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## **OxCarre Research Paper 101**

# **The Political Economics of the Arab Spring**

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## Abstract

The Arab Spring has led to very different outcomes across the Arab world. I present a highly stylized model of the Arab Spring to better understand these differences. In this model, dictators from the ethnic or religious majority group concede power if their country is oil-poor, but can stay in power by bribing the people if their country is oil-rich. Dictators from the minority group often rely on other members of their group to repress protests and to fight the majority group if necessary. These predictions are consistent with observed outcomes in Egypt, Libya, Saudi Arabia, Syria, Tunisia, and elsewhere.

**Keywords:** Arab Spring, political transitions, repression, civil conflict, oil, divided societies

**JEL classification:** D72, D74

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# 1 Introduction

The Arab Spring started with protests and demonstrations in Tunisia in December 2010, and has spread across North Africa and the Middle East.<sup>1</sup> Most dictators initially responded with a mixture of repression and concessions. Nevertheless there are large differences in their responses and, consequently, the outcomes of the Arab spring across the region. In Tunisia and Egypt, the dictators conceded power after mostly peaceful protests lasting less than one month, thereby allowing for political transitions from dictatorships to more democratic regimes. Shortly thereafter, the king of Saudi Arabia announced an extra US-\$ 36 billions in benefits to the Saudi people, which was generally viewed as an attempt to bribe them not to protest.<sup>2</sup> In Libya and Syria, the dictators responded to protests and demonstrations with political violence, which led to full-blown civil wars. These large differences in the dictators' responses seem puzzling. After all, these dictators and ruling families had all been in power for decades, and they had always shown a large appetite for personal enrichment, but little or no appetite for democracy and civil liberties.

Without denying that many country-specific factors may have influenced the behavior of each single Arab dictator, the goal of this paper is to understand the general pattern of the dictators' responses across the Arab world. For that purpose I present a highly stylized model. In this model the dictator has two options to prevent democratization and to stay in power: he can try to bribe all citizens to stop protesting, or to rely on members of his own ethnic or religious group to repress the protests and to fight other groups if necessary. In equilibrium his behavior depends on the country's oil revenues, and whether or not the dictator belongs to

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<sup>1</sup>Malik and Awadallah (2011) provide an insightful discussion of the economic underpinnings of the Arab Spring.

<sup>2</sup>See, e.g., "Saudi Arabia: The royal house is rattled too." *The Economist*, March 3, 2011; and "Arab Economies: Throwing money at the street." *The Economist*, March 10, 2011.

the ethnic or religious majority. A dictator from the majority group can never afford the violent support of the members of his own group, because they know that a democratic majority government would also channel oil revenues towards them, and because political violence is more chaos prone than continued protests. The dictator therefore chooses to bribe all citizens if the country is sufficiently oil-rich, but has no means to avoid democratization and to stay in power if the country is oil-poor. For a dictator from the minority group, it is however cheaper to buy the violent support of the members of his group than to bribe all citizens. Their support is relatively cheap because they benefit considerably less from democratization than the members of the majority group. Therefore, a dictator from the minority group is likely to choose the violent option unless oil revenues are very low.

Let us briefly compare these theoretical predictions with the different responses of the Arab dictators discussed above. Egypt and Tunisia have little oil, and their dictators were from the religious and ethnic majority. The model predicts that these dictators would have to concede power. Saudi Arabia is oil-rich, and the ruling family from the religious and ethnic majority. The model predicts that they would bribe the people. Libya and Syria were both characterized by dictators belonging to minority groups: Asad belongs to Syria's Alawi minority, and Qadhafi came from one of many small tribes in highly fractionalized Libya. Moreover, oil revenues were intermediate in Syria, and relatively high in Libya. The model predicts that civil wars become a likely outcome. The observed outcomes coincide with the model's predictions in all these cases. Below I take a more systematic look at all Arab countries that were dictatorships in 2010. There I confirm that the pattern emerging from my model is by and large consistent with the observed differences in the dictators' responses and, consequently, the outcomes of the Arab Spring across North Africa and the Middle

East.

