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**DIFFERENT ARAB SPRINGS? THE POLITICAL ELITE  
AND DE FACTO POLITICAL POWER**

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**Working Paper No. 790**

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## Abstract

We identify conditions under which the political elite may overcompensate the loss of de jure power (as a result of political reform) by investing too much in de facto power so that the probability to have de facto power is higher under democracy than under non-democracy. We show that under certain assumptions the political elites may treat democracy and spending on citizens' education as substitutes. Based on the predictions of the model we try to examine the question of 'why the Arab Spring Movements in North Africa followed different paths.' We hypothesize that the interplay of political elites' de facto power, democracy, and education can provide useful insight that may help answer the question. The model's predictions are discussed in relation to the experiences of three North African countries, Egypt, Morocco and Tunisia).

**JEL Classifications:** D7, I2, O17

**Keywords:** Institutions, democracy, education, political elite, de facto political power, North Africa

## ملخص

نحدد في هذه الورقة الشروط التي بموجبها قد تعوض النخبة السياسية الخسارة بحكم القانون السلطة (نتيجة للإصلاح السياسي) من خلال الاستثمار في سلطة الامر الواقع بحيث أن احتمال أن يكون حكم الامر الواقع قوة أعلى في ظل الديمقراطية عنها في ظل اللاديمقراطية. وتبين لنا أنه في ظل افتراضات معينة قد تتعامل النخب السياسية مع فكرة الديمقراطية والإنفاق على التعليم المواطنين كبديل. واستنادا إلى التوقعات من النموذج، نحاول دراسة مسألة "لماذا سارت حركات الربيع العربي في شمال أفريقيا في طريق مختلف". ونفترض أن استخدام النخب السياسية لأفكار سلطة الامر الواقع، والديمقراطية، والتعليم يمكن أن توفر البصيرة المفيدة التي قد تساعد في الإجابة على هذا السؤال. وتناقش تنبؤات النموذج فيما يتعلق بتجارب ثلاثة بلدان شمال افريقيا وهي مصر والمغرب وتونس.

## 1. Introduction

The intensive campaign of civil resistance that led to the ousting of the Ben Ali regime in Tunisia in January 2011 ushered what has become known as the *Arab Spring*. Yet, the outcomes in other Arab countries where citizens have tried to follow in the footsteps of Tunisian citizens have been different. In Egypt, after a long wait, the military regime handed power over to the elected president but there were mass protests (in November and December 2012) against the draft constitution that was considered by many as president Morsi's adoption of sweeping powers. In Libya, the struggle for liberation from the Gaddafi regime included a brutal civil war. Similarly, in Syria, large numbers of citizens are still dying and it seems the country has entered civil war. In other Arab countries, large protests occurred but no revolution took place (e.g., Jordan and Morocco) but the incumbent regimes have introduced some reforms. Given the different outcomes in different countries, it may be more appropriate to refer to these forms of civil resistance as the *Arab Springs*.

What are the major factors that led to the Arab Spring and why so many (including the United States' Central Intelligence Agency) failed to predict it? More importantly, why did the *Arab Spring Movements* in North Africa follow different paths? Clearly, there is a significant knowledge gap in this area. Various aspects of economic and political developments in Arab countries over the last three decades or so suggest that widespread corruption, rent seeking and lack of human rights alone cannot explain it. If these were the primary explanation, then the regimes should have been toppled (successful civil resistance) in the 1980s or the early 1990s when corruption and violations of human rights were at their worst, especially in North Africa. We propose an alternative political economy-based explanation; one in which education of the masses and *de facto* power play a central role.

In this paper, we extend the Acemoglu-Robinson (2006) model of persistence of institutions in two ways. First we allow for nonlinearity of the elite's *de facto* power function and show that this leads to an over-compensation effect (to compensate for the loss of the Jure power resulting from democratization), so that the probability to have *de facto* power is higher under democracy than under non-democracy. Second, we extend the model to allow for expenditure on a public good, namely, education. The inclusion of education in the model can help explain why some dictators subsidize (or fund) education. We show that under certain conditions the political elite treat democracy and spending on citizens' education as substitutes, implying that public education expenditure may decline as a result of democratization. We discuss how the theoretical results might help explain the diverse outcomes of the 'Arab Spring' across Arab countries.

The paper is organized as follows. After an introduction in Section 1, Section 2 develops the static model, characterizes its equilibria, and derives propositions based on elites' decisions regarding investing in *de facto* power, subsidizing citizens' education, and undertaking political reform (democratization). Section 3 outlines the implications of the theoretical results and discusses how differences in the political regimes and their preferences may explain differences in the forms of civil resistance, focusing on Egypt, Morocco and Tunisia. Section 4 concludes.

## 2. The Model<sup>1</sup>

We follow the characterization of society in Acemoglu and Robinson (2006). Society has two groups: A finite number ( $M$ ) of the elites ( $e$ ) and a continuum 1 of citizens ( $c$ ). Since the elites are a minority group, they gain more from controlling *de facto* political power and they are more efficient in doing so (Mosca, 1939; Olson, 1965; Acemoglu and Robinson, 2008).

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<sup>1</sup> This section draws heavily on an earlier draft published as ICER working paper 18-2009 (Baliamoune-Lutz, 2009a).

We assume that only those who control de facto political power can control economic power. This implies that those who hold de facto political power are the only ones capable of setting up economic institutions in the country, including economic reforms (such as market regulation, financial liberalization, trade reform, and exchange rate liberalization).

We first describe how the de facto political power of an elite member  $i$  is generated. Let  $\theta^i$  represent the amount invested by elite member  $i$  in activities that would increase de facto power ( $P^e$ ). For all  $\theta^i \geq 0$ , let  $g(\theta^i) > 0$ ,  $g'(\theta^i) > 0$ . The political power generating function  $g(\theta^i)^2$  is defined as the increase in the de facto power of the elite as a result of the contribution  $\theta^i$  of member  $i$  of the elite. Thus,

$$P^e = \phi \sum_{i \in \mathcal{Q}} g(\theta^i) \quad (1)$$

where  $(\phi > 0)$ .

