increases in the tax

rate. However, after a critical threshold, further increases in the tax rate distort the incentives to accumulate capital and ultimately the growth rate decreases.

Importantly, whereas in the context of a democratic regime the growth rate is affected only by the tax rate, in a dictatorial regime the incentive of individuals to accumulate capital is adversely affected by the extraction rate,  $1 - \theta$  (positively affected by  $\theta$ ). In particular,

$$\gamma_\theta > 0,$$

thereby implying that after taxes have been collected, the appropriation of public funds by a dictator will hamper the productivity-enhancing effect of public good provision. While this is an anticipated outcome, as will be argued later, it will have major implications on determining the societal groups that would favor a dictator as opposed to a democratic regime.

## 2.4 Tax Rate in a Democratic Regime

Initially the analysis of the preferred tax policy will be conducted under the assumption of a democratic regime. Elections over tax rates are held in each time period and therefore the tax rate is determined by a simple majoritarian rule.<sup>4</sup> As already

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<sup>4</sup>It is worth noting that allowing for elections to be held on a continuous basis amounts to considering a perfectly functioning democracy that would continuously discipline its elected officials.

argued it is also assumed that under a well functioning democracy, the ruler cannot appropriate public funds and therefore  $\theta = 1$ .<sup>5</sup>

Given that individuals differ in their initial endowments, the problem that the government has to solve is to find the optimal  $\tau$  that maximizes  $i$ 's intertemporal utility. From eqs. (10) and (13) it is inferred that along the optimal growth path the instantaneous consumption of an agent  $i$ , is

$$c_i^* = [\omega(\tau, \theta)\sigma_i + r(\tau, \theta) - \tau]k_i^* = [\omega(\tau, \theta)\sigma_i + \rho]k_i^* \quad (15)$$

thereby implying that only a fraction,  $\rho$ , of his capital stock,  $k_i^*$ , is consumed on top of his income from labor  $\omega(\tau, \theta)\sigma k_i^*$ .

Therefore, the ruler in a democratic regime maximizes the following intertemporal utility of consumer  $i$ ,

$$\max_{\tau} U_i = \max_{\tau} \int_0^{\infty} \log(c_i) e^{-\rho t} dt \quad (16)$$

s.t

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Moreover, should an alternative scenario be considered where elections are being held at constant time intervals, the outcome of the voting process would have been identical.

<sup>5</sup>It should be noted that since the ruler is not explicitly modeled, and it is assumed that he acts as a social planner, the optimal rate of  $\theta$  that would have been chosen by the social planner would endogenously had been set to  $\theta = 1$ .

$$c_i^* = [\omega(\tau, \theta)\sigma_i + \rho]k_i^* \quad (17)$$

and

$$\dot{k}_i = \dot{k} = \gamma(\tau, \theta) \quad (18)$$

Given the constant growth rate of the economy as derived in (13), and the consumption along the optimal path in eq. (15), eq. (16) can be expressed as a function of the initial endowment of capital for agent  $i$ ,  $k_{i0}$ ,

$$\max_{\tau} U_i = \max_{\tau} \int_0^{\infty} \log \left[ (\omega(\tau, \theta)\sigma_i + \rho)k_{i0}^{\gamma(\tau, \theta)t} \right] e^{-\rho t} dt \quad (19)$$

The tax rate that will be chosen by the ruler will not only affect the level of consumption but also the growth rate of the economy. Solving the optimization problem yields the following inequality (which holds with equality at optimality), which implicitly defines the preferred tax rate of individual  $i$ ,

$$\tau_i [1 - aA(1 - a)(\tau_i \theta)^{-a}] \leq \rho(1 - a)v_i \quad (20)$$

where  $v_i = \omega(\tau, \theta)\sigma_i / (\omega(\tau, \theta)\sigma_i + \rho)$ . Importantly, as is evident from eq. (20), the implicit tax rate is independent of time and therefore is constant over time. It can be easily proved that there exists a unique  $\tau_i$  and that the single crossing property is

verified, thus implying that the median voter theorem is satisfied (see Appendix A).