This paper contributes to several strands of the political economy literature. First, it is related to contributions on political transitions from dictatorships to more democratic regimes. Important contributions with an economic perspective include Lipset's (1959) modernization theory, and Acemoglu and Robinson's (2001, 2006) theory of political transitions.<sup>3</sup> A main difference between my model and their theory is that the citizens who are initially excluded from power are divided into different ethnic or religious groups in my model, but form a homogenous group in their theory. This difference is one of the reasons why political transitions are always peaceful on the equilibrium path in their theory, but can be peaceful or violent in my model. Further, natural resource revenues play no prominent role in their theory, but in my model and, arguably, in many Arab countries. Other contributions on political transitions find empirical evidence for anti-democratic properties of oil (e.g., Ross, 2001; Crespo Cuaresma et al., 2011; Tsui, 2011). This finding is consistent with the theoretical predictions of my model.

Second, my paper is related to theoretical contributions on the effects of a country's ethnic composition on the political struggle for power (e.g., Hodler, 2006; Padró i Miquel, 2007; Esteban and Ray, 2008, 2011; Morelli and Rohner, 2010; Caselli and Coleman, 2012). Some of these contributions also focus on how the interplay between ethnic composition and natural resource revenues shapes this struggle, but they look neither at political transitions, nor at the role of political leaders and their ethnic or religious group affiliation.

From all these contributions, the model of Padró i Miquel (2007) is probably closest to mine. He studies how a dictator can use transfer payments to his own ethnic

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<sup>3</sup>See Acemoglu and Robinson (2006) for a discussion of other contributions on political transitions.

group to stay in power and to generate personal rents.<sup>4</sup> I follow Padró i Miquel in assuming that the dictator can discriminate between ethnic groups when allocating rents, and that the support from his own group is necessary for the dictator to stay in power. My model differs from Padró i Miquel's model in various respects. In my model, the support from the own group is not sufficient for the dictator to stay in power; the relevant public revenues are oil rather than tax revenues; and equilibrium behavior strongly depends on whether the dictator belongs to the majority or the minority group. Moreover, I focus on political transitions rather than on a dictator who might be replaced by another dictator. All these differences make my model well suited to shed light on the political economics of the Arab Spring.

The remainder of the paper is structured as follows: Section 2 introduces the model, section 2 solves it, section 3 provides some anecdotal evidence, and section 5 briefly concludes.

## 2 The model

There is a country with a dictator and a population of mass 1. The population consists of  $\pi_A \in (1/2, 1)$  members of majority group  $A$ , and  $\pi_B = 1 - \pi_A$  members of minority group  $B$ . The dictator  $D_I$  belongs to group  $I = A, B$ . The state gets oil revenues  $R \geq 0$ , and can discriminate across citizens based on their group affiliation  $i = A, B$  when distributing these revenues.

In this country, there is a window of opportunity for democratization due to some exogenous events, the Arab spring. The dictator can try either peacefully or violently to prevent democratization and to stay in power. His peaceful option is to bribe all citizens. Thereby he offers transfer payments  $T_I^{bA}$  and  $T_I^{bB}$  to members of groups  $A$

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<sup>4</sup>See, e.g., Burgess et al. (2010), and Franck and Rainer (2012) for evidence of ethnic favoritism.

and  $B$ , respectively. The members of each group can accept or decline the dictator's offer. If they all accept, the protests stop and the dictator can stay in power. If the members of at least one group reject the dictator's offer, continued protests lead to democratization with probability  $p_D > 0$ , and to chaos with probability  $1 - p_D$ .

The dictator's violent option is to pay the other members of his own ethnic group to repress the protests, and to fight the minority group if necessary. Thereby he offers transfer payments  $T_I^{vI}$  to each member of group  $I$  (but no transfer payments to the members of the other group). The members of group  $I$  can either accept or decline the dictator's offer. If they accept, there is political violence in the form of repression or civil conflict. The outcome of political violence is uncertain: With probability  $p_I > 0$ , the dictator and his group can repress the protest or defeat the other group, such that the dictator can stay in power. With probability  $p_J > 0$ , where  $J \neq I$  and  $J = A, B$ , this other group is successful with its ongoing protests and potentially violent struggle for democratization. Finally, with probability  $1 - p_I - p_J$ , political violence leads to chaos. If the members of group  $I$  reject the dictator's offer, continued protests lead to democratization with probability  $p_D$ , and to chaos with probability  $1 - p_D$ .

I put the following restrictions on the probabilities  $p_A$ ,  $p_B$  and  $p_D$ :

**Assumption 1** (i)  $\frac{1}{2} \leq p_A + p_B < p_D < 1$ , and (ii)  $\frac{p_I}{p_J} \geq \frac{\pi_I}{\pi_J}$ , where  $J \neq I$  and  $J = A, B$ .

