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# **Autocratic rule in ethnically-diverse societies\***

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## **Abstract**

Richer and more educated citizens demand better governance than poorer citizens. They participate more in the political process, are more difficult to buy off, and tend to have the financial resources to support a revolt. An autocrat who is politically insecure may therefore not invest in income-enhancing goods like education, roads, the rule of law, etc. This argument is not new. The novelty of this paper is to argue that ethnic diversity *and* discrimination exacerbate an autocrat's fear of the negative effect of high income or income-enhancing investments like public education on his political survival. The combination of ethnic diversity and the fear of survival results in low economic performance in ethnically-diverse autocracies. I show that under such circumstances, the proportion of national income that the autocrat appropriates to himself is increasing in the degree of ethnic diversity. An implication is that in such ethnically-diverse societies, kleptocrats may be better off with a bigger share of a smaller national income than they are with a smaller share of a bigger national income. Previous empirical work provides some support for my theory. I discuss applications and limitations of my results.

Key words: autocracy, ethnic diversity, kleptocracy, public capital, selectorate.

JEL Classification: H1, H2.

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## 1. Introduction

Why do some autocracies perform better than others? Why have most autocracies in Africa and Latin America governed very badly while the autocracy in China, for example, has governed well. Why did the dictators in the former Soviet Union, Eastern Europe, and East Asia invest heavily in a growth-enhancing area like education? How is it that Seretse Khama governed very well in a *de facto* one-party state like Botswana? What produces an Idi Amin in Uganda or a Mobutu Sese Seko in Zaire? Is it a coincidence that these Amin and Mobutu were leaders in two of the top three ethnically fractionalized countries of the world?<sup>1</sup>

In this paper, I argue that ethnic diversity *and* discrimination combined with the negative effect of economic growth on the survival of autocracies account for the poorer economic performance of autocrats in more ethnically-diverse societies.

The negative effect of ethnic diversity on socio-economic performance has been theoretically and empirically examined in Easterly and Levine (1997), Alesina, Baqir, and Easterly (1997), Alesina and La Ferrara (2000), Collier (2001), Gugerty and Miguel (2005), Montalvo and Reynol-Querol (2005), Robinson and Torvik (2005), Padro I Miquel (2007), and Putnam (2007). Alesina and La Ferrara (2005) present a survey of this literature.

There is evidence that to ensure their political survival, autocrats may not promote growth even if they can benefit from the higher tax revenue due to growth.<sup>2</sup>

Acemoglu and Robinson (2006) refer to this fear of political survival as the *political replacement effect*. This effect is at the core of Acemoglu and Robinson (2000, 2006).

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<sup>1</sup> See Table III in Easterly and Levine (1997).

<sup>2</sup> See Acemoglu and Robinson (2006) who apply this idea to the different paths to industrialization taken by Britain, Germany, Japan, and Russia. See also Robinson (2001) and the several references cited therein.

For example, Acemoglu and Robinson (2006, p. 116) argue that "... in Russia, the Tzar and political elites were initially strongly opposed to industrialization, or even to the introduction of railways. When industrialization in Russia finally got underway after the Crimean War, the fears of the elites were confirmed: industrialization brought social turbulence in urban centers, and political and social change, culminating in the 1905 Revolution ... Even though the political elites in Russia may have preferred industrialization if they could be sure of maintaining power and taxing the proceeds, in practice they did oppose it because they were afraid of losing political power."<sup>3</sup>

Similarly, Evans (1995, p. 248) notes that "[T]he disorganization of civil society is the sine qua non of political survival for predatory rulers. Generating an entrepreneurial class with an interest in industrial transformation would be almost as dangerous as promoting the political organization of civil society. For predatory states "low level equilibrium traps" are not something to be escaped; they are something to be cherished."

Wintrobe (1998, p. 23) also argues that the "... modern African dictator ... suffers from insecurity. For many regimes, this insecurity is unsurprising, given the frequency of coups in the notoriously short life of African regimes. However, even a long-lasting regime like of Zaire's Mobutu, which survived for 31 years, was dominated by insecurity." To the extent that military coups and revolutions require resources and financial support, an insecure leader will rather impoverish his subjects than make them rich. Indeed, as Robinson (2001, p. 28) notes Mobutu "... saw infrastructure as increasing

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<sup>3</sup> As another example, a growth-enhancing investment like public education could threaten the survival of an autocrat. Lipset (1959, p. 79-80) argues that "[E]ducation presumably broadens men's outlooks, enables them to understand the need for norms of tolerance, restrains them from adhering to extremist and monistic doctrines ... If we cannot say that a "high" level of education is a sufficient condition for democracy, the available evidence does suggest that it comes close to being a necessary condition." This view is referred to as the *modernization hypothesis* and has received empirical support in Barro (1999) and Glaeser, Ponzetto, and Shleifer (2007).

the ability of citizens to organize in collective action against him.”<sup>4</sup> This view is also echoed by Callaghy (1984).

Acemoglu, Robinson, and Verdier (2004) argue that it is easier for a kleptocrat to buy off less productive and poorer groups in order to maintain power. This is yet another reason why an autocrat may not promote growth or undertake investments that will boost average productivity in the economy.

Arguably, an autocrat can maintain his power by improving the economic welfare of his citizens. But it depends on whether he is an honest autocrat or a corrupt autocrat (i.e., a kleptocrat). If he is a kleptocrat, then the citizens might believe that they can do better by getting rid of him. Also, even an honest autocrat might improve the welfare of his citizens on a pecuniary dimension but not on non-pecuniary dimensions like freedom of speech, freedom of association, etc. Hence, the citizens may use the higher material resources stemming from a higher per capita income to agitate for civil rights and democratization.

The novelty of this paper is to argue that ethnic diversity *and* discrimination exacerbate an autocrat’s fear of the negative effect of high income or income-enhancing investments like public education on his political survival. The combination of these two factors results in low economic performance in ethnically-diverse autocracies. An implication of my analysis is that in more ethnically-diverse societies, kleptocrats may be better off with a bigger share of a smaller national income than they are with a smaller share of a bigger national income.

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<sup>4</sup>Mobutu is reported to have said to President Juvenal Habyarimana of Rwanda after a coup attempt in Rwanda that “I told you not to build any roads... Building roads never did any good ... I've been in power in Zaire for thirty years and I never built a road. Now they are driving down them to get you.” (quoted in *Jeune Afrique*, 1991). On Mobutu’s kleptocratic behavior, see Ayittey (1992).

Padro I Miquel's (2007) is the closest in spirit to my paper. He argues that autocrats in ethnically-diverse societies are able to hold onto power despite large reductions in the welfare of their citizens because the members of the autocrat's ethnic group believe that they are better off under his rule than they will be under the rule of another leader from a different ethnic group: as the saying goes "the devil you know is better than the angel you don't know." Hence the autocrat's ethnic group supports him for fear of being ruled by a worse leader from a different ethnic group. This is clearly a plausible argument.