Next, let  $E$  represent the elite's spending on education of the citizens. We assume that the citizens do not undertake activities to increase their de facto power so that  $\theta$  for the citizens is equal to zero.

Following Acemoglu and Robinson (2006), we define  $\omega$  as a random variable with a continuous distribution function  $F(\cdot)$  and density function  $f(\cdot)$  which is strictly decreasing ( $f'(\cdot) < 0$ ).  $I(S = D)$  is an indicator function taking the value of 1 when the state of the regime is democracy.  $\eta$  is the extent of the political power of the citizens that is derived from democracy, and it is strictly positive ( $\eta > 0$ ).

The total political power of the citizen is given by the following equation.

$$P^c = \omega + E + \eta I(S = D) \quad (2)$$

Equation (2) shows that the citizens can increase their political power from three different sources. The citizens may manage to solve the collective action problem and come to a consensus that might allow them to have greater de facto political power (with  $\omega$  having a positive effect). Second, more spending by the elites on education ( $E$ ) enhances citizens' political participation. Third, more democracy (a higher value for  $\eta$ ) implies more (de jure) political power for citizens.

The description of the game stages is as follows. In stage 1,  $\eta$  is set. In stage 2, the elite choose  $\theta^i$  and  $E$  simultaneously. In stage 3,  $\omega$  will be realized. The game is solved by backward induction to result in a subgame perfect equilibrium.

In regime  $S$ , where  $S$  refers to the state of the regime, democracy ( $S = D$ ) or non-democracy ( $S = N$ ), the power of the elite is given by

$$P^e(\theta^i, \{\theta^j(S)\}_{j \in \mathcal{Q}, j \neq i} | S) = \phi \sum_{j \in \mathcal{Q}, j \neq i} \theta^j(S) + g(\theta^i) \quad (3)$$

The elite will have de facto political power under non-democracy if

$$P^e(\theta^i, \{\theta^j(S)\}_{i \in \mathcal{Q}, j \neq i} | S) \geq \omega + E + \eta I(S = D) \quad (4)$$

Holding economic power yields returns  $R$  to the elite. Thus, given  $S = N$ , the elite member  $i$  will choose  $\theta^i$  to maximize the following function

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<sup>2</sup> Note that this paper presents an equation for the de facto political power of the elite that is different from that in Acemoglu and Robinson (2006 and 2008) in that we assume that the political power is generated by a general function of investment ( $\theta$ ) in power. Obviously,  $g(\theta) = \theta$  is a sub-case of this general case.

$$-\theta^i + F(\phi(\sum_{j \in \emptyset, j \neq i} g(\theta^j(N)) + g(\theta^i(N))) - E)R^i(E) \quad (5)$$

where the second term ( $F(\cdot)$ ) represents the probability of the elite member having de facto political power greater than the power of the citizens after taking into consideration spending on (subsidy of) education of the citizens.

Solving for the first-order condition with respect to  $\theta^i$ , we get

$$-1 + \phi f(\phi(\sum_{j \in \emptyset, j \neq i} g(\theta^j(N)) + g(\theta^i(N))) - E)R^i(E)g'(\theta^i(N)) \leq 0 \quad (6)$$

and (with complementary slackness)  $\sum_{i \in \emptyset} \theta^i(N) \geq 0$

Under non-democracy ( $S = N$ ) and given the assumptions and conditions introduced earlier, the first-order condition leads to the optimal level of investing in de facto political power such that

$$\phi f(\phi(\sum_{j \in \emptyset, j \neq i} g(\theta^j(N)) + g(\theta^i(N))) - E)R^i(E) = \frac{1}{g'(\theta^i(N))} \quad (7)$$

Using the same approach, we derive the conditions under which investing in de facto political power is the optimal decision (for the elite) assuming democracy ( $S = D$ ); i.e., taking into account the extent of citizens' de jure political power ( $\eta$ ) which is derived from democracy. The elite member  $i$  will choose  $\theta^i$  to maximize the following function

$$-\theta^i + F(\phi(\sum_{j \in \emptyset, j \neq i} g(\theta^j(D)) + g(\theta^i(D))) - \eta - E)R^i(E) \quad (8)$$

Solving for the first-order condition with respect to  $\theta^i$ , we get

$$-1 + \phi f(\phi(\sum_{j \in \emptyset, j \neq i} g(\theta^j(D)) + g(\theta^i(D))) - \eta - E)R^i(E)g'(\theta^i(D)) \leq 0 \quad (9)$$

and (with complementary slackness)  $\sum_{i \in \emptyset} \theta^i(D) \geq 0$

Thus,

$$\phi f(\phi(\sum_{j \in \emptyset, j \neq i} g(\theta^j(D)) + g(\theta^i(D))) - \eta - E)R^i(E) = \frac{1}{g'(\theta^i(D))} \quad (10)$$

(7) and (10) imply that

$$\frac{f(\phi(\sum_{j \in \emptyset, j \neq i} g(\theta^j(N)) + g(\theta^i(N))) - E)}{f(\phi(\sum_{j \in \emptyset, j \neq i} g(\theta^j(D)) + g(\theta^i(D))) - \eta - E)} = \frac{g'(\theta^i(D))}{g'(\theta^i(N))} \quad (11)$$

## 2.1. Political power

In this section, we try to identify the conditions under which the elite would decide to invest more in de facto political power (i.e., incur positive amounts of the cost  $\theta$ ). An interesting question that is worth exploring is whether the elite's investment in de facto political power will be only up to the point where it would enable the elite to offset the loss in de jure political power that results from democracy or whether the elite might *overcompensate* for this loss. The latter could help explain why a country may have weaker (lower quality) economic institutions under democracy relative to their level under non-democracy. In such

cases, the elite's overcompensation for the loss of the jure power would lead to greater inefficiency under democracy (as a result of the elite overinvesting in de facto political power) than would occur in the Acemoglu and Robinson's (2006) model, where the elite invests in  $\theta$  in order to *offset* the loss in the jure political power and so such society experiences (economic) institutional persistence. Thus, our model allows for the possibility of deterioration—not just persistence—of economic institutions.

$$\text{Let } F(N) = F(\phi(\sum_{j \in \mathcal{P}, j \neq i} g(\theta^j(N)) + g(\theta^i(N))) - E); F(D) = F(\phi(\sum_{j \in \mathcal{P}, j \neq i} g(\theta^j(D)) + g(\theta^i(D))) - \eta - E)$$

**Proposition 1.** It follows from Equation (11) that

if  $g''(\cdot) = 0$ ,  $\theta^i(D) > \theta^i(N)$  and  $F(D) = F(N)$ .

if  $g''(\cdot) < 0$ ,  $\theta^i(D) > \theta^i(N)$  and  $F(D) < F(N)$ .