Restriction (i) implies that the probability of chaos after political violence,  $1 - p_A - p_B$ , is larger than the probability of chaos after continued protests not met by political violence,  $1 - p_D$ . It further implies that the probability of chaos is in both cases less than one half. That is, I assume that the window of opportunity for democratization goes along with circumstances in which the country is not too likely to decent into

chaos. Restriction (ii) implies that group  $I$ , which supports the dictator and may have disproportionate or even exclusive access to the state's military equipment, has a technological advantage in conflict and violence, such that its relative winning probability  $\frac{p_I}{p_I + p_J}$  is at least as high as its population share  $\pi_I$ .

The dictator's payoff is equal to the oil revenues  $R$  minus the promised transfer payments if he remains in power, and zero otherwise. The citizens' payoff consists of several components, and depends on their group affiliation  $i = A, B$ . Each citizen gets the promised transfer payment if the dictator stays in power, and (pecuniary or non-pecuniary) benefits  $\delta_i \geq 0$  in case of democratization. I assume  $\delta_A \geq \delta_B$ , as group  $A$  is the majority group.<sup>5</sup> In case of democratization, the majority group  $A$  also ensures that the oil revenues  $R$  are distributed among its group members.<sup>6</sup> All citizens get a payoff of zero in case of chaos.

To simplify the exposition, I will say that the dictator can afford the peaceful option if he can afford transfer payments  $T_I^{bA}$  and  $T_I^{bB}$  that are accepted by the members of both groups; that he can afford the violent option if he can afford transfer payments  $T_I^{vI}$  that are accepted by the members of group  $I$ ; and that he has to concede power if he cannot afford any of these two options.

### 3 Equilibrium

I study separately the cases in which the dictator comes from the majority and the minority group, respectively. In both cases I use backward induction to solve for the subgame-perfect Nash equilibrium.

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<sup>5</sup>Results do not depend on the assumption that  $\delta_B \geq 0$ . They would be qualitatively equivalent, but more cumbersome to present, if I just assumed  $\delta_A \geq \delta_B$  and  $\bar{\delta} = \pi_A \delta_A + \pi_B \delta_B \geq 0$ .

<sup>6</sup>It would be straightforward to endogenize this distribution of the oil revenues across groups in a majority voting setup.



### 3.1 Dictator from majority group $A$

Suppose for now that the dictator comes from majority group  $A$ , i.e.,  $I = A$ . We look at his two options in turn, starting with the peaceful option. Members of group  $i = A, B$  accept transfer payments  $T_A^{bi}$  and stop protesting if these payments exceed the expected payoff from continuing protests, which is  $p_D \left( \frac{R}{\pi_A} + \delta_A \right)$  for members of group  $A$ , and  $p_D \delta_B$  for members of group  $B$ . Hence, the lowest accepted transfer payments are  $\tilde{T}_A^{bA} = p_D \left( \frac{R}{\pi_A} + \delta_A \right)$  and  $\tilde{T}_A^{bB} = p_D \delta_B$ , respectively. These transfer payments lead to aggregate costs  $C_A^b = \pi_A \tilde{T}_A^{bA} + \pi_B \tilde{T}_A^{bB} = p_D (R + \bar{\delta})$ , where  $\bar{\delta} = \pi_A \delta_A + \pi_B \delta_B$  is the average benefit from democratization.

The dictator's violent option is to pay the other members of majority group  $A$  to repress the protests, and to fight the minority group if necessary. If the members of group  $A$  accept transfer payment  $T_A^{vA}$ , their payoff is equal to  $T_A^{vA}$  with probability  $p_A$ , and to  $\frac{R}{\pi_A} + \delta_A$  with probability  $p_B$ , and zero with probability  $1 - p_A - p_B$ . If they reject it, their payoff is again  $\frac{R}{\pi_A} + \delta_A$  with probability  $p_D$ , and zero with probability  $1 - p_D$ . Hence the lowest transfer payment they accept is  $\tilde{T}_A^{vA} = \frac{p_D - p_B}{p_A} \left( \frac{R}{\pi_A} + \delta_A \right)$ , leading to aggregate costs  $C_A^v = \pi_A \tilde{T}_A^{vA}$ .