A crucial assumption in Padro I Miquel (2007) is that a "... ruler needs the support of his ethnic group in an ethnically divided society." A difference between my argument and Padro I Miquel's (2007) argument is that my argument is driven by the autocrat's own sense of insecurity or fear while his argument is driven by the autocrat's ethnic group's insecurity or fear. To be precise, I focus on the autocrat's fear of ethnic discrimination when he is no longer in power while Padro-I-Miquel (2007) focuses on the *selectorate's*<sup>5</sup> fear of ethnic discrimination when the autocrat is no longer in power. My argument is more applicable to autocrats like Mobutu who came from a very small ethnic group (Acemoglu et al, 2004) because a small ethnic group could not have kept him in power for such a long time (i.e., more than thirty years).<sup>6</sup> In contrast, Padro I Miquel's (2007) argument is more applicable to kleptocrats from sufficiently large ethnic groups, although this need not be the case. I elaborate on this point in section 3.

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<sup>5</sup> The *selectorate* is a term due to de Mesquita et al. (2003). It refers to the group that a ruler depends on to hold on to power. In a democracy, the selectorate is the electorate. In an autocracy, the selectorate could be the military, party cadres, a group of allies, or the autocrat's ethnic group.

<sup>6</sup> Autocrats from small ethnic groups could have a high chance of political survival because small ethnic groups are able to solve the free-rider problem. Like Padro-I-Miquel (2007), I do not examine the collective-action problem.

On the preceding point, Padro I Miquel (2007, p. 1264) observes that “[I]t is important to note that the excluded group in this model always tries to unseat the incumbent. This is a simplifying assumption because the focus of the analysis is in explaining why the ethnic base supports an autocratic ruler. However, it does not capture cases in which the leader is forced to subsidize the opposition group because support from his own group is not enough.” To reduce the cost of subsidizing members of opposing ethnic groups, autocrats from such small ethnic groups may under-develop their areas because that it is cheaper to buy off poorer opposing groups. My point is that this under-development incentive is stronger in more ethnically-diverse societies.

To be sure, the degree of ethnic diversity cannot explain the behavior of all autocracies. I do not wish to claim that ethnic diversity is the be-all and end-all of all autocratic behavior. As Besley and Kudamatsu (2007) argue, history is replete with successful and unsuccessful autocracies.<sup>7</sup> Using theoretical and empirical insights, Besley and Kudamatsu (2007) argue that autocrats govern well when the power of the *selectorate* is independent of the autocrat remaining in office. Besley and Kudamatsu (2007) note that their model incorporates Padro I Miquel’s (2007) insight although they do not link the identity of the selectorate to ethnicity.

In more ethnically-diverse societies, it is more likely that in the event of an unstable transition of power,<sup>8</sup> a new selectorate is likely to emerge from a different coalition of ethnic groups, if the deposed autocrat is from a small ethnic group.

Analogous to the measure of ethno-linguistic fractionalization employed in Easterly and Levine (1997), one can think of a measure of the ethnic fractionalization of selectorates

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<sup>7</sup> See also Jones and Olken (2005).

<sup>8</sup> As Padro-I-Miquel (2007) notes such unstable transitions of power is a key feature of societies with weak institutions.

as the probability that two selectorates under different autocrats are composed of different ethnic groups. An argument of this paper is that this probability will be higher in more ethnically-diverse societies.

In their empirical analysis, Besley and Kudamatsu (2007) found that ethnic fractionalization had no effect on the success of autocracies if success is measured by economic growth or level of education. However, they found that ethnic fractionalization had a negative effect on the quality of health care in autocracies. Their analysis lends partial credence to the theory in this paper. It must be pointed out, though, that their result with respect to economic growth does not confirm nor refute the theory in this paper because my formal model examines the effect of ethnic fractionalization on the level of income not economic growth.

Bluedorn (2001) presents empirical evidence of the positive role of democracy in mitigating the negative growth effects of ethnic diversity. Collier (2000, 2001) found that ethnic fractionalization is detrimental for economic performance in dictatorships but not in democracies.<sup>9</sup> He considers a dictator who draws his power base from his own ethnic group by recruiting the army only from this group. Then the smaller is the ethnic group of the dictator, the stronger is the incentive to choose redistribution to his ethnic group at the expense of the growth of the entire economy. This is a plausible argument but is different from the argument in this paper. However, it lends credence to my theory.

The paper is organized as follows. The next section presents a model to demonstrate the effect on ethnicity diversity *and* discrimination on per capita income.

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<sup>9</sup>It must be borne in mind, though, that there are *de jure* democracies which are *de facto* autocracies in the sense that they replicate the economic outcomes and income distributions of autocracies. Acemoglu and Robinson (2008) refer to such democracies as *captured democracies*.



Section 3 discusses the results, extensions, and limitations of the analysis. Section 4 concludes the paper.

## 2. A model of ethnic diversity and political insecurity

Consider an infinitely-lived economy with  $L_t$  citizens who are governed by a risk-neutral autocrat in period  $t$ . Population grows at the rate  $\eta \geq 0$ . The autocrat has a discount factor,  $\beta \in (0, 1)$ . Each citizen inelastically supplies a unit of labor in each period  $t$ .<sup>10</sup> The economy's aggregate output in period  $t$  is  $Y_t = F(G_t, L_t)$ , where  $G_t$  is aggregate public capital provided by the autocrat in period  $t$ . This could be roads, investment in public education, law and order, protection of private property, health care, etc. The public capital,  $G_t$ , fully depreciates in each period (see, for example, Robinson, 2001; Shen, 2007). I relax this assumption in section 2.2.

Assuming that  $F(G_t, L_t)$  is a standard neoclassical constant-returns-to-scale production function, we can write per capita output as  $y_t = f(g_t, 1)$ , where  $y_t = Y_t/L_t$  and  $g_t = G_t/L_t$ ,  $f(0) = 0$ ,  $f'(\cdot) > 0$ ,  $f'(0) = +\infty$ ,  $f'(\infty) = 0$  and  $f''(\cdot) < 0$ . Let  $\underline{g} > 0$  be the minimum public capital per person required to maintain law and order and subsistence welfare.

I represent the political actions of the citizens by the reduced-form function,  $P_t = P_t[y_{t-1}(g_{t-1})]$  which is the probability that the autocrat maintains power in period  $t$ . I abuse notation by rewriting this as  $P_t = P_t(g_{t-1})$ , where  $P_t'(\cdot) < 0$ ,  $P_t'(0) = -\infty$ ,  $P_t'(\infty) = 0$ ,  $P_t''(\cdot) > 0$ , and  $0 < P_t < 1$ . The reasons for  $P_t'(\cdot) < 0$  were given in the previous section.