Therefore if  $m$  designates the median voter, who is described by his factor endowment  $\sigma_m$ , then the tax rate that would be preferred by the median voter would be implicitly determined by

$$\tau_m[1 - aA(1 - a)(\tau_m)^{-a}] \leq \rho(1 - a)v_m. \quad (21)$$

Importantly, given the constancy of the preferred tax rate over time, the same tax rate will be chosen in every time period. As a consequence, the distribution of individuals with respect to their initial factor endowments will remain unaffected, hence implying that the same individual will remain the median voter across time.

## 2.5 Tax Rate in a Dictatorial Regime

We now extend the analysis to a dictatorial regime so as to compare the two types of regimes and derive results about the potential supporting societal groups of one regime over the other.

In a dictatorial regime the ruler is a self-interested and infinitely-lived dictator who owns in period  $t$  a fraction of the total amount of capital of the economy,

$$k_{dt} = \beta_t k_t \quad \text{where } \beta \in [0, 1].$$

The dictator owns no labor and has two sources of income. The first source are the rents from his capital, whereas his second source of income are the rents that he extracts from the total tax revenue,  $(1 - \theta_d)\tau_d k$ . Therefore in every time period the dictator determines the tax rate  $\tau_d$  that he will impose on capital as well as the share,  $1 - \theta_d$ , of the tax proceeds that he will appropriate and consume.

For analytical tractability, the probability that the dictator might be overthrown will be assumed away. Interestingly, even under this restrictive assumption whereby the dictator is being granted infinite powers, there are still groups that find the dictator preferable to a democratic ruler.

Therefore, the dictator maximizes his utility as described by,

$$\max_{\tau, \theta_d} U_i = \max_{\tau, \theta_d} \int_0^{\infty} \log(c_d) e^{-\rho t} dt \quad (22)$$

s.t

$$c_d^* = [\rho\beta + (1 - \theta_d)\tau]k^* \quad (23)$$

and

$$\dot{k} = \gamma(\tau_d, \theta_d) = aA\theta_d^{1-a}\tau_d^{1-a} - \rho - \tau_d \quad (24)$$

where  $c_d$  denotes the consumption of the dictator. Two issues should be noted. First, as implied by eq. (23), along the optimal path, the dictator consumes a fraction

$(1 - \theta_d)$  of the total tax revenue, as well as a fraction of his capital stock,  $\rho\beta k^*$ . Eq. (24) implies that the dictator makes his policy choice by acknowledging that his policy is also affecting the growth rate of the economy. It should be noted that the growth rate of the economy under a dictatorial regime is the one derived in eq. (13) with the difference being that the tax rate,  $\tau_d$ , and the extraction rate,  $\theta_d$ , are now being determined by the dictator.

Given the constancy of the growth rate of the economy as described in eq. (24), and given the consumption of the dictator along the optimal path in eq. (23), eq. (22) can be expressed as a function of the initial endowment of capital in the economy,  $k_0$ ,

$$\max_{\tau_d, \theta_d} U_d = \max_{\tau} \int_0^{\infty} \log \left[ (\rho\beta + (1 - \theta_d)\tau_d) k_0^{\gamma(\tau_d, \theta_d)t} \right] e^{-\rho t} dt \quad (25)$$

Differentiating w.r.t. to  $\tau_d$  and  $\theta_d$  yields the following first order conditions:

$$\frac{\partial U_d}{\partial \tau_d} = \frac{(1 - \theta_d)}{(\rho\beta + (1 - \theta_d)\tau_d) \rho} + \frac{\partial \gamma(\tau_d, \theta_d) / \partial \tau_d}{\rho^2} = 0 \quad (26)$$

and

$$\frac{\partial U_d}{\partial \theta_d} = \frac{-\tau_d}{(\rho\beta + (1 - \theta_d)\tau_d) \rho} + \frac{\partial \gamma(\tau_d, \theta_d) / \partial \theta_d}{\rho^2} = 0. \quad (27)$$