The oil revenues  $R$  and the aggregate costs  $C_A^b$  and  $C_A^v$  determine whether the dictator can afford these options.

**Proposition 1** *Dictator  $D_A$  can afford the peaceful option if and only if  $R \geq \hat{R}^b \equiv \frac{p_D}{1-p_D} \bar{\delta}$ , but he can never afford the violent option.*

**Proof:**  $D_A$  can afford the peaceful option if and only if  $R \geq C_A^b$ , which holds if and only if  $R \geq \hat{R}^b$ .  $D_A$  could afford the violent option if and only if  $R \geq C_A^v = \frac{p_D - p_B}{p_A} (R + \pi_A \delta_A)$ , which cannot hold because Assumption 1 implies  $\frac{p_D - p_B}{p_A} > 1$ , and because  $\pi_A \delta_A \geq 0$ . ■

Proposition 1 shows that a dictator from majority group  $A$  is never able to offer

transfer payments  $T_A^{vA}$  that are sufficient to motivate members of his own group to engage in political violence against the other group. The reason is that he can at most offer to distribute all oil revenues  $R$  among them if they keep him in power, while they get these oil revenues plus additional benefits  $\delta_A$  in case of democratization. In addition, political violence also raises the probability that the country descends into chaos.

Proposition 1 also shows that the dictator can afford the peaceful option if and only if oil revenues  $R$  are so high he can bribe all citizens. The required transfer payments  $\tilde{T}_A^{bA}$  and  $\tilde{T}_A^{bB}$  and, consequently, the necessary oil revenues  $\hat{R}^b$  increase in the citizens' democratization benefits  $\bar{\delta}$ , and the probability  $p_D$  that continued protests lead to democratization rather than chaos. If the dictator can afford the peaceful option, his expected payoff is  $\Pi_A^b = R - C_A^b = (1 - p_D)R - p_D\bar{\delta}$ , which is positive whenever the peaceful option is affordable. Hence, we can now characterize his equilibrium behavior:

**Proposition 2** *In equilibrium, dictator  $D_A$  has to concede power if  $R < \hat{R}^b$ , and chooses the peaceful option with transfer payments  $\tilde{T}_A^{bA}$  and  $\tilde{T}_A^{bB}$  if  $R \geq \hat{R}^b$ .*

**Proof:** These results directly follow from Proposition 1, and  $\Pi_A^b \geq 0 \Leftrightarrow R \geq \hat{R}^b$ . ■

Proposition 2 shows that the equilibrium behavior of a dictator from majority group  $A$  is straightforward. He bribes all citizens so that he can stay in power if oil revenues  $R$  are sufficiently high, but has no alternative to conceding power otherwise. This simple equilibrium behavior is the direct consequence of the impossibility of buying violent support from members of the majority group.

### 3.2 Dictator from minority group $B$

Suppose now that the dictator comes from minority group  $B$ , i.e.,  $I = B$ . The peaceful option – bribing – requires the same transfer payments for a dictator of group  $B$  as for a dictator of group  $A$ :  $\tilde{T}_B^{bA} = p_D \left( \frac{R}{\pi_A} + \delta_A \right)$  and  $\tilde{T}_B^{bB} = p_D \delta_B$ . Consequently, it also leads to aggregate costs  $C_B^b = p_D(R + \bar{\delta})$ , and an expected payoff of  $\Pi_B^b = (1 - p_D)R - p_D \bar{\delta}$ .<sup>7</sup>

We now look at the dictator's violent option, which is to pay the other members of minority group  $B$  to engage in political violence. Their expected payoff is  $p_B T_B^{vB} + p_A \delta_B$  if they accept the offered transfer payment, and  $p_D \delta_B$  otherwise. Hence the lowest offer they accept is  $\tilde{T}_B^{vB} = \frac{p_D - p_A}{p_B} \delta_B$ , which leads to aggregate costs  $C_B^v = \pi_B \tilde{T}_B^{vB} = \frac{p_D - p_A}{p_B} \pi_B \delta_B$ , and an expected payoff for the dictator of  $\Pi_B^v = p_B(R - C_B^v) = p_B R - (p_D - p_A) \pi_B \delta_B$ .

