Economic Inquiry

THE POLITICAL ECONOMICS OF THE ARAB SPRING

ROLAND HODLER*

There were large differences in the responses of Arab dictators to the Arab Spring protests. To understand these differences, I present a stylized model of how a dictator responds to mass protests for democratization in a polarized country with two ethnic or religious groups. In this model, the dictator's response crucially depends on oil revenues and his affiliation to either the majority or the minority group. I document that the model's predictions are consistent with the observed differences in the Arab dictators' responses. Hence, ethnic politics and religious divides may play an important role in political transitions and regime changes. (*JEL* D72, D74)

I. INTRODUCTION

The Arab Spring started with protests and demonstrations in Tunisia in December 2010, and spread across North Africa and the Middle East. Most dictators initially responded with a mixture of repression and concessions. Nevertheless, there were large differences in their responses to the Arab Spring protests. In Tunisia and Egypt, the dictators conceded power after mostly peaceful protests lasting less than 1 month, thereby allowing for at least temporary transitions from dictatorships to more democratic regimes elected by majority voting. Shortly thereafter, the king of Saudi Arabia announced an extra USD 36 billion in benefits, which was generally viewed as an attempt to bribe the Saudi people not to protest.[1] Also the smaller "Gulf monarchies have bribed their citizens to stay quiet—except for Bahrain, which suppressed the dissenting Shia majority."[2] In Syria, the dictator responded to protests and demonstrations with political violence, which led to a full-blown civil war. 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 with a dictator and two ethnic or religious groups. In this model, the dictator has a peaceful and a violent option to prevent democratization and to stay in power: He can either try to bribe all citizens to stop protesting or rely on members of his own group to repress the protests and to fight the other group if necessary. In equilibrium, his behavior depends on the country's oil revenues, the

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Hodler: Professor, Department of Economics, University of St. Gallen, 9000 St. Gallen, Switzerland; OxCarre, University of Oxford, Oxford, OX1 3UQ, UK; CEPR, London, EC1V 0DX, UK; CESifo, 81679 Munich, Germany. Phone +41 71 224 2578, Fax +41 71 224 2298, E-mail roland.hodler@unisg.ch

1. 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.

2. Excerpt from "The Arab Awakening, Six Months On: It Can Still Come Right," *The Economist*, July 14, 2011.

ABBREVIATIONS

ARDA: Association of Religion Data Archives
GDP: Gross Domestic Product
NATO: North Atlantic Treaty Organization
PPP: Purchasing Power Parity
UNGA: General Assembly of the United Nations
USAID: United States Agency for International Development
VSI: Voting Similarity Index

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citizens' expectations about whether democratization would be permanent and whether democratic institutions would be inclusive, and also on the size of the group to which the dictator belongs. These factors all determine whether the dictator can afford the peaceful or the violent option, and which of the two he prefers when both are affordable.

The model offers the most clear-cut predictions under the assumption that the citizens expect democratic institutions to be non-inclusive, that is, if they expect few checks and balances on the majority group. In this case, a dictator from the majority group never chooses the violent option, as it is very expensive for him to buy the violent support of the members of his group who know that they would benefit strongly from a democratically elected majority government. 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 cheap and easy to buy the violent support of the members of his own group, who expect only few benefits from a democratically elected majority government. Therefore, a dictator from the minority group is likely to choose the violent option.

Let us briefly compare these theoretical predictions with the different responses of the Arab dictators mentioned above. Egypt and Tunisia have little oil, and their dictators were from the religious majority. The theoretical prediction is that these dictators would have to concede power. Saudi Arabia and the small Gulf states Kuwait, Oman, Qatar, and the United Arab Emirates are oil-rich, and their ruling families are from the religious majority. The theoretical prediction is that these ruling families would bribe the people. The dictators of Bahrain and Syria, in contrast, are from their countries' religious minority. The theoretical prediction is that these dictators would choose the violent option, which can result in the successful repression of the religious majority or full-blown civil war. The observed outcomes coincide with the theoretical predictions in all these cases. Below I take a more systematic look at all Arab countries that were dictatorships in 2010. There I find that the pattern emerging from my model is largely consistent with the observed differences in the Arab dictators' responses to the Arab Spring protests.

This paper contributes to several strands of the political economy literature. First, there are the theoretical contributions on dictatorships. From Wintrobe's (1990, 1998) early contributions, I borrow the idea that dictators can use two instruments to maintain power: repression and the distribution of rents to loyal supporters. The contribution by Padró i Miquel (2007) studies how a dictator can use transfer payments to his own ethnic group to stay in power and to generate personal rents.[3] I follow Padró i Miquel in assuming that the dictator can discriminate between ethnic or religious 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 that 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, and on oil- rather than tax-based government revenues. All these differences make my model well suited to shed light on the political economics of the Arab Spring. In a more recent contribution, Francois, Rainer, and Trebbi (2015) show how African leaders share their power and access to rents across ethnic groups to prevent coups and revolutions. While they focus on Sub-Saharan African countries with many ethnic groups, I focus on less fractionalized countries in the Middle East and North Africa with typically fewer rivaling (religious) groups. Moreover, Bormann, Vogt, and Cederman (2012) document that regimes in the Middle East and North Africa are generally more autocratic and less inclusive than those in Sub-Saharan Africa and elsewhere.