From eqs (26) and (27) the following expression is derived,

$$\tau_d(1 - a(1 - a)A\tau_d^{-a}\theta_d^{-a}) = 0 \quad (28)$$

Before deriving the explicit formulas for  $\tau_d$  and  $\theta_d$ , it is worth noting that for eq. (28) to hold, then

$$\tau_d = \frac{(a(1 - a)A)^{1/a}}{\theta_d}$$

thereby suggesting a complementarity between the decision of the dictator on the tax rate of the economy and the extraction rate. A higher tax rate,  $\tau_d$ , that hinders growth, and therefore reduces the dictator's income from capital rents, gives him the incentives to extract more from the tax revenue to maximize his consumption. On the other hand, a lower tax rate that boosts growth, increases rents from capital, and therefore the dictator has less incentives to extract rents from the economy. Consistently with the above rationale, his incentive to extract revenue from the economy would be equal to zero, i.e.  $\theta_d = 1$ , had he chosen the growth maximizing tax rate. As will be shown in the following paragraph, what ultimately affects his policy, is the amount of capital the dictator owns.

Eq. (28) implicitly determines the tax rate and the extraction rate imposed by the dictator. Solving the system of eqs. (26) and (27), and using eq. (28), yields the explicit formulas for  $\tau_d$  and  $\theta_d$ , i.e.



$$\tau_d = \rho(1 - \beta) + (a(1 - a)A)^{1/a} \quad (29)$$

and

$$\theta_d = \frac{(a(1 - a)A)^{1/a}}{\rho(1 - \beta) + (a(1 - a)A)^{1/a}}. \quad (30)$$

Using eqs. (29) and (30), the following Proposition can be deduced.

**Proposition 1.** *i) The higher a dictator's endowment in capital,  $\beta$ , the lower will be the share of taxes embezzled and the tax rate, thereby yielding a higher growth rate for the economy.*

*ii) A dictator owning all the capital, i.e.  $\beta = 1$ , mimics the growth-maximizing social planner.*

*Proof.* Part i) follows immediately from differentiating eqs. 29) and (30) w.r.t.  $\beta$ . while ii) follows from setting  $\beta = 1$  in eqs. (29) and (30), and then deducing that  $\tau_d = \tau^*$ , and  $\vartheta_d = 1$ . □

The result is both intuitive and fundamental. A dictator who owns a negligible amount of capital, is primarily financing his consumption via extraction. Therefore he finds it optimal to impose a high tax on the economy's capital and to extract a large fraction of the tax proceeds. This course of action does carry for the dictator an intertemporal trade-off, since he has two instruments to balance the trade-off

between rent extraction and growth. A low growth rate which is induced by a high tax rate, can be counterbalanced by higher extraction. Moreover, it should be noted that the less capital the dictator owns, the less important is this source of income for his intertemporal consumption and therefore the less the incentives to adopt growth promoting policies.

Conversely, a dictator who owns a large share of the economy's total capital, and whose consumption is therefore primarily financed by rent on the capital he owns, will internalize the adverse effect of extracting a fraction of the tax proceeds on the level of public good, and will therefore lay more emphasis on growth enhancing policies as opposed to rent-seeking decisions. Therefore, such a dictator will choose a lower tax rate, which will ultimately accelerate the growth rate of the economy.

Pushing the reasoning to the limit where the dictator would be the unique capital owner of the economy yields the First Best outcome, namely he would have an incentive to act as a growth maximizing social planner.

## **2.6 Growth in Democracies and Dictatorships**

In this section we compare the growth rates between a democratic and a dictatorial regime. This will enable us to identify the societal groups that would back a dictatorship instead of supporting a democratic regime. Building upon the previous

sections, the following Proposition can be derived.

**Proposition 2.** *i) In a democratic regime, the growth rate associated with the median voter's policy is always lower than the growth-maximizing tax rate. In a dictatorial regime the growth rate associated with the dictator's policy, is always lower than the growth rate imposed by a dictator who owns the total capital of the economy.*

*ii) For any capital endowment of the median voter,  $k_m$ , there always exists a sufficiently wealthy dictator such that a dictatorship yields a higher growth rate.*

*Proof.* Part i) follows immediately from setting  $\sigma_i > 0$  in eq. (20) given eq. (13) and setting  $\beta < 1$  in eq. (29) given eq. (24).