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<sup>10</sup> I shall later argue that the results do not hinge on the assumption of inelastic labor supply.

One may argue that since capital depreciates fully after one period, it cannot be used as the basis of political revolt. There are three reactions to this argument. First, one could assume that in each period the attempt to overthrow the autocrat occurs before capital is fully depreciated. Second, output need not be fully depreciated even if the capital used to produce it is fully depreciated. The citizens may use part of their output to attempt an overthrow of the autocrat. This part of their output will be increasing in the capital stock. Finally, I also consider the case where capital does depreciate fully.

Let there be  $n$  equally-sized ethnic groups in this society. Let the autocrat's payoff, if he loses power, and the new leader is from his ethnic group be  $\theta$  and let his payoff be  $\sigma$ , if the new leader is *not* from the autocrat's ethnic group. Due to ethnic discrimination, suppose that  $\theta > \sigma$ , so that the autocrat gets a higher payoff if the new leader is from his ethnic group. For example, he may face a lighter jail sentence if the new leader is from his ethnic group. Without loss of generality, suppose that the new leader is equally likely to come from one of the  $n$  ethnic groups.<sup>11</sup> We may write the leader's expected payoff if he loses power as  $\Omega(n) = \theta/n + [(n - 1)/n]\sigma$ . Clearly,  $\partial\Omega/\partial n = (\sigma - \theta)/n^2 < 0$ . Hence the higher the number of ethnic groups, the lower is the autocrat's expected payoff if he loses power.<sup>12</sup>

If  $\sigma = \theta$ , ethnic diversity or the number of ethnic groups will be irrelevant. If a person's payoff is independent of his ethnicity or identity, then such characteristics will be irrelevant in socio-economic interactions. Hence it is not ethnic diversity or the number of ethnic groups *per se* that matters. What really matters is the fact that ethnicity

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<sup>11</sup> The fact that the autocrat cannot guarantee that his successor will come from his ethnic group is consistent with the evidence cited in Padro-I-Miquel (2007).

<sup>12</sup> Note that the number of ethnic groups,  $n$ , is positively correlated with the measure of ethno-linguistic fractionalization, ELF, used in Easterly and Levine (1997) and several others papers on ethnic diversity. I return to this point when I discuss the limitations of my results in section 3.

is used or is perceived to be used as the basis of unfavorable discrimination against people who do not belong to one's ethnic group. Given ethnic discrimination (i.e.,  $\theta > \sigma$ ), the number of ethnic groups has a negative effect on the autocrat's expected payoff.<sup>13</sup>

Let  $\tau_t$  be the unit tax rate in period  $t$  on output produced in period  $t-1$ . Then the tax revenue in period  $t$  is  $\tau_t Y_{t-1}$ . Assume that the autocrat can only set a maximum tax rate of  $\bar{\tau} \in (0,1)$ . In McGuire and Olson (1996),<sup>14</sup> such a maximum tax rate below unity exists because the autocrat is concerned with the deadweight loss of taxation, and in Shen (2007), a tax rate above the maximum will lead to a social revolution. Both effects exist in Padro-I-Miquel (2007).<sup>15</sup>

I assume that the autocrat is a kleptocrat (Olson, 1993; McGuire and Olson, 1996; Mesquita et al., 2003, Padro-I-Miquel, 2007).<sup>16</sup> From any given tax revenue, he appropriates an amount for his own private use. The autocrat's problem is to maximize the difference between tax revenue and expenditure on public capital.

The timing of actions is as follows:

1. At the beginning of period  $t$ , there is an attempt to overthrow the autocrat which fails with probability,  $P_t(g_{t-1})$  and succeeds with probability  $1 - P_t(g_{t-1})$ .

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<sup>13</sup>In Acemoglu and Robinson (2006) and Padro-I-Miquel (2007),  $\Omega = 0$ . More importantly,  $\Omega$  is independent of  $n$ .

<sup>14</sup>My model is similar to McGuire and Olson (1996) with the following additions: (1) the autocrat's political survival is a function of the citizen's per capita income, (2) there is ethnic diversity and ethnic discrimination. Acemoglu and Robinson (2000, 2006) and Robinson (2001) consider the first effect but not the second. The novelty of this paper is to demonstrate how the combination of these two effects impinge on economic performance.

<sup>15</sup>In his model, the autocrat's ethnic group will revolt if taxes are excessive. This effect does not apply to the ethnic group that does not support the autocrat because they will like to get rid of him regardless of the tax rate. However, the autocrat does not overtax them because they will switch to a less productive activity.

<sup>16</sup>De Mesquita et al. (2003, chapter 4) provide a theory of when an autocrat will be a kleptocrat or the constraints on the extent of kleptocracy.

2. Conditional on being in power in period  $t$ , the autocrat taxes the output in the previous period yielding a revenue equal to  $\tau_t L_{t-1} f(g_{t-1})$  and invests  $L_t g_t$  in public capital. This yields a payoff of  $\tau_t L_{t-1} f(g_{t-1}) - L_t g_t$ . If he loses power, he gets  $\Omega(n)$ .

According to the above timing of events, in period 1 the autocrat imposes a tax on the output  $L_0 f(g_0)$  produced in period 0 if he is in power. The autocrat makes no decisions in period 0. Hence, the autocrat's planning horizon begins from  $t = 1$ .<sup>17</sup>

### 2.1 Solving the model

Since labor is supplied inelastically (i.e., no distortion in taxation), the autocrat will set  $\tau_t = \bar{\tau}$  in each period. Given that the public capital fully depreciates after one period, the autocrat does not have to consider the marginal benefit of an additional unit of capital beyond one period. Hence the autocrat faces a simple static optimization problem in each period.<sup>18</sup> It is important to note that the benefits of the autocrat's investment accrue one period later while the cost of the investment is immediate.<sup>19</sup> When the autocrat invests  $L_t g_t$  in period  $t$ , the discounted expected benefit is

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<sup>17</sup>Of course, the periods can be relabeled so that period 1 is period 0 and period 0 is period  $-1$ .

<sup>18</sup>While I could have used a finite or single period model to demonstrate some of my results, the infinite period model eases exposition. For example, the infinite period model provides a justification for why the autocrat may not set a tax rate higher than the maximum for fear of a revolution. In any finite period model, there is no reason why an autocrat should fear a revolution in the last period. If so, then if the last period is  $T$ , the citizens will not produce any output in period  $T-1$  since the autocrat will tax all output in the last period. Then the autocrat will not provide any capital in period  $T-1$ . Working backwards, there will be no production in this economy. There may be ways of getting around this problem in a finite period model. However, an infinite period model seems to be a more straightforward and easy way of dealing with this commitment problem. Besides, I later consider the case of partial depreciation of capital which makes the infinite-horizon even more relevant.