Proof:

See the Appendix A.

(a) and (b) imply that under democracy, the elite will invest in  $\theta$  to try to maintain de facto political power. These results are similar to those reported in equation (11) in Acemoglu and Robinson (2006). Under (b) we have the 'standard' case where more democracy leads to a decrease in the probability that the political elite will have de facto political power.

**Proposition 2.**

Given equation (11), it follows that there exists some function  $g(\cdot)$  for which  $g''(\cdot) > 0$  such that

$\theta^i(D) > \theta^i(N)$  and  $F(D) > F(N)$ .

Proof:

See the Appendix A.

Since  $g$  is increasing at an increasing rate, introduction of democracy induces the political elite to invest in  $\theta$  to such a degree that de jure power loss due to democracy is *overcompensated* by the increase in de facto political power. This is an important result. It implies that the political elites invest to a point where the probability that they will have de facto power is higher under democracy ( $F(D) > F(N)$ ), and thus may cause greater inefficiency. An obvious context where we might see a convex power returns to political investment is the case of the discovery of significant reserves of natural resource such as oil. If we assume that  $g(\cdot)$  depends on the opportunities for rent seeking, then a surge in such opportunities would accelerate the change in  $g$ . For example, Vicente (2010) tries to assess the role of natural resources in determining corruption in São Tomé and Príncipe by exploring the oil discovery announcements in the country in 1997–1999. He finds results that are “indicative of increased competitiveness for state resources, namely those that are accessible through the political channel.” The author also argues that the increased corruption in customs may be the result of increased private consumption by the elite (which controls oil revenues).

## 2.2. Education

We now examine how the elite choose the amount of spending on (subsidy of) the education of citizens. We assume imperfect capital markets, implying that the citizens are not able to borrow in order to invest in human capital (education). We also assume that education ( $E$ )

directly increases productivity and total product/income ( $Y$ ) for the elites. Rent (return to the elite,  $R$ ) is defined as income net of total spending on education.<sup>3</sup>

We define the following.

$$Y = \sum_{i \in \varphi} Y^i \text{ (elites' aggregate income); } R = \sum_{i \in \varphi} R^i ;$$

$$E = \sum_{i \in \varphi} E^i \text{ (aggregated investment (or spending) in the education of citizens).}$$

We assume that spending on education ( $E$ ) affects the rents ( $R$ ) to the elite  $i$ .

$$\text{Let } R^i(E) = Y^i(E) - E ; Y^i(E) > 0; Y^{i'}(E) > 0.$$

To simplify the analysis, we focus on the case of democracy ( $S = D$ ). Taking the derivative of equation (8) with respect to  $E^i$  we get

$$-\phi f(\phi(\sum_{j \in \varphi, j \neq i} g(\theta^j(D)) + g(\theta^i(D))) - \eta - E) R^i(E) + F(\phi(\sum_{j \in \varphi, j \neq i} g(\theta^j(D)) + g(\theta^i(D))) - \eta - E) (-1 + \frac{\partial Y}{\partial E^i}) \leq 0 \quad (12)$$

$$\text{and (with complementary slackness) } \sum_{i \in \varphi} E^i \geq 0$$

### Proposition 3.

Case 1: If  $\frac{\partial Y^i}{\partial E^i} \leq 1; \forall E^i \geq 0$ , then no education investment (the elite will not support citizens' education).

Case 2: If  $\lim_{E \rightarrow 0} \frac{\partial Y^i}{\partial E^i} = \infty; \frac{\partial^2 Y^i}{\partial E^{i2}} < 0; \forall E_i \geq 0$ ; and  $\frac{\partial Y^i}{\partial E^i}$  at  $Y(Y) < 1$ ,

then an internal solution (for investing in education) exists.<sup>4</sup>

Proof:

See the Appendix A.

Under case 1, an increase in  $\eta$  (more political power for citizens under democracy) implies that the left hand-side of equation (12) is reduced so that if the political regime does not go back to being less democratic and there is no increased investment in de facto political power (no change in  $\theta$ ), the elite will reduce spending on education. By reducing  $E$ , the elite loses the gain in  $Y$  that is derived from the education of citizens but increases  $R$  by reducing spending on education. The elite will keep doing this until investment in education is zero. Given that the marginal effect of  $E$  on  $Y$  is less than one,  $R$  with no spending on education should be higher.

Given the growing empirical literature (Barro, 1991; Acemoglu et al., 2005; Glaeser et al., 2007) on the links between democracy and education, and in particular the conflicting findings in this literature, it would be useful to present comparative statics with respect to  $\eta$ .

<sup>3</sup> Implicitly,  $E$  is spending on human capital as well as a production factor and has a direct influence on  $P^c$  at the same time, instead of showing these links in separate equations. This is for simplicity and does not affect the quality of the results.

<sup>4</sup> Both cases may hold under democracy and non-democracy (we just remove  $\eta$  under non-democracy). Note that other outcomes are possible, depending on the concrete functional form of  $Y(E)$ .

We are interested in looking at how  $E$  changes when  $\eta$  increases. In other words, we want to identify the effect of an increase in the extent of the political power of citizens (that is derived from democracy) on the equilibrium level of spending on education by the elite. In order to do this we need to find  $dE^i/d\eta$  and evaluate its sign. We can try to formulate the explanation of what exactly happens under case 2 by applying the *implicit function theorem* to see if we can sign the expression  $dE^i/d\eta$ .