Second, my paper relates to contributions on the transition from dictatorship to democracy. Important contributions with an economic perspective include Lipset's (1959) modernization theory and Acemoglu and Robinson's (2000, 2006) threat of revolution theory.[4] A main difference between my model and the threat of revolution 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 allows me to contribute to the literature by highlighting the role of ethnic politics and religious divides in political transitions. Besley and Persson (2009, 2011) present a series of models on the evolution of state capacity which

3. In a similar vein, Acemoglu, Ticchi, and Vindigni (2010) study how dictators may co-opt the military, and Chaney (2013) how they may please religious authorities.

4. See, e.g., Acemoglu and Robinson (2006) or Gassebner, Lamla, and Vreeland (2013) for a discussion of other contributions on political transitions.

feature two different groups.[5] These two groups are assumed to be equally sized, while I focus on unequally sized groups to study how the dictator's behavior and political transitions may differ depending on whether the dictator belongs to the majority or the minority group. Furthermore, my theoretical predictions are in line with contributions on dictatorships and political transitions that present empirical evidence for antidemocratic properties of oil (e.g., Crespo Cuaresma, Oberhofer, and Raschky 2011; Gassebner, Lamla, and Vreeland 2013; Ross 2001; Tsui 2011).

Third, my paper is also related to theoretical contributions on the effects of a country's ethnic composition on the political struggle for power (e.g., Caselli and Coleman 2013; Esteban and Ray 2008, 2011; Hodler 2006; Morelli and Rohner 2015). 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 and regime changes, nor at the role of political leaders and their ethnic or religious group affiliation.

Lastly, I also contribute to the literature on the Arab Spring. Many contributions to this literature focus on economic root causes, such as weak labor market conditions and the resulting lack of economic opportunity (e.g., Campante and Chor 2012; Malik and Awadallah 2013); or the outbreak of mass protests (e.g., Edmond 2013; Gilli 2012).[6] Complementary to these contributions, I take the outbreak of mass protests as given and aim at understanding the dictators' very different responses. I also discuss alternative theories and other potential explanations for these differences: First, I show that the modernization theory and the threat of revolution theory, which were both inspired by past developments in Western Europe, have difficulties in explaining the differences in the Arab dictators' responses. Second, I show that data availability makes it difficult to assess the importance of inequality and external support structures in shaping the Arab dictators' responses to the Arab Spring protests. Third, I argue that the variation in the timing of the first protest and possible learning effects can also not explain these different responses. Finally, I present Bellin's (2012) argument that differences in the military organization can explain some of the differences in the Arab dictators' responses to the Arab Spring protests. I thereby discuss how my model can help to understand the different military organizations across Arab countries.

The remainder of the paper is structured as follows: Section II introduces the model, and Section III presents the equilibrium outcome, comparative static results, and an in-depth discussion of the special case in which democratic institutions would be non-inclusive. Section IV provides case-study evidence for my model, and Section V discusses alternative theories and explanations for the differences in the Arab dictators' responses to the Arab Spring protests. Section VI briefly concludes.

II. THE MODEL

There is a country with a dictator and two (ethnic or religious) groups, labeled A and B. Total population has mass 1, and the population shares of groups A and B are $\pi \in (0, 1)$ and $1 - \pi$, respectively. I abstract from collective action problems and assume that each group acts as a single player.[7] The dictator is a member of group A, and I assume $\pi \neq 1/2$ to focus on the difference in the behavior of dictators from majority and minority groups. The state gets oil revenues $R > 0$, and the dictator can discriminate across citizens based on their group affiliation when distributing these revenues. He can keep the remaining oil revenues, but loses access to the oil revenues if he loses power.[8]

5. Their models on state capacity could be interpreted as models of slow-moving political transitions, as opposed to the more abrupt political transitions considered by Acemoglu and Robinson (2000, 2001, 2006) as well as in my paper.

6. A related literature studies the revolutionary wave that spread in Europe in 1848. Weyland (2009, 2010) discusses the diffusion of protests and regime behavior, and Weyland (2012) discusses the similarity between the revolutionary wave of 1848 and the Arab Spring protests.

7. This abstraction is common in theoretical models focusing on political transitions (e.g., Acemoglu and Robinson 2000) or the behavior of dictators towards different groups (e.g., Padró i Miquel 2007). The reason is that the main interest in these models (including mine) is the strategic interaction *between* groups. Most authors in this literature (including myself) therefore deliberately abstract from strategic interactions *within* groups to simplify the analysis and to sharpen the focus on the interactions *between* groups.

8. More generally, R could stand for all natural resource-based government revenues or even total government revenues. I prefer to refer to R as oil revenues for several reasons: First, in the Arab world almost all variation in natural resource rents is driven by variation in oil and gas rents (see footnote 21). Second, the differences in oil and gas rents seem to explain most of the differences in the Arab dictators' ability to generate and distribute political rents. Third, immobile natural resources like oil are a particularly safe and attractive source of revenues for authoritarian governments (e.g., Boix 2003). Fourth, demand for political accountability is arguably lower if most government revenues are oil- rather than tax-based (e.g., Ross 2001).

The focus of this model is on the dictator's response to mass protests for democratization. I therefore assume that the protests start for exogenous reasons, and focus in the first stage on the dictator's choice between different options for "handling" the protests.[9] In the second stage, each of the two groups can accept or reject the dictator's offer.