The oil revenues  $R$  and the aggregate costs  $C_B^b$  and  $C_B^v$  again determine whether the dictator can afford these two options:

**Proposition 3** *Dictator  $D_B$  can afford the peaceful option if and only if  $R \geq \hat{R}^b$ , and the violent option if and only if  $R \geq C_B^v \equiv \hat{R}^v$ . It holds that  $\hat{R}^b > \hat{R}^v$ .*

**Proof:** The statements in the first sentence directly follows from the proof of Proposition 1 and the main text above. It remains to prove  $\hat{R}^b > \hat{R}^v$  or, equivalently,  $Q_1 \equiv p_B p_D \bar{\delta} - (1 - p_D)(p_D - p_A) \pi_B \delta_B > 0$ . Given  $\bar{\delta} \geq \delta_B$ ,  $Q_1 > 0$  must hold whenever  $Q_2 \equiv p_B p_D - (1 - p_D)(p_D - p_A) \pi_B > 0$ . Given that  $Q_2$  increases in  $p_A$  and  $p_B$ , and that Assumption 1 requires  $p_A + p_B \geq \frac{1}{2}$ ,  $Q_2 > 0$  must hold whenever  $Q_3 \equiv p_B p_D - (1 - p_D)(p_D + p_B - \frac{1}{2}) \pi_B > 0$ . Given that  $Q_3$  increases in  $p_B$  since

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<sup>7</sup>Observe that  $\tilde{T}_B^{bB} < \tilde{T}_B^{bA}$ . If the dictator could not discriminate against members of his own group, aggregate costs  $C_B^b$  would increase from  $p_D(R + \bar{\delta})$  to  $p_D \left( \frac{R}{\pi_A} + \delta_A \right)$ , requiring higher oil revenues  $R$  for the peaceful option to be affordable, and making this option less attractive if affordable.

$p_D \in (\frac{1}{2}, 1)$ , and Assumption 1 requires  $p_B \geq \pi_B(p_A + p_B) = \frac{1}{2}\pi_B$ ,  $Q_3 > 0$  must hold whenever  $Q_4 \equiv p_D - (1 - p_D)(2p_D + \pi_B - 1) > 0$ . Given that  $Q_4$  decreases in  $\pi_B$  and  $\pi_B \in (0, \frac{1}{2})$ ,  $Q_4 > 0$  must hold whenever  $Q_5 \equiv p_D - (1 - p_D)(2p_D - \frac{1}{2}) > 0$ . It is easy to verify that  $Q_5 > 0$  holds for all  $p_D \in (\frac{1}{2}, 1)$ , implying  $Q_n > 0$  also for  $n = 1, 2, 3, 4$ , and, consequently,  $\hat{R}^b > \hat{R}^v$ . ■

Proposition 3 shows that, unsurprisingly, the peaceful option is again affordable if and only if  $R \geq \hat{R}^b$ , while the violent option is affordable if and only if  $R \geq \hat{R}^v$ . The required oil revenues  $\hat{R}^v$  increase in the size  $\pi_B$  of the group that the dictator needs to compensate for their violent support, and in their democratization benefits  $\delta_B$ , which determine the compensation each group member demands.  $\hat{R}^v$  also tends to be high if the probability of chaos after political violence,  $1 - p_A - p_B$ , is large relative to the probability of chaos after continued protests not met by political violence,  $1 - p_D$ .

Proposition 3 further delivers a strong result:  $\hat{R}^b > \hat{R}^v$ . This result implies that the violent option is cheaper than the peaceful option for a dictator from minority group  $B$ . This result is in stark contrast with our earlier result that a dictator from majority group  $A$  can never afford the violent option. The reason for these contrasting results is the difference in what members of groups  $A$  and  $B$  can expect from democratization. Members of majority group  $A$  know that they are well off after democratization, making their violent support for repressive polices unaffordable. Members of minority group  $B$  benefit less from democratization, as the majority government will not channel any oil revenues towards them. Their violent support for repressive polices is thus relatively cheap to get. In fact it is even cheaper than bribing all citizens, because doing so again requires partially compensating members of group  $A$  for all the perks they get in case of democratization.