To show ii) we simply take the limit of the growth rate induced by the dictator when  $k \rightarrow \infty$ . Since at the limit the dictator tends to owning all the capital, he produces the growth-maximizing policy.  $\square$

In light of the beneficial effect of the public good on productivity, a positive tax on capital is desirable by all individuals of a democratic society, including individuals owning no labour (i.e. pure capitalists). If a dictator owns all the economy's capital, he will implement a growth maximizing policy: his incentives to retain part of the tax proceeds for himself are annihilated since the entire tax collection is operated on the dictator's own capital stock.

Interestingly, once one departs from the limit cases where the median voter is the pure capitalist and the dictator owns the total capital of the economy then there we can always conceive a sufficiently wealthy dictator that can generate higher growth rates than a democracy. The direct implication of this result, as will be shown in the next section, is that there can exist a fraction of the society that prefers backing a dictatorship instead of supporting a democratic regime.

## 2.7 Who Supports a Dictator?

It is generally argued that most dictatorships are being supported by rich elites. Yet, the common understanding is that these elites are either themselves part of the government, or to the least receive special favours from the regime. The following Proposition further enriches our understanding of the elites' backing of dictatorships.

**Proposition 3.** *In relatively unequal economies, where the median voter is poorly endowed in capital, a capital rich dictator implements a policy generating a higher growth rate than under democracy. Consequently, a fraction of capital-rich individuals is in favour of a dictatorship.*

*Proof.* We first show that the result is valid when  $\sigma_m = \infty$ , and then relax the assumption so that the median owns some capital.

When setting  $\sigma_m = \infty$  and  $\beta = 1$ , we know that  $\gamma_m < \gamma_d$ . As a consequence there

must exist a  $\bar{\beta} < 1$  such that  $\gamma_m = \gamma_d$ . Distributing  $(1-\beta-\epsilon)k$  to agents endowed with no labour makes them strictly better-off under dictatorship. Moreover, by continuity there exist positive values of labour endowment still making them better-off under dictatorship.

Setting  $\beta = 1$ , by continuity there exists a finite  $\bar{\sigma}$  such that  $\gamma_m = \gamma_d$ . Reproducing the above reasoning implies that Proposition 3 holds for capital-poor median voters owning strictly positive amounts of capital.

□

Using the above Proposition, we deduce that there exist distributions of capital where the dictatorship is preferred by some societal group. Our analysis suggests that highly unequal societies where ruling elites control a significant part of the economy's capital are more prone to the emergence of a dictatorial regime. While it is not the purpose of the model to explicitly model the endogenous emergence of regimes, if the endogenous emergence of the regime depended on power derived from riches (i.e. capital) or power derived from masses (i.e. number of supporters), under both cases the probability of a dictatorial regime would be higher in more unequal societies.

Whereas the results of this model support the predictions of A&R for relatively equal societies, crucially this is no longer valid as the degree of inequality increases.

Increases in inequality suggest that the prevalence of a democratic regime is no longer an outcome preferred by all societal groups, thereby leaving space for the emergence of a dictatorial regime.

Proposition 3 underlines that some citizens would be disposed to totally give up their voting rights and therefore renege on the very existence of checks and balances under some circumstance. When scrutinizing this finding, it is fairly immediate: since both a dictatorship and a democracy yield policies which citizens are unable to influence on their own (except for the dictator and the median voter), it is not surprising that capital-rich individuals would rather see a growth-friendly dictator, while capital-poor individuals would be in favour of a pro-redistribution ‘dictator’, i.e. the equivalent to a capital-poor median voter.

## **2.8 Discussion**

The support for the dictator has been shown to depend on the distribution of capital in the society. First, the more endowed an individual is in capital, the more likely it is that he supports a growth-friendly dictator. As long as the dictator’s policy ensures a sufficiently high growth rate, the wealthier capitalists of the society will support the dictator. Second, the more capital the median voter owns, the lower the society’s support for a dictatorship. The wealthier the median voter in terms of

capital, the higher the growth rate implemented under democracy, thus eroding the relative benefits of a dictatorship.