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_A^p and T_B^p to each member of groups A and B, respectively. These offers need to satisfy $\pi T_A^p + (1-\pi) T_B^p \leq R$. Each group can either accept or decline the dictator's offer. If both groups accept, the protests stop and the dictator can stay in power. The groups however know that the dictator faces a commitment problem and pays the promised transfer payments only with probability $q \in (0, 1]$ despite staying in power.[10] If he is not supported by both groups, then continued protests force him to step down and lead to democratization, at least temporarily.

The dictator's violent option is to pay group A to repress the protests, and to fight group B if necessary. Thereby, he offers transfer payments T_A^v to members of group A (but nothing to members of group B). This offer must satisfy $\pi T_A^v \leq R$. Group A can either accept or decline the dictator's offer. If it accepts, there is political violence in the form of repression or civil conflict. The outcome of political violence is uncertain: The dictator and group A succeed in repressing the protest or defeating group B with probability $p \in (0, 1)$. In this case, the dictator can stay in power and again pays the promised transfer payments with probability q. However, with probability $1-p$, political violence leads to chaos and the dictator loses power.

The way I have modeled the dictator's two options ensures that his group affiliation matters: He can only engage in political violence if his group supports him; and he cannot stay in power without the (peaceful or violent) support of his group.[11]

All players are risk-neutral. The dictator's expected payoff is equal to the oil revenues R minus the expected costs from paying the promised transfer payments if he can stay in power, and zero otherwise. Hence, he will try to stay in power whenever he can.[12]

The citizens' payoffs are equal to the expected transfer payments if the dictator stays in power, and zero if chaos emerges or a new dictator takes power. In case of permanent democratization, the citizens' aggregate payoff is $R+Y$, where $Y \geq 0$ are pecuniary and nonpecuniary benefits of democratization. However, counter-revolution occurs with probability $1-\psi$, where $\psi \in (0, 1)$. In this case, the citizens' payoffs drop to zero. Hence, the citizens' expected aggregate payoff of democratization today is $\psi(R+Y)$.

Moreover, the individual citizen's payoff of democratization depends on her group affiliation. In particular, democracy may allow the majority group to grab a disproportionate share of oil revenues and (other) benefits of democratization. The extent to which the majority group can do so depends on constitutional checks and balances or, more generally, on how inclusive democratic institutions are. I measure the inclusiveness of democratic institutions by ratio $\sigma \in [0, 1]$. This ratio determines how much oil revenues and (other) benefits of democratization a minority group member gets relative to a majority group member.[13] Hence, majority group members are much better-off than minority group members

9. Hence, the Arab Spring protests as such are not explained within my model. Arguably, citizens played a coordination game: no citizen wants to turn out in the street to protest if nobody else does, but many citizens might be willing to do so if many others do. In Tunisia, the likely trigger for turning out in the streets and protesting was the self-immolation of a fruit vendor. Elsewhere in the Arab world, the likely trigger was the mass protests in neighboring countries.

10. The elite's commitment problem features prominently in the work of Acemoglu and Robinson (2000, 2006). My modeling of the commitment problem follows Acemoglu and Robinson (2006, chapter 5).

11. Not surprisingly, most other theoretical contributions on ethnic politics also assume that the political leaders' group affiliation matters. For example, Padró i Miquel (2007) and Francois, Rainer, and Trebbi (2015) also introduce assumptions which imply that political leaders require the support of their ethnic group to stay in power. Empirical evidence also suggests that dictators tend to favor their own group when allocating resources (e.g., Burgess et al. 2015; De Luca et al. 2015; Franck and Rainer 2012; Hodler and Raschky 2014).

12. The assumption of risk-neutrality is made for simplicity. The results would remain qualitatively unchanged if the dictator was risk-averse. Quantitatively, they would change in a predictable manner: First, as even a risk-neutral dictator tries to stay in power whenever he can, the same would hold true for a risk-averse dictator as well. Second, as the violent option is associated with higher uncertainty (because of the uncertain outcome of political violence), the parameter space for which the dictator would choose the peaceful option when both options are affordable would increase (i.e., threshold Ψ—introduced below—would decrease) if the dictator became more risk-averse.

13. Besley and Persson (2011) introduce a similar parameter in their model with two equally sized groups. They refer to it as a measure of the political institutions' cohesiveness.

if σ is close to 0, while there is little discrimination against minority group members if σ is close to 1. The expected payoff of members of groups A and B after democratization are therefore $D_A = \psi(R+Y)/(\pi+(1-\pi)\sigma)$ and $D_B = \sigma\psi(R+Y)/(\pi+(1-\pi)\sigma)$ if $\pi > 1/2$, and $D_A = \sigma\psi(R+Y)/(\pi\sigma+(1-\pi))$ and $D_B = \psi(R+Y)/(\pi\sigma+(1-\pi))$ if $\pi < 1/2$, respectively.

To simplify the subsequent exposition, I will say that the dictator can afford the peaceful option if he can afford transfer payments T_A^p and T_B^p that are accepted by both groups; that he can afford the violent option if he can afford transfer payments T_A^v that are accepted by group A; and that he has to concede power if he cannot offer any transfer payments that would be accepted.

III. ANALYSIS

In this section, I first derive the subgame-perfect Nash equilibrium. I then present comparative static results and discuss how equilibrium outcomes depend on, among others, oil revenues, the inclusiveness of democratic institutions, and the population share of the dictator's group. Finally, I discuss equilibrium outcomes in case of non-inclusive democratic institutions.