Define  $K$  as the LHS of equation (12). Then, using the implicit function theorem, the marginal effect of the degree of political power of citizens (from democracy) on education can be expressed by the following equation.

$$\frac{dE^i}{d\eta} = -\frac{\partial K / \partial \eta}{\partial K / \partial E^i} = \left[ \frac{\phi^2 f'(\phi(\sum_{j \in \Omega^i, j \neq i} g(\theta^j(D)) + g(\theta^i(D))) - \eta - E) R^i(E) - F(\phi(\sum_{j \in \Omega^i, j \neq i} g(\theta^j(D)) + g(\theta^i(D))) - \eta - E) (-1 + \frac{\partial Y}{\partial E^i})}{\phi^2 f'(\phi(\sum_{j \in \Omega^i, j \neq i} g(\theta^j(D)) + g(\theta^i(D))) - \eta - E) R^i(E) + F(\phi(\sum_{j \in \Omega^i, j \neq i} g(\theta^j(D)) + g(\theta^i(D))) - \eta - E) (\frac{\partial^2 Y^i}{\partial E^{i2}})} \right] \quad (13)$$

**Proposition 4.** Assuming  $\eta$  (de jure political power of citizens) is specified, an increase in  $\eta$  causes the elite to reduce the equilibrium level of spending on citizens' education, as long as  $\partial^2 Y^i / \partial E^{i2} < 0$  (as long as there are diminishing returns to education).

Proof (sketch):

It follows from equation (13) that in the case where  $\partial Y^i / \partial E^i$  is greater than one (which must hold for positive values of  $E$ ), the numerator in the ratio inside the brackets is negative. If the denominator in the equation (13) is also negative, then  $dE^i/d\eta$  will be negative. An increase in citizens' political power (i.e., in democracy) will be accompanied by less spending on citizens' education. The opposite happens if the denominator in the equation (13) is positive, then  $dE^i/d\eta$  will be positive. Under which circumstances will the denominator of the ratio inside the brackets be negative and under which cases will it be positive?

If we assume that  $\partial^2 Y^i / \partial E^{i2}$  is negative, then we have  $dE^i/d\eta < 0$ ; i.e., the effects of  $\eta$  on  $E$  is unambiguously negative (note that  $Y'''(E)$  is  $< 0$  was the condition under proposition 3-case 2 for an internal solution for spending on education to occur). On the other hand, if we assume that  $Y'''(E)$  is  $> 0$ , then the second term in the denominator (inside the brackets) will be positive and we cannot sign  $dE^i/d\eta$  without further assumptions. Depending on these assumptions,  $dE^i/d\eta$  could be either positive or negative. Given these results, we should expect to find that as democracy strengthens, some countries would invest more in education, while others would invest less. Indeed, this seems to be consistent with the mixed results on the effects of democracy on education in the empirical literature and with the fact that some dictators support public education.

### 3. Discussion

#### 3.1 Interpretation of the results

The interplay of political reform, de facto political power and citizens' education can lead to multiple outcomes. We may have a situation where the elites choose lower (or no) subsidy for citizens' education and no or very little democratization (outcome 1). A second situation would be a society characterized by no democratization and elites' support for public education (outcome 2). A third case is when the elite choose partial democratization but invest in the education of the masses, while investing heavily in other instruments (military

sector and/or ownership of major economic sectors) in order to protect their de facto powers<sup>5</sup> (outcome 3). Another case is one where there is low or partial democratization with some support for citizens' education and no significant investment in other technologies to maintain de facto power (outcome 4). In this case, the levels of democratization and education are not high enough to pose an immediate threat for the political elite. Finally, we may have a situation where the elite support both citizens' education and their political participation (outcome 5), and thus the country may move along a path of sustainable democratization and less unequal income distribution (assuming more citizens' education reduces inequality).<sup>6</sup> Theoretically, each case would lead to a different development path and could have different implications with regard to the nature of political revolution and social uprising. Overall, the results imply that the cross-country empirical evidence on the *positive* association between democracy and growth, democracy and education (particularly in countries where the elite has de facto political power), and democracy and economic policy could be statistically insignificant or mixed (reflecting the mixed results in the empirical literature). Figures 1-3 in Appendix B seem to provide some support to these conjectures.

Figure 1 suggests that the association between democracy and growth is negative and statistically insignificant. Figure 2a indicates that there is a positive association between democracy and schooling. However, the interplay of ethnolinguistic fractionalization with democracy has a negative relationship with education (Figure 2b). To the extent that the political elite in countries with high fractionalization may try to invest a lot (overinvest) in maintaining control of de facto power as democratization proceeds, we interpret this as a crude validation of proposition 4; i.e., in such countries more democracy results in the elite investing less in the education of the masses. Figures 3a and 3b suggest that there is no positive association between democracy and good macroeconomic policy.

Together, the propositions presented in this paper suggest that the political elite may find an optimal  $\eta$ , then decide on the levels of investment in de facto political power ( $\theta$ ) and citizens' education ( $E$ ), given the other parameters. Under Proposition 1, the elite decide to invest in de facto power to have control of overall political power while the citizens are offered de jure power (democracy). Proposition 2 implies that the elite may overinvest in securing de facto power to the point where the probability to have de facto political power is greater under democracy. If the de facto power is used to maintain economic institutions that favor the elites, we may have inefficiencies and lower growth (see Acemoglu and Robinson, 2008). Proposition 3 implies that the elite's decision to support or not support public education may depend on whether education has significant effects on the elite's rents. An interesting corollary of Proposition 4 is that if  $dE^i/d\eta$  is negative, then subsidizing the education of the masses and democratization (political reform) might be viewed by the elite as substitutes. Education may increase political participation of citizens and thus may reduce de facto political power of the elite, particularly if political participation enables citizens to have a greater say in the reform of economic institutions. Education may also allow citizens to access traditionally elite-dominated economic activities and thus would reduce rents, which would also reduce de facto power of the elite. An interesting question arises. Under which circumstances would spending on public education (education of the masses) have strong positive effects on elite's income (rents)? The answer may depend (at least in part) on the

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<sup>5</sup> Recall that we noted earlier that education leads to citizens demanding democracy.