Having discussed when the dictator can afford the two options, we again turn to his equilibrium behavior:

**Proposition 4** *In equilibrium, dictator  $D_B$  has to concede power if  $R < \hat{R}^v$ , and chooses the violent option with transfer payments  $\tilde{T}_B^{vB}$  if  $R \in [\hat{R}^v, \hat{R}^b]$ , and also if  $R > \hat{R}^b$  and  $p_B \geq 1 - p_D$ . If  $R > \hat{R}^b$  and  $p_B < 1 - p_D$ , dictator  $D_B$  chooses this violent option when  $\delta_A, \delta_B, \pi_A, p_A, p_B$  and  $p_D$  are relatively high, and  $R$  and  $\pi_B$  relatively low, and the peaceful option with transfer payments  $\tilde{T}_B^{bA}$  and  $\tilde{T}_B^{bB}$  otherwise.*

**Proof:**  $D_B$ 's equilibrium behavior for  $R \leq \hat{R}^b$  follows directly from Proposition 3, and  $\Pi_B^b \geq (>)0 \Leftrightarrow R \geq (>)\hat{R}^b$ , and  $\Pi_B^v \geq (>)0 \Leftrightarrow R \geq (>)\hat{R}^v$ . To look at his equilibrium behavior for  $R > \hat{R}^b$ , let  $\Delta\Pi \equiv \Pi_B^v - \Pi_B^b = [p_B - (1 - p_D)]R + p_D\bar{\delta} - (p_D - p_A)\pi_B\delta_B$ . Observe that  $p_D\bar{\delta} > (p_D - p_A)\pi_B\delta_B$  since  $p_D > p_D - p_A$  and  $\bar{\delta} > \pi_B\delta_B$ . Hence,  $\Delta\Pi < 0$  if  $p_B \geq 1 - p_D$ , while  $\Delta\Pi$  can be positive or negative if  $p_B < 1 - p_D$ . The last statement in Proposition 4 follows from the positive partial derivatives of  $\Delta\Pi$  with respect to  $\delta_A, \delta_B, p_A, p_B$  and  $p_D$ , and the negative partial derivatives of  $\Delta\Pi$  with respect to  $\pi_B$  and  $R$  given  $p_B < 1 - p_D$ . ■

The equilibrium behavior for oil revenues  $R \leq \hat{R}^v$  is straightforward: If the dictator cannot afford any option because  $R < \hat{R}^v$ , he has to concede power; and if he can only afford the less expensive violent option because  $R \in [\hat{R}^v, \hat{R}^b]$ , then he chooses this option.

If the dictator can afford both options, i.e., if  $R > \hat{R}^b$ , he faces a trade-off: The peaceful option allows him to stay in office with higher probability, while the violent option is less expensive and, therefore, leads to a higher payoff if he can stay in office. A priori, it is unclear which option is more attractive. Proposition 4 shows that the violent option is always more attractive if the dictator's group is relatively strong in political violence, in particular, if  $p_B \geq 1 - p_D$ . The dictator only seriously consider

both options if oil revenues are so high that  $R > \hat{R}^b$  and his group so weak that  $p_B < 1 - p_D$ .<sup>8</sup> He may then choose the peaceful option if oil revenues  $R$  are high, democratization benefits  $\delta_A$  and  $\delta_B$  relatively small, and his group  $B$  at the same time relatively large in size (high  $\pi_B$ ) and rather weak in political violence (low  $p_B$ ).

The general pattern emerging from Propositions 3 and 4 is that both the budget constraints and the incentives of a dictator from the minority group make it likely that he responds with political violence to the Arab spring if the country is not too oil-poor.

## 4 Anecdotal evidence

I now compare the dictators' behavior predicted by my model with their behavior observed across the Arab world. For that purpose, Table 1 provides information on oil revenues, the largest religious and ethnic groups, and the dictators' religious and ethnic affiliations for all Arab countries in the Middle East and North Africa (MENA) that were dictatorships in December 2010.<sup>9</sup> Egypt and Tunisia have little oil, and their dictators were both from the religious and ethnic majority. The model predicts that these dictators would have to concede power. This is indeed what happened, with the dictators leaving their country and conceding power after relatively short and mostly peaceful protests.

Saudi Arabia and the small Gulf states Kuwait, Oman, Qatar, and the United Arab Emirates are all very oil-rich. Moreover, their dictators are all from the religious

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<sup>8</sup>Many oil-rich dictators invest extensively in military or paramilitary forces, such that parameter constellations with high  $R$  and low  $p_B$  would be rather rare.