A. Affordable Options and Equilibrium Outcomes

I start by looking at the dictator's two options, starting with the peaceful option. Group $i = A, B$ accepts transfer payments T_i^b and stops protesting if and only if the expected payment qT_i^b is at least as high as its members' expected benefit from democratization D_i. Hence, the lowest transfer payment they accept is $T_i^b = D_i/q$. The dictator's total costs for the peaceful option are therefore $C^p = (\pi D_A + (1-\pi)D_B)/q$, which simplifies to $C^p = (\psi/q)(R+Y)$ for both, $\pi > 1/2$ and $\pi < 1/2$. That is, the dictator must compensate the citizens for their expected payoff of democratization. He can afford the peaceful option if and only if $C^p \leq R$ or, equivalently, $R/(R+Y) \geq (\psi/q)$. His expected payoff, $R - qC^p = R - \psi(R+Y)$, is always positive if he can afford this option.

The dictator's violent option is to pay group A to repress the protests and to fight group B if necessary. Members of group A accept transfer payments T_A^v if and only if their expected payoff from accepting them, pqT_A^v, is at least as high as their expected payoff of democratization D_A. Hence, the lowest transfer payment they accept is $T_A^v = D_A/pq$. The dictator's costs for the violent option are therefore $C^v = \pi D_A/(pq)$. They can be rewritten as $C^v = \delta\psi(R+Y)/(pq)$, where $\delta \equiv \pi D_A/(\psi(R+Y))$ is the share of the citizens' expected aggregate payoff of democratization that goes to members of group A. The dictator can afford the violent option if and only if $C^v \leq R$ or, equivalently, $R/(R+Y) \geq (\theta/q)$, where $\theta \equiv \delta\psi/p$. For later use, notice that $\theta > \psi$ if and only if $\delta > p$. The dictator's expected payoff, $p(R - qC^v) = pR - \delta\psi(R+Y)$, is always positive if he can afford the violent option.

The following proposition summarizes the conditions under which the dictator can afford the two options:

PROPOSITION 1. *The dictator can afford the peaceful option if and only if $R/(R+Y) \geq (\psi/q)$, and the violent option if and only if $R/(R+Y) \geq (\theta/q)$, where $\theta \equiv \delta\psi/p$ and $\delta \equiv \pi D_A/(\psi(R+Y))$.*

The dictator has to concede power if he cannot afford any option, that is, if groups A and B accept no feasible transfer payment. Whenever he can afford exactly one option, he chooses this one option as doing so leads to a positive expected payoff. It remains to determine which option he chooses when he could afford either of them. As seen before, his expected payoff is $R - qC^p = R - \psi(R+Y)$ when choosing the peaceful option, and $p(R - qC^v) = pR - \delta\psi(R+Y)$ when choosing the violent option. Hence, he prefers the peaceful option if and only if $R/(R+Y) \geq \Theta \equiv (1-\delta)\psi/(1-p)$.[14] These insights and Proposition 1 allow characterizing equilibrium behavior:

PROPOSITION 2. *In equilibrium, if $R/(R+Y) < \min\{\psi/q, \theta/q\}$, the dictator has to concede power.*

If $\theta/q < R/(R+Y) < \psi/q$ or $\max\{\psi/q, \theta/q\} < R/(R+Y) < \Theta$, where $\Theta \equiv (1-\delta)\psi/(1-p)$, the dictator chooses the violent option and offers transfer payments $T_A^v = D_A/(pq)$, and group A accepts this offer.

If $\psi/q < R/(R+Y) < \theta/q$ or $\max\{\psi/q, \theta/q, \Theta\} < R/(R+Y)$, the dictator chooses the peaceful option and offers transfer payments $T_A^p = D_A/q$ and $T_B^p = D_B/q$, and groups A and B accept these offers.

14. I make the (inconsequential) tie-breaking assumption that the dictator chooses the peaceful option when indifferent.

B. Comparative Statics

I now turn to the comparative statics. I first look at the effects of oil revenues R, pecuniary and nonpecuniary benefits of democratization Y, and the probability ψ that democratization would be permanent:

PROPOSITION 3. *Higher R, lower Y, and lower ψ all raise the likelihood that the dictator can afford the peaceful option, the likelihood that the dictator can afford the violent option, and the likelihood that he chooses the peaceful option if both options are affordable.*

Proof: The results for R and Y follow directly from Propositions 1 and 2. The results for ψ follow directly from these two propositions, and $(\partial\theta/\partial\psi) > 0$ and $(\partial\Theta/\partial\psi) > 0$. ■

Hence, higher oil revenues R make it easier for the dictator to buy the citizens' peaceful or violent support. This result is hardly surprising. Each citizen supports the dictator when doing so leads to a higher expected payoff than democratization, and higher R increases the resources that the dictator has available to buy the citizens' support relative to the citizens' expected aggregate payoff of democratization, $\psi(R+Y)$. For the same reason, lower benefits of democratization Y or lower probability ψ that democratization would be permanent also make both options easier to afford.