<sup>6</sup> This list of possible outcomes is non-exhaustive. One can think of several other cases that would include various degrees of democratization and investment in citizen's education, along with various instruments (if needed) to maintain de facto power.

stages of development and the size of the middle class. In the following, we provide a brief description of the mechanics that might be involved.<sup>7</sup>

In the early stages of development education may not add significantly to the elites' income as society relies more on agriculture and the elites have low (or no) incentives to subsidize the education of the masses. As income per capita rises (medium development stage; middle income countries) education begins to gradually become a necessity (or a normal good) for at least two reasons. More people can now invest in education, including private education, so that the notion of 'education as a luxury good' is no longer strictly valid as larger numbers of individuals are able to have access to education. Second, as the structure of the economy changes with the share of agriculture declining and the share of manufacturing and services rising—and thus requiring more skilled labor (higher human capital)—education now becomes essential to getting a job in industries that use skilled labor (productive sector). Yet, while some individuals from the masses may be able to invest in education (as income rises), the political elites may also see a significant incentive to support more education in the country in order to satisfy the needs of the business elites, particularly in the presence of imperfect financial markets where the non-rich are often credit-constrained. This is because the political elite and the business elite in developing countries, more often than not, tend to support each other. In this case, we would expect to see higher spending on education in middle-income countries.

Additionally, the size of the middle class may play a crucial role. If education leads to stronger political participation and the size of the middle class increases so that large groups which were formerly part of the masses (citizens) can now solve the collective action problem, then the elites may lose de facto political power and it might be too costly for them to regain such power. In this case, in order to maintain control of de facto power, the political elite may choose to significantly reduce spending on education. The political elite may need to use co-optation of small groups from the educated or politically active citizens to maintain de facto power. In order to achieve this, the elite may focus education subsidy (spending) on a specific groups, thus creating a small middle class that would support the political elites (Bourguignon and Verdier, 2000).

In theory, in the absence of information on the values of the parameters for the relevant functions we cannot unambiguously determine what happens to democracy and spending on education when the elites simultaneously decide education and democracy. An important implication for empirical analysis is that when examining cross-country experiences we might find conflicting results depending on the countries studied. We might find countries that increased education and democracy (where the two could be viewed as complementary); others that restricted political freedom and other democratic institutions and significantly increased spending on public education, or improved democratic institutions but restricted spending on education (mainly in order to maintain a small middle class); and countries that restricted both spending on education and political reform.

### ***3.2 Implications for the nature of social unrest and political uprising***

The propositions derived from the theoretical model developed in this paper suggest that the political elite may overinvest in de facto political power. In some cases, this investment takes the form of military spending so that the political elite have control over a large military sector. In countries where this occurs, uprisings could become very violent as the military may be used against the citizens. A large military sector can also serve as a deterrent against widespread civil resistance. In addition, the role of the military may depend on the outcome

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<sup>7</sup> This is obviously speculative. However, the arguments presented in this discussion appear to be consistent with some stylized facts on stages of development and the role of the middle class. See, for example, Easterly (2001) and Llavador and Oxoby (2005).

(from the five identified outcomes) that applies prior to the uprising or revolution.<sup>8</sup> As an example of the differences in the size of the military sector across Arab countries, we examined differences in the share of armed forces personnel in the total labor force in four North African countries. Figure 4 shows that Libya and Egypt have large military sectors, while Tunisia has the smallest.

Prior to its *Jasmine revolution* in 2010, Tunisia appeared to be experiencing *outcome 2*; no democracy but strongly subsidized education of the masses (the regime seemed to view democracy and education as substitutes).<sup>9</sup> In addition, the political elite controlled a large share of the economy but invested little in the military sector. Both the high levels of educated citizens and the small military sector may have contributed significantly to making the revolution relatively nonviolent and swift. If Tunisia continues moving along a path of sustainable democratization, it would be the first country in the region that combines both high human capital levels and a good level of democracy (*outcome 5*).

Prior to the 2011 revolution, Egypt appeared to be in the neighborhood of *outcome 3*; low or partial democratization with some support for the education of the masses, but with a large military sector (which helped the regime maintain de facto power and low democratization) that traditionally protected the political elite. This situation may explain, at least partially, why it took much longer (than it did in Tunisia) in Egypt for the uprising to succeed in overthrowing the Mubarak regime. The size of the military sector, combined with the pure dictatorship of the Gaddafi regime, could also explain the extreme violence during the Arab Spring uprising in Libya.

Finally, under King Hassan II, Morocco was for many years an oligarchic society (*outcome 1*), where the political elite supported low subsidy for citizens' education and no or little democracy. The Hassan II regime also invested significantly in both the economic and military sectors to strengthen its control of de facto power (which reinforced the monarch's jure power). This implies that for some of the regime's 38 years, Morocco also experienced *outcome 3*.<sup>10</sup> The situation has changed somewhat under King Mohammed VI. Indeed, the current king of Morocco has been pushing for more education for his people and, during the 2010-2011 uprisings in the region, has offered to share some powers with the Prime Minister. If the power-sharing process leads to significant democratization, improvements in human development, and reduction in the control of economic sectors by the political elite in Morocco, then the country would be moving towards *outcome 4*. Based on the model presented in this paper, we may speculate that if investment in citizen's education is enhanced but democratization is weak and control of economic sectors by the political elite is not reduced, Morocco would look more like Tunisia on the eve of the Jasmine Revolution, with the notable difference that the size of the military sector is significantly larger in Morocco, which may either deter the citizens from revolting or lead to violent confrontations.

#### **4. Conclusion**

We have examined the interplay between political institutions, de facto political power, and the education of the masses. We did so by presenting a theoretical model that makes the equilibrium spending on education and democratization depend on the elite's de facto power. The inclusion of education in the model can help explain why some dictators support spending on public education and other public goods. The analysis yields some interesting results. First, the model identifies conditions under which the elite may overcompensate the

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<sup>8</sup> For an interesting recent discussion of the civil-military relations in North Africa, see Lutterbeck (2013).