<sup>19</sup> In period  $t$ , the choice of  $g_t$  is equivalent to choosing consumption in period  $t$ . Hence, one could treat  $g_t$  as the control variable and  $g_{t-1}$  as the state variable [see Sargent (1987, p. 24) for a similar interpretation].

$\beta\{P_{t+1}(g_t)\bar{\tau}L_t f(g_t) + (1 - P_{t+1}(g_t))\Omega(n)\}$  in period  $t+1$ . The autocrat must equate today's marginal cost to tomorrow's discounted expected marginal benefit. Conditional on being in power, the autocrat chooses  $g_t$  in period  $t$  to maximize

$$W_t = \beta\{P_{t+1}(g_t)\bar{\tau}L_t f(g_t) + (1 - P_{t+1}(g_t))\Omega(n)\} - L_t g_t, \quad (1)$$

subject to given  $g_0 > 0$  and  $L_0 > 0$  and the feasibility constraint  $R_t \equiv \bar{\tau} L_{t-1} f(g_{t-1}) \geq L_t g_t$ .

Assume  $W_t$  is strictly concave and twice differentiable.<sup>20</sup>

It is important to note that in period  $t$ , the autocrat's expected payoff in (1) does *not* include the tax revenue,  $R_t \equiv \bar{\tau} L_{t-1} f(g_{t-1})$ , although this is what he actually gets in period  $t$  if he maintains power. This is because from the autocrat's standpoint, the benefit of the investment in period  $t$  is the expected discounted tax revenue in period  $t+1$ . The formulation in (1) is required in order to get a meaningful optimization problem because the investment in period  $t$  has no effect on the tax revenue,  $R_t \equiv \bar{\tau} L_{t-1} f(g_{t-1})$ , in period  $t$ . Notice also that the investment in period  $t$  has no effect on the autocrat's survival probability in period  $t$  (i.e.,  $P_t = P_t(g_{t-1})$ ).

In period  $t$ , the public capital that maximizes the autocrat's payoff must satisfy

$$\beta\{P'_{t+1}(\cdot)(\bar{\tau}L_t f(\cdot) - \Omega(n)) + P_{t+1}(\cdot)\bar{\tau}L_t f'(\cdot)\} - L_t = 0 \quad (2)$$

We can rewrite (2) as<sup>21</sup>

$$\beta\{P'_{t+1}(\cdot)(\bar{\tau}f(\cdot) - \hat{\Omega}_t(n)) + P_{t+1}(\cdot)\bar{\tau}f'(\cdot)\} - 1 = 0 \quad (2a)$$

where  $\hat{\Omega}_t(n) \equiv \Omega(n)/L_t$ .

<sup>20</sup> For example, this holds if  $f(g) = g^\alpha$ ,  $P(g) = k/g^\gamma$ , where  $0 < \gamma < \alpha < 1$  and  $k > 0$ .

<sup>21</sup> Notice that I could have set up a Lagrangian function,  $S_t$ , where  $S_t = W_t + \mu[R_t - L_t g_t]$  and  $\mu$  is the Lagrange multiplier. If the feasibility constraint binds (i.e.,  $\mu > 0$ ), then  $g_t^* = \bar{\tau}f(g_{t-1})/(1 + \eta)$  independent of  $\Omega$ . This is not an interesting solution for the problem at hand. Hence, in this section and the next subsection, I assume that the feasibility constraint does not bind.

If there is no population growth (i.e.,  $\eta = 0$ ), then  $\hat{\Omega}_{t+1}(n) = \hat{\Omega}_t(n)$  for all  $t = 1, 2, \dots, \infty$ . Then equation (2a) implies that  $g_t^* = g^* = g^*(\Omega(n))$  for all  $t = 1, 2, \dots, \infty$ .<sup>22</sup>

Putting  $g^* = g^*(\Omega(n))$  into (2a), setting  $L_t = 1$ , and differentiating with respect to  $\Omega$  gives

$$\frac{\partial g^*}{\partial \Omega} = \frac{P'(\cdot)}{D} > 0 \quad (3)$$

because  $P_t'(\cdot) < 0$  and

$$D \equiv P_{t+1}''(\cdot)(\bar{\tau}L_t f(\cdot) - \Omega(n)) + 2P_{t+1}'(\cdot)\bar{\tau}L_t f'(\cdot) + P_{t+1}(\cdot)\bar{\tau}L_t f''(\cdot) < 0 \quad (4)$$

due to the strict concavity of  $W_t$ .

It follows that

$$\frac{\partial g^*}{\partial n} = \frac{\partial g^*}{\partial \Omega} \frac{\partial \Omega}{\partial n} < 0 \quad (5)$$

For a given  $g_t$ , it is important to note that we can rewrite the autocrat's expected marginal benefit as  $P_{t+1}(g_t)[\bar{\tau}L_t f(g_t) - \Omega(n)] + \Omega(n)$ . Therefore, a higher  $n$  increases  $\bar{\tau}L_t f(g_t) - \Omega(n)$  and therefore increases the autocrat's valuation of being in power. Conversely, the cost of not being in power is higher, the higher is  $n$ . It is in this sense that ethnic diversity *and* discrimination exacerbate an autocrat's fear of the negative effect of high income or income-enhancing investments like public education on his political survival.<sup>23</sup> *Ceteris paribus*, this higher cost of not being in power induces the autocrat to reduce the capital stock. This is the intuition behind the result in (5).

<sup>22</sup> The efficient output  $g^{**}$  must satisfy  $f'(g^{**}) = 1$ . It is straightforward to show that  $g^{**} > g^*$ .

<sup>23</sup> The autocrat's greater fear does not mean that ethnic diversity shifts or changes the  $P_t$  function. The greater fear stems from the fact that for the same  $P_t$ , ethnicity diversity increases the cost of not being in power.

Noting that  $y^* = f(g^*)$  is an increasing function, the derivative in (5) implies that higher ethnic diversity leads to lower per capita income in an autocracy. This gives the following proposition:

**Proposition 1:** *If a higher per capita income has a negative effect on an autocrat's political survival and if his payoff when is out of power is lower when the new leader does not belong to his ethnic group than when the new leader belongs to his ethnic group, then the autocrat will undertake less income-enhancing investments if the country is more ethnically diverse.*

If there is population growth, then  $\hat{\Omega}_{t+1}(n) < \hat{\Omega}_t(n)$ . Equation (4) then implies that  $g_{t+1}^* < g_t^*$ . Public capital per person falls over time till it reaches  $\underline{g} > 0$ .<sup>24</sup> So with population growth, the autocrat provides very little public capital per person over time. However, for  $g_t^* > \underline{g}$ , the derivative in (5) still holds. That is, for any public capital per person that is greater than  $\underline{g}$ , an autocrat in a more ethnically-diverse society provides a smaller capital than an autocrat in a less ethnically-diverse society. If the autocrat is in power and provides  $\underline{g}$ , he gets  $L_{t-1}(\bar{\tau}f(\underline{g}) - (1 + \eta)\underline{g}) > 0$  in period  $t$ .