Proposition 3 further shows that higher oil revenues R or, again, lower Y or ψ make it more likely that the dictator chooses the peaceful option. Intuitively, the peaceful option is more attractive if oil revenues R are high relative to $\psi(R+Y)$, because it ensures that the dictator gets at the very least all the oil revenues that he has not promised to the citizens, while the violent option may lead to him losing power and not getting any oil revenues at all.

We next look at the effect of the probability p that the dictator wins a violent conflict and can stay in power when being supported by the other members of group A:

PROPOSITION 4. *Higher p raises both the likelihood that the dictator can afford the violent option, and the likelihood that he chooses the violent option if both options are affordable. The dictator never chooses the violent option if $p \to 0$, and never the peaceful option if $p \to 1$.*

Proof: The first statement follows directly from Propositions 1 and 2, and $(\partial\theta/\partial p) < 0$ and $(\partial\Theta/\partial p) > 0$. The second statement follows from these two propositions and the following two observations: First, if $p \to 0$, the dictator cannot afford the violent option (for finite R), because $\lim_{p\to 0} \theta = \infty$. Second, if $p \to 1$, the dictator can always afford the violent option when he can afford the peaceful option, because $\lim_{p\to 1} \theta = \delta\psi \leq \psi$, and he always prefers the violent option when both options are affordable (for finite R), because $\lim_{p\to 1} \Theta = \infty$. ■

The reason why a higher winning probability p makes the violent option more likely to be affordable is that group A is willing to fight for lower transfer payments T_A^v when it becomes more likely to win and, therefore, to receive the promised payments. There are even two reasons why higher p makes the violent option more attractive for the dictator: First, again, higher p lowers T_A^v. Second, it lowers the chances that the dictator loses power and cannot benefit from the oil revenues R at all. Therefore, if $p \to 1$, the violent option is no less affordable, but more attractive for the dictator than the peaceful option. In the opposite case in which $p \to 0$, the violent option becomes unaffordable as members of group A demand excessive transfer payments $T_A^v \to \infty$ for their violent support.

We now look at the effect of the dictator's credibility q, that is, on the extent to which he can commit to paying the transfers he promises:

PROPOSITION 5. *Higher q reduces the likelihood that the dictator can afford the peaceful and the violent option, but has no effect on his choice if both options are affordable.*

Proof: All statements follow directly from Propositions 1 and 2. ■

The intuition is straightforward: As the dictator is less credible, the citizens need to be promised more generous transfer payments in return for their support. As a result, the dictator's two options both become more expensive and may no longer be affordable.

We now turn to the role played by the democratic institutions. Their inclusiveness σ affects the share δ of resources benefitting group A after democratization. This share also depends on group A's population share π. In particular, $\delta = \pi/(\pi + (1-\pi)\sigma)$ if $\pi > 1/2$, and $\delta = \pi\sigma/(\sigma\pi + (1-\pi))$ if $\pi < 1/2$. Moreover, the two thresholds θ and Θ, which determine the dictator's behavior, depend on this share δ. As a consequence, the democratic institutions' inclusiveness σ affects the dictator's behavior; and

this effect depends on whether he is from the majority or the minority group:

PROPOSITION 6. *Given $\pi > 1/2$, higher σ raises both the likelihood that the dictator can afford the violent option, and the likelihood that he chooses the violent option if both options are affordable.*

Given $\pi < 1/2$, higher σ reduces both the likelihood that the dictator can afford the violent option, and the likelihood that he chooses the violent option if both options are affordable.

Proof: First, suppose $\pi > 1/2$. In this case $\delta = \pi/(\pi + (1-\pi)\sigma)$, implying $(\partial\delta/\partial\sigma) < 0$. It follows that $(\partial\theta/\partial\sigma) = \frac{\partial\theta}{\partial\delta}\frac{\partial\delta}{\partial\sigma} < 0$ and $\frac{\partial\Theta}{\partial\sigma} = \frac{\partial\Theta}{\partial\delta}\frac{\partial\delta}{\partial\sigma} > 0$, as $(\partial\theta/\partial\delta) > 0$ and $(\partial\Theta/\partial\delta) < 0$. The first statement directly follows from these results, and Propositions 1 and 2. The proof of the second statement is very similar, except that $(\partial\delta/\partial\sigma) > 0$ since $\delta = \pi\sigma/(\pi\sigma + (1-\pi))$ if $\pi < 1/2$. ■

To understand these results, suppose first that group A, to which the dictator belongs, is the majority group, that is, $\pi > 1/2$. In this case, members of group A know that they get a disproportionate share δ of the expected aggregate payoff of democratization (unless $\sigma = 1$). Their support is therefore relatively expensive for the dictator to buy. Moreover, the share δ decreases in the democratic institutions' inclusiveness σ if $\pi > 1/2$. The reason is simple: More inclusive democratic institutions constrain the majority group from grabbing most resources at the expense of the minority group. Therefore, as σ increases, democratization becomes less attractive for members of group A. The violent option becomes therefore less expensive for the dictator, and more likely to be affordable.

Higher σ also raise the likelihood that a dictator from the majority group chooses the violent option if he can afford both options. To see why, observe that more inclusive democratic institutions make democratization more attractive for members of minority group B, such that they require higher transfer payments T_B^p for their peaceful support. In fact, this increase in T_B^p fully compensates the decrease in T_A^p. Hence, higher σ raises the likelihood that the dictator chooses the violent option, because the costs of the peaceful option remain unchanged while the violent option becomes less expensive.