<sup>9</sup> See Baliaoune-Lutz (2009b).

<sup>10</sup> See Addison and Baliaoune-Lutz (2006) for a discussion of economic policies and institutional reforms implemented in the Maghreb countries (including Morocco and Tunisia) in the last 20 years or so of the 20<sup>th</sup> century.

loss of de jure power by investing too much in de facto political power, so that the probability to have de facto power is higher under democracy than under non-democracy. The over-investment in de facto power may be one explanation as to why in the early stages of democratization (partial democracy) growth may be even lower (and economic policies worse) than under autocracy. Second, the results indicate that we may have multiple outcomes depending on the interplay between political reform, de facto political power, and public education. In particular, we show that under certain conditions the political elite may treat democracy and spending on citizens' education as substitutes. Overall, the predictions of the model seem to be consistent with the results in Bourguignon and Verdier (2000). If the goal of the elite is to maintain (inefficient) economic institutions and policies favoring the political elite, then the model clearly shows that the control of de facto power is crucial and, in order to avoid this, political reform should also put in place instruments to maintain good economic institutions.<sup>11</sup>

Using the predictions of the theoretical model in this paper, we tried to address this question: Why did the *Arab Spring Movements* in North Africa follow different paths? We hypothesized that the interplay of political elites' de facto power, democracy, and education can provide useful insight that may help answer this question. The model's predictions are discussed in relation to the experiences of three North African countries; namely, Egypt, Morocco and Tunisia.

The model we presented in this paper may appear to be similar to McGuire and Olson's (1996) model of stationary versus roving bandits. However, there is at least one major difference between the two models. While in McGuire and Olson's model, the stationary bandit's main objective is to maximize rent, in our model the political elite's primary objective is to maximize de facto power and the elite face a tradeoff between security (de facto power) and gains (rents derived from using an educated labor force—a productive public good). Furthermore, the predictions of the present model are sharply different from those derived by McGuire and Olson (1996). Our model clearly allows for the possibility that there may be less spending on public goods (in this case education) under democracy than there is under autocracy. McGuire and Olson's model does not allow for this possibility. The authors show that there is more spending on public goods under (super-encompassing) democracy than under autocracy.

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<sup>11</sup> This, of course, is easier said than done since the political elite would halt or reverse democratization (political reform), if they have the power to do so, in order to maintain their preferred economic institutions.

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## Appendix A

### Proof of Proposition 1

Proposition 1.a: If  $g''(.) = 0$ , then  $\theta^i(D) > \theta^i(N)$  and  $F(D) = F(N)$ .

If  $g''(.) = 0$ , then the cost for the elite of investing in the de-facto political power is linear. For any value of  $\eta$  greater than zero, suppose that  $\theta^i(D) = \theta^i(N)$ , then  $g'(\theta^i(D)) = g'(\theta^i(N))$  i.e. the RHS of equation (11) equals one, while the LHS of equation (11) is less than one. As  $\theta^i(D)$  is increased, the LHS of equation (11) increases until both sides are equalized and both sides are equal to one. QED.

Proposition 1.b: If  $g''(.) < 0$ ,  $\theta^i(D) > \theta^i(N)$  and  $F(D) < F(N)$ .

If  $g''(.) < 0$ , then investing in the de-facto political power exhibits diminishing returns. For any value of  $\eta$  greater than zero, suppose that  $\theta^i(D) = \theta^i(N)$ , then  $g'(\theta^i(D)) = g'(\theta^i(N))$  i.e. the RHS of equation (11) equals one, while the LHS of equation (11) is less than one. As  $\theta^i(D)$  is increased, the LHS of equation (11) increases while the RHS decreases until both sides are equalized and both sides are less than one. QED.

### Proof of Proposition 2

If  $g''(.) > 0$ ,  $\theta^i(D) > \theta^i(N)$  and  $F(D) > F(N)$ .

If  $g''(.) > 0$ , then investing in de-facto political power exhibits increasing returns. For any value of  $\eta$  greater than zero, suppose that  $\theta^i(D) = \theta^i(N)$ , then  $g'(\theta^i(D)) = g'(\theta^i(N))$  i.e. the RHS of equation (11) equals one, while the LHS of equation (11) is less than one. As  $\theta^i(D)$  is increased, the denominator of the LHS of equation (11) decreases while the numerator of the RHS increases.

From the proof of Proposition 1.a it also follows that if  $g''(.)$  is sufficiently close to zero, then increasing  $\theta^i(D)$  will lead to a convergence of the RHS and the LHS of equation (11), respectively, until both sides are equalized at a value greater than one (more generally,  $g''(.)$  has to be small relative to  $f'(.)$ ). QED.

### Proof of Proposition 3

Case 1:

It is easy to see from equation (12) that if  $\frac{\partial Y^i}{\partial E^i} \leq 1$ , then the LHS of equation (12) will be strictly negative. Thus, the elite will not invest any amount in subsidizing the education of the citizens;

$$\sum_{i \in \varphi} E^i = 0. \text{ QED.}$$

Case 2:

It follows from equation (12) that if  $\frac{\partial Y^i}{\partial E^i} > 1$ , then it is possible to have the LHS of the equation equal to zero.

$$\text{If } \lim_{E \rightarrow 0} \frac{\partial Y}{\partial E^i} = \infty; \frac{\partial^2 Y^i}{\partial E^{i2}} < 0; \forall E_i \geq 0; \text{ and } \frac{\partial Y^i}{\partial E^i} \text{ at } Y(Y) < 1;$$