What proportion of national income does the autocrat appropriate to himself and how does this vary with the level of ethnic fractionalization? Without loss of generality, suppose there is no population growth. In each period, we can write the proportion of national income that goes to the autocrat as

$$\alpha_t(g^*(n)) = \frac{\bar{\tau}f(g^*(n)) - g^*(n)}{f(g^*(n))} \quad (6)$$

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<sup>24</sup>Note, however, that this result is independent of the degree of ethnic fractionalization.

Then

$$\frac{\partial \alpha_t^*}{\partial n} = \frac{\partial \alpha_t^*}{\partial g^*} \frac{\partial g^*}{\partial n} = -\frac{\partial g^*}{\partial n} \left( 1 - \frac{f'(g^*)}{f(g^*)/g^*} \right) > 0, \quad (7)$$

given that  $\partial g^*/\partial n < 0$ ,  $f(g)$  is strictly concave, and  $f(0) = 0$ . This gives the following proposition:

**Proposition 2:** *If a higher per capita income has a negative effect on an autocrat's political survival and if his payoff when is out of power is lower when the new leader does not belong to his ethnic group than when the new leader belongs to his ethnic group, then the autocrat will appropriate a higher proportion of national income to himself if the country is more ethnically diverse.*

## 2.2 Public capital does not depreciate fully

Suppose that public capital does not depreciate fully in each period. In particular, suppose  $g_t = I_t + (1 - \delta)g_{t-1}$ , where  $I_t$  is per capita investment in period  $t$  and  $\delta \in (0, 1)$  is the rate of depreciation. I assume that there is no population growth and normalize the size of the population to 1.

The autocrat solves the program:

$$\max_{\{I_t\}_{t=1}^{\infty}} \sum_{t=1}^{\infty} \beta^{t-1} H(g_t, I_t, \Omega) \quad (8)$$

subject to  $g_t = I_t + (1 - \delta)g_{t-1}$  and  $g_0 > 0$ , where

$$H(g_t, I_t, \Omega) = \beta \{P_{t+1}(g_t) \bar{\pi} f(g_t) + (1 - P_{t+1}(g_t)) \Omega(n)\} - I_t \quad (9)$$

is the autocrat's expected single-period payoff in period  $t$ . As before, I assume that

$H(g_t, I_t, \Omega)$  is strictly concave and twice differentiable.



Let  $V(g_t, \Omega)$  be the value function in period  $t$ . Then the Bellman equation is

$$V(g_t, \Omega) = \max_{I_t} \{H(g_t, I_t, \Omega) + \beta V(g_{t+1}, \Omega)\} \quad (10)$$

Putting  $g_{t+1} = I_{t+1} + (1 - \delta)g_t$  into (10) gives

$$V(g_t, \Omega) = \max_{I_t} \{H(g_t, I_t, \Omega) + \beta V(I_{t+1} + (1 - \delta)g_t, \Omega)\} \quad (11)$$

Since  $H$  is concave and differentiable, it follows that the value function  $V$  is concave and differentiable [see Stokey, Lucas, and Prescott (1989, p. 83-86)]. Indeed, given that  $H$  is strictly concave, this result also implies that the maximand on the right-hand-side of (11) is strictly concave and thus has a unique and differentiable interior solution.<sup>25</sup>

Given the observation in the preceding paragraph and noting that

$g_{t+1} = I_{t+1} + (1 - \delta)[I_t + (1 - \delta)g_{t-1}]$ ,<sup>26</sup> the first-order condition for  $I_t$  is:

$$\beta \{P'_{t+1}(\cdot)(\bar{c}f(\cdot) - \Omega(n)) + P_{t+1}(\cdot)\bar{c}f'(\cdot)\} - 1 + \beta(1 - \delta)V_g(g_{t+1}, \Omega) = 0, \quad (12)$$

where  $V_g(g_{t+1}, \Omega)$ , the derivative of the value function, is the shadow value of capital.

Given the strict concavity of the objective function, we can write the optimal solution to

(12) as  $I_t^* = I_t^*(g_{t-1}, \Omega)$ .<sup>27</sup>

Putting  $I_t^* = I_t^*(g_{t-1}, \Omega)$  into (12) and differentiating with respect to  $\Omega$  gives

$$\frac{\partial I_t^*}{\partial \Omega} = \frac{P'(\cdot) - (1 - \delta)\partial V_g / \partial \Omega}{H_{gg}} \quad (13)$$

<sup>25</sup>Notice also that the set  $\{(g_{t+1}, g_t): g_{t+1} = I_t + \delta g_t\}$  is convex and compact. Indeed, the problem in (8) is well-behaved [see also Ljungqvist and Sargent (2004, p. 87)]

<sup>26</sup>A unit of investment in period  $t$  contributes a unit of capital to the capital stock in period  $t$  but contributes  $(1 - \delta)$  units to the capital stock in period  $t+1$ .

<sup>27</sup>Note that since  $I_t$  affects the level of the capital stock in period  $t$  and beyond but does not affect  $g_{t-1}$ , the optimal investment in period  $t$  can only be a function of  $g_{t-1}$  but not  $g_j$ ,  $j = t, t+1$ , etc.

where  $H_{gg} \equiv P'_{t+1}(\cdot)(\bar{\tau}f(\cdot) - \Omega(n)) + 2P'_{t+1}(\cdot)\bar{\tau}f'(\cdot) + P_{t+1}(\cdot)\bar{\tau}f''(\cdot) < 0$  due to the strict concavity of  $H$ .<sup>28</sup>

Note that if capital depreciates fully after one period (i.e.,  $\delta = 1$ ), then the investment in period  $t$  would have no effect on the value function in period  $t+1$ , hence  $V_g(g_{t+1}) = 0$ . Then  $\partial V_g(g_{t+1})/\partial \Omega = 0$  and so, as expected, the derivative in (13) boils down to the derivative in (3).

If  $\partial V_g/\partial \Omega \neq 0$ , then the sign of the derivative in (13) is indeterminate which means that the sign of  $\partial I_t^*/\partial n$  is also indeterminate. However, the derivative is positive if its numerator is negative. A sufficient but not necessary condition for this to hold is  $\partial V_g/\partial \Omega > 0$  which implies that  $\partial V_g/\partial n < 0$ . Given this property of the value function,  $\partial I_t^*/\partial n = (\partial I_t^*/\partial \Omega)(\partial \Omega/\partial n) < 0$ . Alternatively, if  $\partial V_g/\partial \Omega < 0$ , so that  $\partial V_g/\partial n > 0$  and  $\partial V_g/\partial n > 0$  is sufficiently small (i.e., the absolute of  $\partial V_g/\partial \Omega$  is sufficiently small),<sup>29</sup> then the autocrat's investment in public capital is decreasing in the degree of ethnic diversity.