We now turn to the case in which group A, to which the dictator belongs, is the minority group, that is, $\pi < 1/2$. In this case, members of group A get a relatively small share δ of the expected aggregate payoff of democratization (unless $\sigma = 1$), but this share now increases in σ. That is, more inclusive democratic institutions ensure that the members of the minority group get a "fairer" share. Therefore, higher σ now raises the costs of the violent option C^v. This cost increase makes the violent option less likely to be affordable for the dictator. As the costs of the peaceful option are again independent of σ, more inclusive democratic institutions further reduce the likelihood that a dictator from the minority group chooses the violent option if both options are affordable.

C. Special Case: Non-inclusive Democratic Institutions

In this section, I study how the dictator behaves if democratic institutions are expected to be non-inclusive, that is, if $\sigma = 0$. This special case gives interesting and clear-cut results that can be directly compared to real-world outcomes.[15] In Section IV, I will argue that Arab citizens most likely expected limited checks and balances on the majority group in newly democratic Arab countries.

The following corollary summarizes the equilibrium outcome in this special case:

COROLLARY 1. *Suppose $\sigma = 0$. Given $\pi > 1/2$, the dictator can always afford the peaceful option if he can afford the violent option, and he always prefers the violent option if both options are affordable.*

Given $\pi < 1/2$, the dictator can always afford the violent option and is likely to choose it if both options are affordable.

Proof: First, suppose $\sigma = 0$ and $\pi > 1/2$. In this case, $\delta = 1$, implying $\theta = \psi/p > \psi$ and $\Theta = 0$. The first statement follows from these results and Propositions 1 and 2. Now, suppose $\sigma = 0$ and $\pi < 1/2$. In this case, $\delta = 0$, implying $\theta = 0$ and $\Theta = \psi/(1-p)$. The second statement follows from these results and Propositions 1 and 2. ■

15. Standard majority voting models would also predict very limited access to resources for minority group members. In these models, there are two office-motivated candidates who run on a binding platform that specifies how they allocated government resources across (two) different groups. In a setting with two differently sized groups, the majority of voters, including the median voter, would simply vote for the candidate proposing higher transfers to the majority group. Both candidates would therefore choose a platform that proposes transferring all resources to the majority group and none to the minority group.

The first statement of Corollary 1 implies that a dictator from the majority group never chooses the violent option, as it is both more expensive and less attractive than the peaceful option. There are two interlinked reasons why the violent option is more expensive: First, the expectation that democratic institutions would be non-inclusive makes it expensive to buy the support of majority group members, who get all the oil revenues and (other) benefits of democratization (with probability ψ) if they do not support him, while he can promise them at most all the oil revenues. At the same time, it is very cheap or—in fact—free to buy the support of minority group members, who do not expect to benefit from democratization anyway. Second, majority group members ask for even higher transfer payments for violent support than for the peaceful support, because they do not receive any transfer payments unless the dictator can stay in power, and because the dictator can stay in power with higher probability when choosing the peaceful option. Moreover, the peaceful option is also more attractive for the dictator if both options are affordable, because it allows him to stay in power and enjoy a positive payoff with higher probability. Hence, the equilibrium behavior of a dictator from the majority group is straightforward: He bribes all citizens so that he can stay in power if oil revenues are sufficiently high, that is, if $R/(R+Y) \geq (\psi/q)$, but has no alternative to conceding power otherwise.

The second statement of Corollary 1 is also strong, and in stark contrast to the first: A dictator from a minority group can always afford the violent option. The reason is again that minority group members are willing to support the dictator at no costs, as they do not expect any benefits from democratization. The peaceful option, which requires the support of majority group members as well, is considerably more expensive as the majority group members' expected benefits from democratization are much higher. Hence, when both options are affordable, the dictator faces a trade-off: The violent option is much cheaper, while the peaceful option ensures that he gets a positive payoff with certainty. The dictator prefers the violent option whenever $R/(R+Y) < \psi/(1-p)$. Hence, he chooses the violent option with higher likelihood than he would in case of more cohesive democratic institutions (i.e., $\sigma > 0$). He would seriously consider the peaceful option if oil revenues R were high and his group weak in violent conflict (i.e., low p). Given that many oil-rich dictators invest extensively in military or paramilitary forces, such a parameter constellation should be rather rare in the real world. Therefore, it is to be expected that a dictator from the minority group chooses the violent option, which he can always afford.

The results presented in Corollary 1 lead to the following theoretical predictions:

PREDICTION 1. *Dictators from the majority group bribe all citizens if oil revenues are high, but have to concede power if oil revenues are low. Dictators from the minority group are likely to engage in political violence with support of other members of their group.*

IV. EVIDENCE FROM CASE STUDIES

In this section, I compare my model's predictions with the dictators' responses to the Arab Spring observed across the Arab world. I thereby focus on Prediction 1. Hence, I implicitly assume that citizens in the Arab world were not expecting that democratization would lead to inclusive institutions. Despite the general optimism at the time, it seems unlikely that most people were expecting Western-style democracies with strong checks and balances. Most people in the Arab world probably rather expected democratic institutions that would give considerable power to the majority, and at best limited access to government resources for minority groups. Such expectations would have been consistent with the experience of other newly democratic countries in, e.g., Africa after decolonization, or Central Asia after the dissolution of the Soviet Union. There is indeed evidence that democratization typically leads to a sharp and large increase in competitive elections, but only to a small and very slow increase in inclusiveness (Bidner, Francois, and Trebbi 2015). Arguably, Mohammed Mursi, the freely elected post-Arab Spring president of Egypt, confirmed this pattern with his non-inclusive politics and his attempts to undermine independent institutions.[16,17]

16. See, e.g., "Islam, Democracy and Soldiers: Egypt's Tragedy," *The Economist*, July 6, 2013.

17. The view that democracy is not about inclusiveness is prevalent even in many relatively democratic country. In the words of South Africa's President Jacob Zuma: "You have more rights because you are the majority; you have less rights because you are the minority. That's how democracy works" (quoted in: "African Democracy: The March of Democracy Slows," *The Economist*, August 20, 2016).