<sup>9</sup>In particular, countries are included in Table 1 if they are members of the Arab League, belong to the MENA region, and got a negative Polity2 score for 2010, which implies that their autocratic traits were more pronounced than their democratic traits.

majority, and also from the ethnic group that constitutes the majority of citizens.<sup>10</sup> The model predicts that the dictators of Saudi Arabia and these small Gulf states would use parts of their oil revenues to bribe the people not to protest. Arguably, this is indeed what happened. For example the announcement of the king of Saudi Arabia to spend an extra US-\$ 36 billions in benefits was generally viewed as an attempt to bribe the Saudi people not to protest. The same holds true for the decision of the emir of Kuwait to offer a handout of US-\$ 4,000 per person and free food for 14 months, or the decision of the ruling family of the United Arab Emirates to offer well-paid public sector jobs to 6,000 unemployed Emiratis.<sup>11</sup>

The dictators of Bahrain, Libya and Syria all belonged to ethnic or religious minority groups. In Bahrain the majority of citizens are Shia Muslims, but the king belongs to the Sunni minority. Qadhafi came from one of many small tribes in highly fractionalized Libya. According to Alesina et al. (2003), Libya is the most ethnically fractionalized country in the MENA region (with an index of ethnic fractionalization equal to 0.79), and no single ethnic group (except the category of residual groups) has a population share of more than 19 percent. In Syria the majority are Sunni Arabs, while Asad belongs to the Alawi minority, who follow a particular form of Shia Islam. Moreover, oil revenues were intermediate in Bahrain and Syria, and relatively high in Libya. The model predicts that political violence in the form of violent repression or civil war is the likely outcome in these circumstances. Tragically, these predictions are consistent with the observed violent repression of Shia protestors in Bahrain, and the civil wars in Libya and Syria. The model further predicts that the dictators

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<sup>10</sup>The ethnic groups of the dictators of Kuwait, Qatar, and the United Arab Emirates constitute the majority of citizens, but due to the high number of guest workers from South Asia not the majority of the total population. However these guest workers are arguably not important players, as they would hardly obtain any voting rights even in case of democratization.

<sup>11</sup>See, e.g., “Arab Economies: Throwing money at the street.” *The Economist*, March 10, 2011; “The Arab awakening, six months on: It can still come right.” *The Economist*, July 14, 2011; and “Abu Dhabi: Where are the jobs for the boys?” *The Economist*, November 24, 2012.

of Bahrain, Libya and Syria might rely on members of their own group to engage in political violence. This prediction is again consistent with anecdotal evidence. The king of Bahrain relied on his Sunni dominated security forces and the military support of Sunni forces from abroad to violently repress Shia protesters. Qadhafi relied primarily on paramilitary forces of well-armed tribesmen (and mercenaries from Chad and Niger) in the Lybian civil war, and Asad primarily on Alawite soldiers and militiamen in the Syrian civil war.<sup>12,13</sup>

The anecdotal evidence discussed in this section suggests that the pattern predicted by my model is by and large consistent with the differences in the dictators' responses and, consequently, the outcomes of the Arab Spring observed across North Africa and the Middle East.

## 5 Concluding remarks

Many factors may influence the dictators' responses to the Arab Spring, but the general pattern across the Arab world can by and large be understood by the interplay of two factors: the country's oil revenues, and the dictator's affiliation to the majority or a minority group. In particular, my model predicts that dictators from the ethnic

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<sup>12</sup>See, e.g., "Libya's no-fly zone: The military balance." *The Economist*, March 3, 2011; "Middle East and Africa: One year on." *The Economist*, November 17, 2011; and "Syria's Salafists: Getting stronger?" *The Economist*, October 20, 2012.

<sup>13</sup>It remains to look at Morocco, Jordan and Yemen. The kings of Morocco and Jordan could stay in power by promising political reforms, but without resorting to excessive political violence, and without the means to bribe all citizens. Unlike the dictator in my model, these kings might have a sufficiently credible commitment technology. In Yemen, both the relevant circumstances and the dictator's behavior were in some sense in-between those in Egypt and Tunisia, on the one hand, and those in Libya and Syria, on the other hand. Yemen's oil revenues are modest, and it is a tribal society, but the dictator belonged to the religious majority. He initially tried to violently repress the protest with the support of armed tribesmen, but when his repressive policies failed, he conceded power before a full-blown civil war could erupt. See, e.g., "Yemen's demonstrations: Yet more cracking down." *The Economist*, March 17, 2011; "Middle East and Africa: One year on." *The Economist*, November 17, 2011; and "Yemen's president: Another one bites the dust." *The Economist*, January 28, 2012.



or religious majority group concede power if their country is oil-poor, but can stay in power by bribing the people if their country is oil-rich. It further predicts that dictators from the minority group are likely to rely on the support of other members of their group to repress protests and to fight the majority group if necessary. I have shown that these predictions are consistent with observed outcomes in, e.g., Egypt, Libya, Saudi Arabia, Syria, Tunisia, and the small Gulf states.