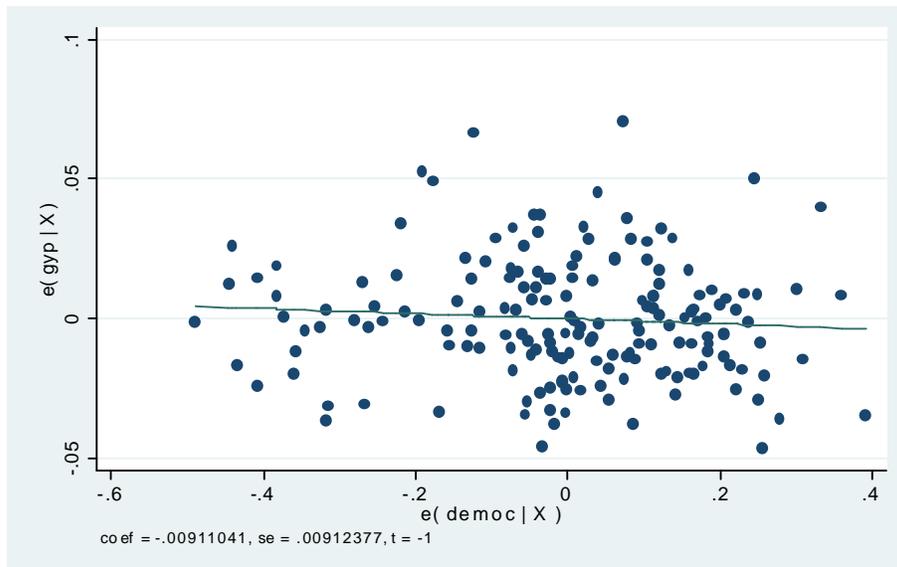
then an internal solution (for investing in education) exists.

If  $\lim_{E \rightarrow 0} \frac{\partial Y}{\partial E^i} = \infty$ , as  $E$  approaches zero, then there are very large (increasing) returns to scale and the elite will invest in education. The assumptions that  $\frac{\partial^2 Y^i}{\partial E^{i2}} < 0$  and that  $\partial Y^i / \partial E^i$  at  $Y(Y) < 1$  imply that an optimal level of investment in the education of the citizens within the budget constraint ( $E < Y(E)$ ) exists. At such point the returns to the elite from the education of the citizens, other things being equal, are maximized. Equation (12) shows that in this case, the term  $F(.)(-1 + \frac{\partial Y}{\partial E^i})$  will be positive which allows the LHS of equation (12) to be zero and  $\sum_{i \in \phi} E^i$  to be  $> 0$ . QED.

## Appendix B

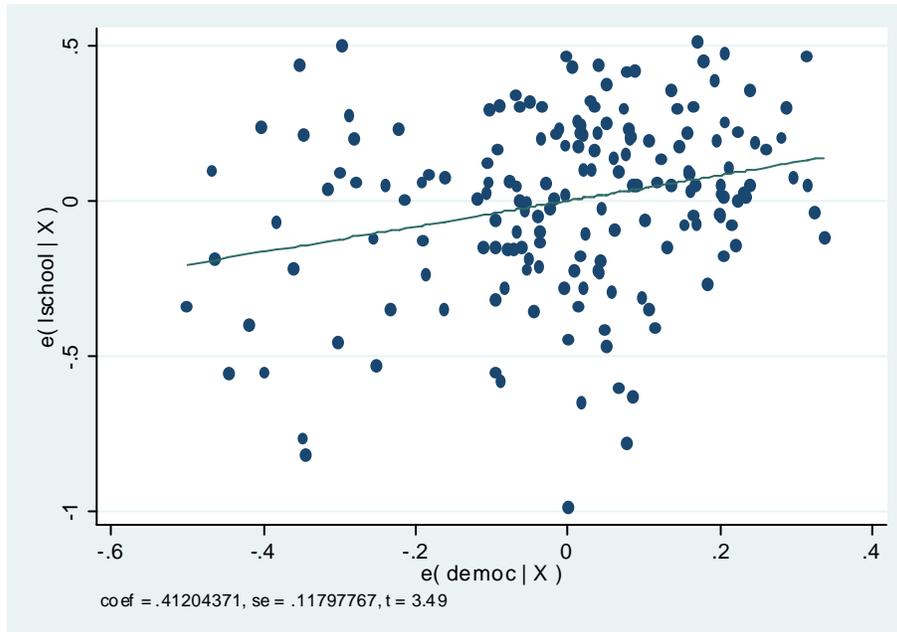
All data used to generate the following plots (Figures 1-3) are from Baum and Lake (2003).

**Figure 1: Democracy and Growth**

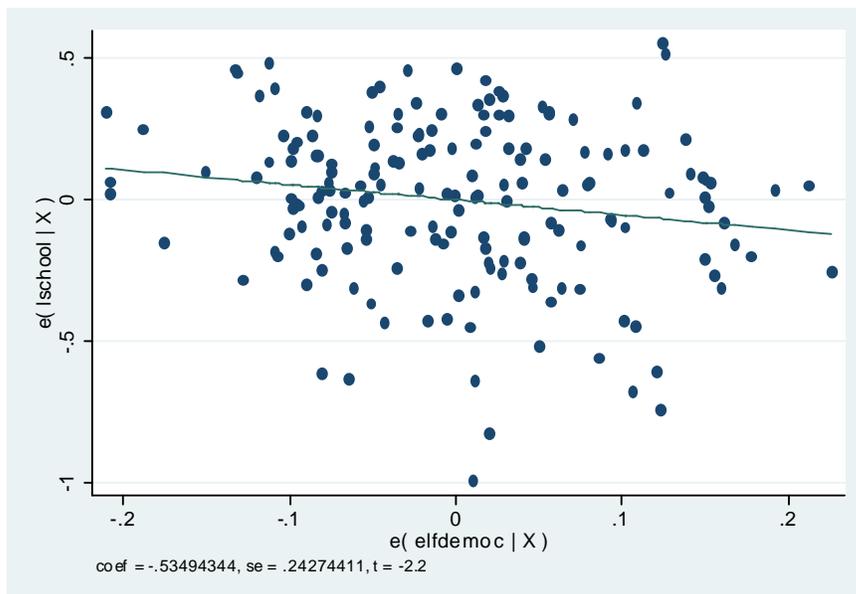


These are added-variable plots (avplots generated by Stata) from a growth equation where we control for other variables (initial income, financial depth, ethnic fractionalization, a dummy for the 1970s and for Latin America). Complete estimation results may be obtained from the author upon request.