To compare my theoretical predictions to the observed behavior of Arab dictators, I also need to take a stand on the salient-dividing line in Arab societies. I assume that the salient-dividing line is religious. The major monotheistic religions Christianity, Islam, and Judaism originated in the Middle East. There have been regular conflicts between adherents of these religions. Today, Islam is the prevalent religion in the Middle East and North Africa, and the divisions between Shia (or Alawite) Muslims and Sunni Muslims is a main source of conflict in many Arab countries. I therefore focus on religious (or sectarian) divides and the dictators' religious affiliation. Two comments are in order: First, my model is applicable no matter whether religious affiliations and identities are deeply rooted and inherently salient, or the product of divide-and-rule tactics deployed by dictators or other strategic choices aimed at making religion salient.[18] What matters is that the society is divided into religious groups (inherently salient or not), and that dictators can potentially mobilize members of their own group for political violence along religious lines. Second, there could be other salient dividing lines. Note that, however, if the salient dividing line were not religious, it would work against me finding evidence for my theoretical predictions.

I take a close look at all countries that (1) belong to the Middle East and North Africa (MENA) according to the World Bank's classification, (2) were members of the Arab League in 2010, and (3) got a negative Polity2 score from the Polity IV project for the year 2010, which implies that their autocratic traits were more pronounced than their democratic traits. There are 13 countries that fulfill all three criteria.[19] Table 1 provides information on these countries' oil rents, their largest religious group, and their dictators' religious affiliation.

Oil and gas rents are the difference between the value of the produced crude oil and natural gas at world market prices and the total production costs. I report oil and gas rents both in values per capita for 2010 and as share of gross domestic product (GDP) in 2010.[20] The former is an absolute measure of oil revenues and the latter a relative measure. Oil and gas rents as well as the underlying GDP and population data are from the World Development Indicators.[21] The population shares of religious groups in 2010 are taken from the Association of Religion Data Archives (ARDA). The dictators' religious affiliations are collected from various sources. For the readers' convenience, the last column of Table 1 provides a crude summary of the subsequent discussion of the dictators' responses to the Arab Spring protests.

Let us first look at countries in which the dictators came from the religious majority. Table 1 shows that the dictators of Saudi Arabia and the small Gulf states Kuwait, Oman, Qatar, and the United Arab Emirates were all from their countries' religious majority.[22] Moreover, Table 1 confirms that these countries have high oil and gas rents (in absolute and relative terms). Prediction 1 thus suggests that the dictators of Saudi Arabia and these small Gulf states would use parts of their oil revenues to bribe their citizens so that they would not protest. Arguably, this is indeed what happened. For example, the announcement of the king of Saudi Arabia in February 2011 to spend an extra USD 36 billion 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 USD 4,000 per person and

18. This debate about the salience of religion is reminiscent of the debate on the roots and formation of ethnic identities, where the evolutionary or primordial view holds that these affiliations are deeply rooted and inherently salient, while the constructivist or instrumentalist view sees them as situational or as a product of strategic decisions taken for economic or political gains (e.g., Ahlerup and Olsson 2012).

19. The following countries from the MENA region are not included in my sample: Iran, which is not a member of the Arab league; Algeria, Iraq, and Lebanon, which had positive Polity2 scores in 2010; and Israel, which is not a member of the Arab league and had a positive Polity2 score in 2010.

20. Values for Syria refer to 2007, as oil and gas rents are missing for later years.

21. In an earlier version, I used oil revenues per capita in 2010 based on oil price and production data from BP Statistical Review of World Energy 2012. The correlation between the oil and gas rents per capita reported in Table 1 and the previously used oil revenues per capita in 2010 is higher than 0.95. Alternatively, I could also use total natural resources rents from the World Development Indicators, which include oil and gas rents as well as rents from coal, minerals, and forestry. The correlation between oil and gas rents and the total natural resource rents is again higher than 0.95, implying that the differences in natural resource rents across Arab countries are indeed driven by the differences in oil and gas rents. It would also be interesting to know the extent to which Arab countries relied on oil and gas earnings for their government revenues. To the best of my knowledge, this information is not available in a systematic manner, which is probably due to the poor reporting standards of many Arab dictatorships.

22. The Sunnis are the largest religious group in Qatar, but their population share is below 50%. The reason are the many guest workers from South Asia in Qatar (and also in Kuwait the United Arab Emirates). However, these guest workers are arguably not important players and they would hardly obtain any voting rights even in case of democratization.