The model's focus on the dictator's affiliation to the majority or minority group is novel. It may therefore help to shed new light on political transitions and political conflicts also in divided societies outside the Arab world.

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Table 1: Oil revenues, and religious and ethnic groups in Arab dictatorships

Country	Dictator (2010)	Oil revenues per capita in US-\$ (2010)	Largest group (and share)	religious (and pop. share)	Dictator's religious affiliation (and pop. share)	Largest group (and share)	ethnic (and pop. share)	Dictator's ethnic affiliation (and pop. share)
Bahrain	King Hamad	1,107	Shia Islam (61%)	Sunni Islam (20%)	Sunni Islam (64%)	Arab (64%)	Arab (64%)	Arab (64%)
Egypt	Pres. Mubarak	263	Sunni Islam (89%)	Sunni Islam (89%)	Sunni Islam (90%)	Arab (90%)	Arab (90%)	Arab (90%)
Jordan	King Abdullah II	0	Sunni Islam (97%)	Sunni Islam (97%)	Sunni Islam (51%)	Palestinian (51%)	Jordanian (37%)	Jordanian (37%)
Kuwait	Amir Sabah	28,726	Sunni Islam (45%)	Sunni Islam (45%)	Sunni Islam (45%)	Kuwaiti (45%)	Kuwaiti (45%)	Kuwaiti (45%)
Libya	Col. Qadhafi	7,448	Sunni Islam (97%)	Sunni Islam (97%)	Sunni Islam (97%)	n.a. ( $\leq 19\%$ )	n.a. ( $\leq 19\%$ )	n.a. ( $\leq 19\%$ )
Morocco	King Mohammed VI	5	Sunni Islam (100%)	Sunni Islam (100%)	Sunni Islam (60%)	Arab (60%)	Arab (60%)	Arab (60%)
Oman	Sultan Qaboos	8,454	Ibadi Islam (74%)	Ibadi Islam (74%)	Arab (74%)	Arab (74%)	Arab (74%)	Arab (74%)
Qatar	Amir Hamad	54,131	Sunni Islam (95%)	Sunni Islam (95%)	Arab (40%)	Arab (40%)	Arab (40%)	Arab (40%)
Saudi Arabia	King Abdullah	11,226	Sunni Islam (93%)	Sunni Islam (93%)	Arab (90%)	Arab (90%)	Arab (90%)	Arab (90%)
Syria	Pres. Asad	503	Sunni Islam (74%)	Shia Islam (12%)	Sunni Arab (66%)	Alawi (11%)	Alawi (11%)	Alawi (11%)
Tunisia	Pres. Ben Ali	220	Sunni Islam (99%)	Sunni Islam (99%)	Arab (98%)	Arab (98%)	Arab (98%)	Arab (98%)
United Arab Emirates	Pres. Khalifa	16,717	Sunni Islam (80%)	Sunni Islam (80%)	Asian (53%)	Arab (25%)	Arab (25%)	Arab (25%)
Yemen	Pres. Salih	371	Sunni Islam (100%)	Sunni Islam (100%)	n.a.	n.a.	n.a.	n.a.

*Notes:* Countries are included if they satisfy all of the following criteria: member of the Arab League, part of the Middle East and North Africa (MENA) region, and a negative Polity2 score by the Polity IV project for 2010. Dictators' names are from the CIA directory of Chiefs of State and Cabinet Members Foreign Governments for December 2010. Oil revenues are calculated based on oil price and production data from BP Statistical Review of World Energy 2012 (complemented with oil production data from the CIA World Factbook 2012 for Bahrain, Jordan and Morocco). Population size is from Penn World Tables 7.1. Population shares of ethnic and religious groups are from the dataset of Alesina et al. (2003). In this dataset, there is no ethnicity data for Yemen, and the ethnic groups of Libya are not labeled, just numbered. The dictators' religious and ethnic affiliations are from various Internet sources.