This gives the following proposition:

**Proposition 3:** *If the shadow value of public capital to an autocrat is either (a) decreasing in the degree of ethnic diversity, or (b) increasing in the degree of ethnic diversity but is sufficiently small, and (c) the autocrat's probability of being in power is decreasing in the stock of public capital, and (d) his payoff when he is out of power is decreasing in the degree of ethnic diversity, then the autocrat's investment in public capital is decreasing in the degree of ethnic diversity.*

<sup>28</sup> Since  $g_{t-1}$  is predetermined in period  $t$ , we do not have to worry about the effect of  $\Omega$  on  $g_{t-1}$ . Hence, the derivative in (13) makes sense (see also Stokey, Lucas, and Prescott (1989, p. 83 and p. 86).

<sup>29</sup> Although the problem is well-behaved, finding the value function is beyond the scope of this paper. Therefore, I only state the conditions that must be satisfied to obtain the desired result.

The result in this case of partial depreciation of capital is weaker because the marginal return from tax revenue due to investment in public capital is higher than in the case of full depreciation. This is because partial depreciation gives the autocrat a much longer planning horizon. However, under the conditions stated in proposition 3, the negative effect of ethnic fractionalization on economic performance will continue to hold.

### 3. Discussion and extensions

As noted in section 1, Collier (2000, 2001) and Besley and Kudamatsu (2007) provide some support for the theory in this paper. Before I discuss further applications and extensions, it is necessary to mention some caveats.

First, my claim that Collier (2000, 2001) and Besley and Kudamatsu (2007) lend some support to my theory needs an important qualification. Collier (2000, 2001) and Besley and Kudamatsu (2007) use a well-known measure of ethnic fractionalization, ELF, employed by Easterly and Levine (1997) and several other authors. ELF measures the probability that two randomly selected individuals in a country will belong to different ethno-linguistic groups and is higher the more equal is the size of the groups. For  $n$  equally sized groups,  $ELF = 1 - \sum_j (s_j)^2 = 1 - 1/n$ , where  $s_j$  is the proportion of the  $j$ -th ethnic group in the society. Clearly, ELF is increasing in  $n$ .

However, consider the following. Consider two counties, 1 and 2, each with three ethnic groups, A, B, and C. Suppose that the autocrat in each country comes from group A. In country 1 these groups have equal sizes so that, if the autocrat loses power, the probability that the new leader will come from a different ethnic group is  $2/3$ . In country 2, the proportions of the groups are  $s_A$ ,  $s_B$  and  $s_C$ , where  $s_B + s_C > 2/3$ . Hence my theory

will predict that country 2 will have a lower economic performance than country 1 because the autocrat in country 2 faces a higher risk of being governed by a leader from a different ethnic group if he loses power. Yet according to the ELF measure country 1 is more fractionalized.

This discrepancy arises because the autocrat is interested in the probability that, if he loses power, the new leader will come from an ethnic group different from his ethnic group while ELF measures the probability that two randomly selected individuals in a country will belong to different ethno-linguistic groups.<sup>30</sup> These are two different things except in some cases where they will be positively correlated. For example, when the ethnic groups are restricted to having equal sizes, then an increase in the number of groups is necessarily a decrease in the size of the autocrat's ethnic group. More generally, let the autocrat belong to the  $i$ -th ethnic group. Then the probability that he cares about is  $\pi = (1 - s_i)$ . We can rewrite ELF as  $ELF = 1 - (s_i)^2 - \sum_{j \neq i} (s_j)^2$ . A fall in  $s_i$  increases  $\pi$  but ELF will increase if and only if the fall in  $(s_i)^2$  is greater than the rise in  $\sum_{j \neq i} (s_j)^2$ . In what follows, I assume that ELF and  $\pi$  are positively correlated.<sup>31</sup>

Second, notice that the proportion of the autocrat's ethnic group in total population is  $1/n$ . Hence, *ceteris paribus*, the higher the degree of ethnic fractionalization, the smaller is the size of the autocrat's ethnic group. Therefore, the propositions could be re-stated in terms of the size of the autocrat's ethnic group. However, the effect of the size of the autocrat's ethnic group could go either way. For example, smaller ethnic

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<sup>30</sup>This argument is independent of the critique against ELF that ethnic heterogeneity does not necessarily imply linguistic heterogeneity.

<sup>31</sup>Montalvo and Reynal and Reynal-Querol (2005) discuss the limitations of the ELF measure and instead propose a measure of ethnic polarization, RQ, where  $RQ = 4\sum_j (s_j)^2(1 - s_j)$ . In general, RQ is positively correlated with ELF at high low levels of ELF (Montalvo and Reynal-Querol, 2002). However, RQ will also not necessarily be positively correlated with  $\pi$ .

groups may be able to solve the free-rider problem better than bigger ethnic groups (Olson, 1965). Hence a leader from a smaller ethnic may have a higher political survival than a leader from a bigger ethnic group.<sup>32</sup>

Third, the effect of the politics of fear studied in Padro I Miquel (2007) could make autocrats from smaller ethnic groups stronger. Consider a country with three ethnic groups, A, B, and C. Suppose that the autocrat is from ethnic group A which is smaller than B and C. Suppose also that B and C are of equal sizes. A member of a given ethnic group prefers a leader from his own ethnic group to a leader from a different ethnic group. However, suppose that ethnic group B gets along better with ethnic group A than with ethnic group C. So the members of ethnic group B prefer a leader from ethnic group A to a leader from group C. Then the effect of the politics of fear in Padro I Miquel's (2007) model could lead to an equilibrium where ethnic groups A and B would support the incumbent autocrat from ethnic group A. Indeed, if members of group C also prefer a leader from group A to a leader from group B, then one could imagine a situation where the politics of fear would result in all three groups supporting the autocrat from group A. This could be due to a very high level of mistrust between groups B and C. Hence in a world where political survival is based on one's ethnic group's support, an autocrat from a small ethnic group could still enjoy significant support. Therefore Padro I Miquel's (2007) argument could also apply to autocrats from small ethnic groups.