A series of graphs will help visualizing how different distributions of capital map into the support for a dictatorship. On Figure 1 we draw a Lorenz curve of a hypothetical society for capital. On the  $x$ -axis is therefore represented the cumulative share of individuals, while on the  $y$ -axis lies the cumulative share of capital. This society is composed of three groups  $A$ ,  $B$ , and  $C$ , with increasing capital endowments. Notice that the median voter of this economy belongs to the capital-poor group  $A$ . We assume the capital endowment of group  $C$  individuals to be such as to make them slightly prefer a growth-friendly dictator to democracy. Therefore, the rest of the society strictly prefers democracy. In this society a dictator would be supported by a share  $(1 - \pi_2)$  of individuals owning a share  $(1 - \beta - \kappa_2)$  of the economy's total capital.

[FIGURE 1 HERE]

On Figure 2 we increase the level of inequality of this society by transferring part of group  $A$ 's capital to group  $B$  individuals, for them to match group  $C$  capital-endowments. This capital redistribution has two effects. First, it aligns the regime preferences of group  $B$  and group  $C$  individuals. Second, it reduces the capital endowment of the median voter, thereby reducing the growth rate under democracy.

As a consequence under this new configuration a share  $(1 - \pi_1)$  of the society (or the owners of share  $(1 - \kappa'_1)$  of capital) will be pro-dictatorship. While it is speculative to identify the critical support for the emergence of a dictatorship, an increase of inequality in capital ownership strengthens the backing of a dictatorship. A very unbalanced distribution of wealth may therefore have favored the emergence of some relatively stable dictatorships (e.g. the experiences of Chile and Singapore).

[FIGURE 2 HERE]

In Figure 3, we pool the capital endowments of Groups  $A$  and  $B$  as given in Figure 1. This inequality-reducing transfer increases the capital ownership of the median voter, thereby increasing the growth rate under democracy. Since Group  $C$  was weakly preferring dictatorship prior to the transfer, nobody will support the dictatorship after this transfer. A relatively prosperous middle class characterizing economically developed societies inhibits the emergence of a pro-dictatorship coalition.

[FIGURE 3 HERE]



### 3 Concluding Remarks

In this paper we show that different societal groups may support a rent-seeking dictator serving their interests better than the median voter would in a democratic regime. Importantly, support for a dictator is not granted in exchange of individual benefits (e.g., special treatment by the dictator as clients, party members, or military bodies), nor is it the result of coercion and fear. Wealthy elites are inclined to back an almighty and long lived dictator because of the growth-promoting policies that are likely to be implemented. The distribution of capital in the society and the stakes of dictator in the economy, in the form of capital ownership, directly shape the preferences of individuals over the political system: in societies featuring a high concentration of capital and a dictator endowed with enough capital, part of the capital owners eager to see the economy grow value dictatorship more than democracy. We argue that the persistence of some dictatorships can be rooted in the substantial backing of wealthy capital owners. Finally, we show the support for a dictator to be decreasing with the capital ownership of the median voter.

## A Proofs

### Proof of Uniqueness of tax rate, $\tau_i$

The optimal tax rate is implicitly derived by eq. (20). Setting eq. (20) equal to zero as implied by the optimality condition, and differentiating with respect to  $\tau$ , implies that the objective function is concave in  $\tau$  iff

$$1 - aA(1 - a)^2(\tau_i\theta)^{-a} - \frac{aA(1 - a)^3\rho^2\sigma_i(\tau_i\theta)^{-a}}{[\omega(\tau, \theta)\sigma_i + \rho]^2} > 0$$

Rearranging terms, this expression can be written as

$$\left[1 - \frac{(1 - a)\rho}{\omega(\tau, \theta)\sigma_i + \rho}\right] \tau[1 - aA(1 - a)(\tau_i\theta)^{-a}] + a^2A(1 - a)^2(\tau_i\theta)^{-a} > 0$$

Since both terms of the expression are positive the inequality is necessarily satisfied. It is then straightforward to compute  $\frac{\partial^2 U}{\partial \tau_i \partial \sigma_i}$  and to verify that the single crossing property is verified, thus implying that the median voter theorem applies.

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