**Figure 2.a: Education and Democracy**

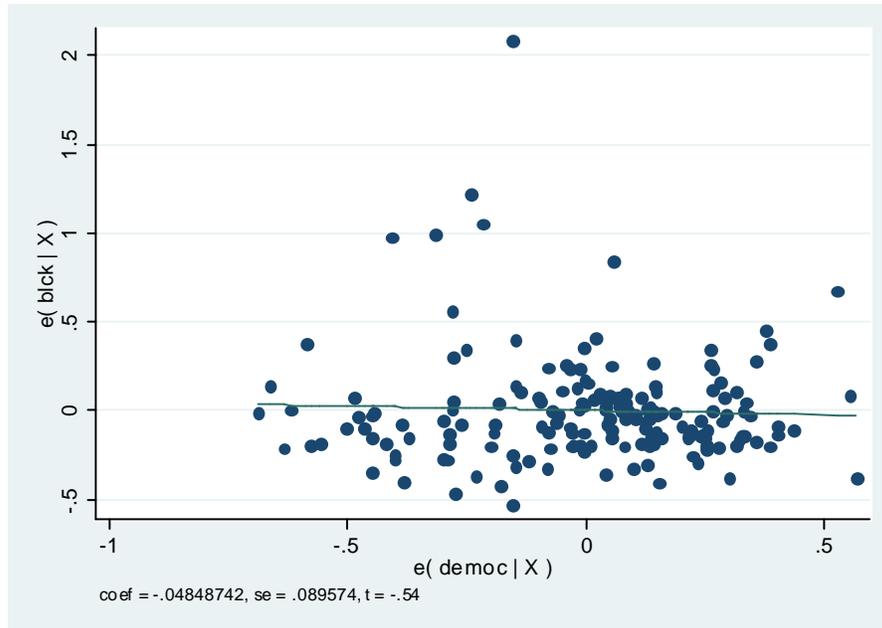


**Figure 2.b: Education and Ethnic Fractionalization X Democracy**

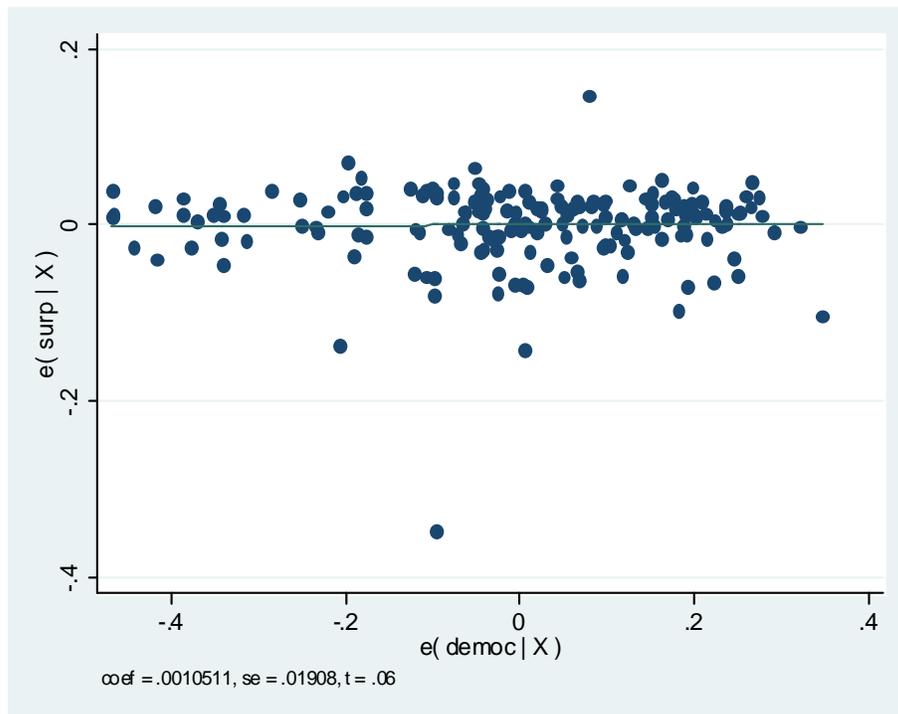


These are added-variable plots (avplots generated by Stata) from an equation where the dependent variable is average years of school attainment (after controlling for other relevant variables). Complete estimation results may be obtained from the author upon request.

**Figure 3.a: Democracy and Economic Policy (Black Market Premium)**

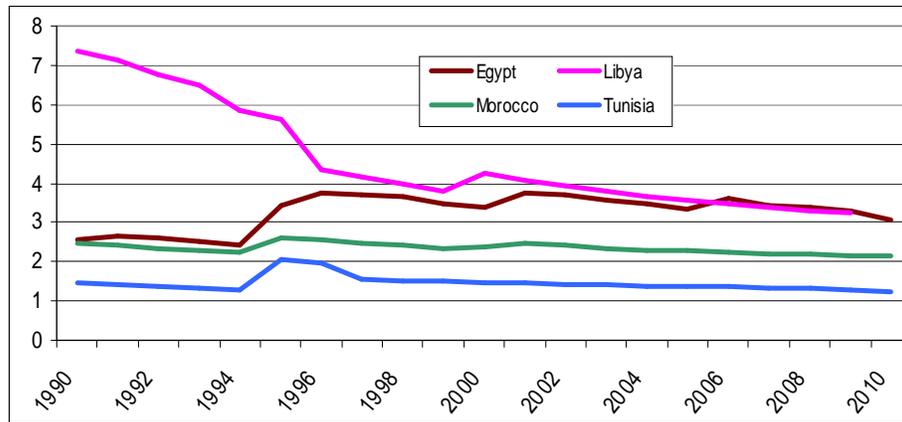


**Figure 3.b: Democracy and Economic Policy (Budget Surplus)**



These are added variable plots (avplots generated by Stata) from an equation where the dependent variable is the indicator of economic policy—black market exchange rate premium or fiscal surplus as a ratio of GDP— (after controlling for other relevant variables). Complete estimation results may be obtained from the author upon request.

**Figure 4: Armed Forces Personnel (% of Total Labor Force)**



Source of data: World Development Indicators database online (World Bank, 2012).