Finally, suppose the autocrat's probability of survival,  $P$ , was a function of the resources of his ethnic group and the resources of the other ethnic groups. In particular, suppose that when he invests in  $g$  units of public capital, his ethnic groups gets  $\lambda g$  units

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<sup>32</sup> Collier (2001, p. 141) notes that "[I]n eleventh-century England and Southern Italy the Norman ethnic group seized and maintained power to their own advantage despite constituting only some 2% of the population."

and the other ethnic groups get  $(1 - \lambda)g$  units, where  $0 < \lambda < 1$ .<sup>33</sup> Then we may write  $P = P(\lambda g, (1 - \lambda)g)$  where  $P$  is increasing in the first argument and decreasing in the second argument. In particular, suppose  $P(\lambda g, (1 - \lambda)g) = (\lambda g)^\alpha / [(1 - \lambda)g]^\gamma = \Delta g^{(\alpha - \gamma)}$  where  $\alpha, \gamma \in (0, 1)$  and  $\Delta \equiv \lambda^\alpha / (1 - \lambda)^\gamma$ . Then  $P$  is decreasing in  $g$  if  $\alpha < \gamma$  but increasing in  $g$  if  $\alpha > \gamma$ . The parameters,  $\alpha$  and  $\gamma$  may reflect differences in the internal organization, productivities, and cohesion of the autocrat's ethnic group relative to the other ethnic groups. If  $P$  is increasing in  $g$ , then the propositions derived in this paper will *not* hold. Ultimately, the effect of  $g$  on  $P$  is an empirical issue and partly depends on the autocrat's belief. As Acemoglu and Robinson (2006) argue the effect of political competition on the behavior of autocrats is non-monotonic; "... with a high degree of entrenchment, incumbents are willing to innovate, because they are not afraid of losing political power." However, based on the examples and arguments in Callaghy (1984), Evans (1995), Acemoglu and Robinson (2000, 2006) and other authors, I shall discuss applications of my results by assuming that  $P$  is actually decreasing or is perceived by the autocrat to be decreasing in  $g$ . It is indeed in such situations that my results are relevant. For example, the evidence mentioned in section 1 suggests an autocrat like Mobutu of Zaire fits this scenario (Callaghy, 1984).

Table III in Easterly and Levine (1997) shows that Zaire is the second most ethnically fractionalized country in the world. According to Acemoglu, Robinson, and

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<sup>33</sup>For example, the public good may be a road and the autocrat might award more road contracts to members of his ethnic group. Alternatively, different ethnic groups might benefit differently from public capital depending on their occupations (e.g., fishing versus farming) or differences in their ability to take advantage of public capital like public education, etc. For example, if an ethnic group has very low-quality public and secondary schools in its region, then it cannot make good use of the autocrat's investment in university or tertiary education.

Verdier (2004), Mobutu of Zaire came from a very small ethnic group and the social base of his regime was very small. Proposition 1 could explain why he governed so badly.

Furthermore, according to Acemoglu, Robinson, and Verdier (2004), 15-20% of the operating budget of Zaire went directly to Mobutu in the 1970s. Proposition 2 implies that the high ethnic diversity of Zaire explains why Mobutu embezzled such a high percentage of the national budget.

Given that the autocrat's maximizing behavior is such that national income is decreasing in ethnic fractionalization while his share of this income is increasing in ethnic fractionalization, propositions 1 and 2 imply that the autocrat is better off with a bigger share of a smaller national income than he is with a smaller share of a bigger national income. Indeed, it is clear from (7) that  $\partial \alpha_t^* / \partial g^* < 0$ . This makes sense given that the level of per capita income has an effect on the balance of power between the autocrat and his enemies. In this sense, the autocrat's relative political power,  $P_t / (1 - P_t)$ , is decreasing in the level of per capita income. Not surprisingly, a higher relative political power also translates into a higher relative economic power,  $\alpha_t^*$ . The desire to hold onto power in a world where his subjects are relatively much weaker may explain why an autocrat would rather be "first in a village than be second in Rome."<sup>34</sup> This is consistent with Evans (1995, p. 248) who argues that "[E]xtracting a larger share from a shrinking pie is not the optimal way to maximize revenues, but it may be the only way consistent with the survival of predatory states." Proposition 2 implies that this share is bigger in ethnically-diverse societies.

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<sup>34</sup> This statement is attributed to Julius Caesar by Plutarch in the "Life of Caesar": [http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Plutarch/Lives/Caesar\\*.html](http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Plutarch/Lives/Caesar*.html)

In Ghana, Jerry John Rawlings ruled as an autocrat from 1982-1992 and as a democrat from 1993 to 2000. One could argue that a reason why he agreed to democratization was a clause in the 1992 Ghanaian constitution which indemnified him against all actions taken during his autocratic rule. Such a clause is equivalent to a higher value of  $\Omega$ . Notice that due to the two-term limit in the constitution, Rawlings agreed to democratization mindful of the fact that he will not be in power after two terms. Such indemnity clauses will weaken the fear of ethnic discrimination on an autocrat's behavior. However, they are effective only if the autocrat believes that the society can commit to it because the clause may be a time-inconsistent provision in the constitution.<sup>35</sup> The autocrat's belief then depends on the degree of trust in the society. Arguably, more ethnically-diverse societies find it more difficult to build trust (Putnam, 2007).

Notice that since the autocrat imposes taxes on output after it has been produced, he cannot commit to any tax rate below  $\bar{\tau}$ . The citizens will not believe him. Therefore, in every period the tax rate will still be  $\bar{\tau}$ . So even if we were to assume that the citizens did not supply their labor inelastically, the analysis will still go through since in every period the labor supply will be  $L_t(\bar{\tau})$ .

As several authors have argued, one key form of political survival for autocrats is to engage in patronage transfers. This is at the core of the *selectorate* theory of de Mesquita et al (2003) and the *divide-and-rule* theory of Acemoglu et al. (2004). My model does not have explicit transfers from the autocrat to a subset of the society but one can imagine that the autocrat shares some of his rents with certain influential members of the society (e.g., the army). One could imagine that the autocrat gives a *fixed* amount of

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<sup>35</sup>There is a very negative countervailing effect of such clauses. The autocrat might govern very badly precisely because of the indemnity he will enjoy if he is out of power.



money,  $B$ , to members of the army. This amount is enough to keep the army loyal to the autocrat. Then the above analysis is equivalent to one in which the political survival probability is  $P_t = P_t(g_{t-1}, B)$ , where  $B$  is a shift parameter that is held fixed.

The autocrat's payoff when he is no longer in power may depend on the policies implemented while in power. Hence, we may write  $\Omega = \Omega(n, g_t)$ , where  $\Omega(n, g_t)$  is increasing in  $g_t$ . This formulation will not change my results, so long as  $\partial\Omega(n, g_t)/\partial n < 0$ .<sup>36</sup>

Finally, while one might argue that autocrats like Mobutu did not bother to invest in public capital because they could rely on foreign aid to bail them out, this does not change my key argument because autocrats like Mobutu could still have invested the foreign in public capital instead of using it for personal consumption. Since foreign aid is typically not given directly to the citizens but instead administered through the leaders of the recipient country, foreign aid plays the same role as tax revenue in the model.

#### **4. Conclusion**

The paper provides a plausible mechanism through which ethnic diversity could lead to a low per capita income in an autocracy. The novelty of this paper is to argue that ethnic diversity exacerbates an autocrat's fear of the negative effect of high income or income-enhancing investments like public education on his political survival. The combination of ethnic diversity and the fear of survival results in low economic performance in ethnically-diverse autocracies. The behavior of autocrats like Sani

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<sup>36</sup>It is important to note that the autocrat's belief that his payoff, if he is no longer in power, hinges on the ethnicity of the new leader need not be true. All that matters is that there is enough mistrust among ethnic groups such that the autocrat believes that his payoff when he is no longer in power hinges on the ethnicity of the new leader.

Abacha of Nigeria, Mobutu Sese Seko of Zaire, and Idi Amin of Uganda fits this explanation. Their own fears and mistrust of their citizens in very highly diverse ethnic societies meant that it was in their parochial interest to impoverish their subjects. In such ethnically-diverse societies, autocrats may be better off with a bigger share of a smaller national income than they are with a smaller share of a bigger national income.

Of course, behavior is influenced by a person's nature (i.e., preferences) and constraints (i.e., nurture). In this paper, I have focused on the external environment or constraints. To be sure, the external environment as captured by the society's cultural norms and values may affect a person's preferences. However, it is much harder to come up with testable hypothesis about preferences.<sup>37</sup> While an autocrat need not be a kleptocrat, I have shown that autocrats with similar preferences (i.e., those who are kleptocrats) will behave differently depending on the ethnic diversity of their societies.<sup>38</sup>

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<sup>37</sup> On this issue, de Mesquita et al. (2003, p. 164) observe that "... we recognize that some leaders are personally civic-minded. Such leaders will take the discretionary funds that constitute their opportunity for kleptocracy and spend them on projects that enhance general welfare in the society; they are not inclined to steal from the state. Our theory does not include an independent assessment of each leader's degree of civic-mindedness, although we do not deny its existence."

<sup>38</sup> As noted earlier, Besley and Kudamatsu (2007) argue that autocrats govern well when the power of the *selectorate* is independent of the autocrat remaining in office.

## References

- Acemoglu, D., and Robinson, J.A. (2000). Political losers as a barrier to economic development. *American Economic Review* 90: 126-130.
- Acemoglu, D., and Robinson, J.A. (2006). Economic backwardness in political perspective. *American Political Science Review* 100: 115-131.
- Acemoglu, D., and Robinson, J.A. (2008). Persistence of elites, power, and institutions. *American Economic Review* 98: 267-93.
- Acemoglu, D., Robinson, J.A., and Verdier, T. (2004). Kleptocracy and divide-and-rule: a model of personal rule. *Journal of the European Economic Association* 2: 162-192.
- Alesina, A., Baqir, R., and Easterly, W. (1999). Public goods and ethnic divisions. *Quarterly Journal of Economics* 114: 1243-1284.
- Alesina, A., and La Ferrara, E. (2000). Participation in Heterogeneous Communities. *Quarterly Journal of Economics* 115: 847-904.
- Alesina, A., and La Ferrara, E. (2005). Ethnic Diversity and Economic Performance. *Journal of Economic Literature* 43: 762-800.
- Ayittey, G. (1992). *Africa betrayed*. New York: St. Martin Press.
- Barro, R. (1999). Determinants of democracy. *Journal of Political Economy* 107: 158-183.
- Besley, T., and Kudamatsu, M. (2007). Making autocracy work. Unpublished manuscript, London School of Economics.
- Bluedorn, J.C. (2001). Can democracy help? Growth and ethnic divisions. *Economics Letters* 70: 121-126.
- Callaghy, T.M. (1984). *The state-society struggle: Zaire in comparative perspective*. New York: Columbia University Press.
- Collier, P. (2000). Ethnicity, politics, and economic performance. *Economics and Politics* 12: 225-245.
- Collier, P. (2001). Implications of ethnic diversity. *Economic Policy* 16: 129-166.
- De Mesquita, B. B., Smith, A., Siverson, R.M., and Morrow, J.D. (2003). *The logic of political survival*. Cambridge, Massachusetts, MIT press.

- Easterly, W., and Levine, R. (1997). Africa's growth tragedy: policies and ethnic divisions. *Quarterly Journal of Economics* 112: 1203-1250.
- Evans, P.B. (1995). *Embedded autonomy: states and industrial transformation*. Princeton University Press, Princeton, NJ.
- Glaeser, E.L., Ponzetto, G., and Shleifer, A. (2007). Why does democracy need education. *Journal of Economic Growth* 12: 77-99.
- Gugerty, M.K, and Miguel, E. (2005). Ethnic Diversity, Social Sanctions, and Public Goods in Kenya. *Journal of Public Economics* 89: 2325-2368.
- Jones, B.F., and Olken, B. (2005). Do leaders matter? National leadership and growth since World War II. *Quarterly Journal of Economics* 120: 835-864.
- Lipset, S.M. (1959). Some social requirements of democracy: economic development and political legitimacy. *American Political Science Review* 53: 69-105.
- Ljunqvist, L., and Sargeant, T.J. (2004). *Recursive macroeconomic theory*. Cambridge, Massachusetts: MIT Press.
- McGuire, M.C., and Olson, M. (1996). The economics of autocracy and majority rule: the Invisible hand and the use of force. *Journal of Economic Literature* 34: 72-96.
- Montalvo, J.G., and Reynol-Querol, M. (2002). Why ethnic fractionalization? Polarization, ethnic conflict, and growth. Universitat Pompeu Fabra. Unpublished manuscript.
- Montalvo, J.G., and Reynol-Querol, M. (2005). Polarization, potential conflict, and civil wars. *American Economic Review* 95: 796-816.
- Olson, M. (1965). *The logic of collective action: public goods and the theory of groups*. Cambridge, Mass.: Harvard University Press.
- Olson, M. (1993). Dictatorship, democracy, and development. *American Political Science Review* 87: 567-576.
- Padro I Miquel (2007). The control of politicians in divided societies: the politics of fear. *Review of Economic Studies* 74: 1259-1274.
- Putnam, R.D. (2007). *E Pluribus Unum: Diversity and Community in the Twenty-first Century*. *Scandinavian Political Studies* 30: 137-174.
- Robinson, J.A. (2001). When is a state predatory? Harvard University, Cambridge. Processed.

Robinson, J.A., and Torvik, R. (2005). White elephants. *Journal of Public Economics* 89: 197-210.

Sargent, T.J. (1987). *Dynamic macroeconomic theory*. Cambridge, Massachusetts: Harvard University Press.

Shen, L. (2007). When will a dictator be good? *Economic Theory* 31: 343-366.

Stokey, N.L., Lucas, R.E., with Prescott, E.C. (1989). *Recursive methods in economic dynamics*. Cambridge, Massachusetts: Harvard University Press.

Wintrobe, R. (1998). *The political economy of dictatorship*. Cambridge University Press.