TABLE 1
Oil and Gas Rents, and Religious Groups in Arab Dictatorships in 2010

Country	Dictator	Oil and Gas Rents: USD per Capita	Oil and Gas Rents: Share of GDP (%)	Largest Group	Dictator's Group	Dictator's Response
Bahrain	King Hamad	4,951	24	Shia: 60%	Sunni: 30%	Violence
Egypt	President Mubarak	304	11	Sunni: 86%	Sunni: 86%	Exile
Jordan	King Abdallah II	4	0	Sunni: 95%	Sunni: 95%	Minor reforms
Kuwait	Amir Sabah	19,931	53	Sunni: 70%	Sunni: 70%	"Bribing"
Libya	Colonel Qadhafi	6,930	58	Sunni: 97%	Sunni: 97%	Violence
Morocco	King Mohammed VI	0	0	Sunni: 99%	Sunni: 99%	Minor reforms
Oman	Sultan Qaboos	7,822	39	Ibadhi: 54%	Ibadhi: 54%	"Bribing"
Qatar	Amir Hamad	29,407	41	Sunni: 37%	Sunni: 37%	"Bribing"
Saudi Arabia	King Abdallah	8,118	43	Sunni: 88%	Sunni: 88%	"Bribing"
Syria	President Asad	510	24	Sunni: 74%	Alawite: 16%	Violence
Tunisia	President Ben Ali	225	5	Sunni: 99%	Sunni: 99%	Exile
United Arab Emirates	President Khalifa	7,955	22	Sunni: 57%	Sunni: 57%	"Bribing"
Yemen	President Salih	329	25	Sunni: 55%	Shia: 44%	Violence

Notes: Countries satisfying the following criteria are included: (1) part of the Middle East and North Africa (MENA) region, (2) member of the Arab League in 2010, and (3) negative Polity2 score for 2010. Dictators' names are from the CIA directory of Chiefs of State and Cabinet Members Foreign Governments for December 2010. Oil and gas rents are the difference between the value of the produced crude oil and natural gas at world market prices and the total production costs. Oil rents and the underlying GDP and population data for 2010 are from the World Development Indicators (Exception: Values for Syria are for 2007). Population shares of religions for 2010 are from the Association of Religion Data Archives. The dictators' religious affiliations are from various sources. The dictators' responses reported in the last column are based on the more detailed and nuanced discussion in the main text of Section IV.

free food for 14 months; or the decision of the ruling family of the United Arab Emirates to offer public sector jobs to 6,000 unemployed Emiratis, with starting salaries typically in the range of USD 6,800–9,500.[23]

The dictators of Egypt and Tunisia were both from their countries' religious majority too, but oil and gas rents were low (in absolute and relative terms) in these countries. Prediction 1 thus suggests that the dictators of Egypt and Tunisia would have to concede power. This is indeed what happened. Presidents Mubarak and Ben Ali both conceded power and left their country after relatively short and mostly peaceful protests. Interestingly, Morocco and Jordan are also oil-poor, and their kings are also from the religious majority. Nevertheless, they both managed to stay in power without resorting to excessive political violence, or being blessed with high oil revenues that allowed bribing their citizens. The reason could be a combination of higher credibility and pre-emptive reforms after having observed what happened to Arab dictators elsewhere.[24]

I now turn to the three countries in which the dictators came from a religious minority group. In Bahrain, there is a Shia majority, but King Hamad belongs to the Sunni minority. The reverse was true in Yemen: There is a Sunni majority, but former President Salih is Shia.[25] In Syria, there is also a Sunni majority, while President Asad belongs to the Alawite minority. Moreover, oil and gas rents were intermediate in Bahrain (by Arab standards). In Syria and Yemen, oil and gas rents were quite low on a per capita basis, but intermediate when measured as share of GDP (because of the comparatively low GDP per capita). According to Prediction 1, political violence in the form of repression or civil war is the likely outcome in these countries. Tragically, this prediction is consistent with the observed violent repression of Shia protestors in Bahrain, the long-lasting civil war in Syria, and the chaos and civil conflict in Yemen.

According to the mechanism at work in my model, the dictators of Bahrain, Syria, and Yemen

23. 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.

24. Weyland (2010) discusses the role of pre-emptive reforms in the revolutionary wave in Europe in 1948. I discuss the timing of the Arab Spring protests and the learning of Arab dictators in Section V.B. The kings of Morocco and Jordan may have had higher religious legitimacy and credibility than other Arab dictators, as they are both considered to be descendants of the Prophet Muhammad.

25. To be more precise, Salih and the Houthis (mentioned below) are Zaidi Shia. Zaidism is a sect that emerged out of Shia Islam in the eighth century.

would have relied on members of their own group to engage in political violence. Anecdotal evidence is consistent with this mechanism as well: King Hamad of Bahrain relied on his Sunni dominated security forces and the military support of Sunni forces from abroad to brutally repress Shia protesters. President Asad relied primarily on Alawite soldiers and militiamen known as the shabiha already early on in the Syrian civil war. Most of these militiamen were Alawite, and they were relatively cheap and easy to recruit—exactly as my model suggests.[26] President Salih initially tried to violently repress the protest with the support of loyal armed forces and armed tribesmen. When his repressive policies failed, he agreed to step down in exchange for immunity from prosecution in November 2011. However, Yemen remained chaotic, and Salih kept his influence in the armed forces. He openly supported the Houthis, who are also Shia tribesmen from northern Yemen, when they captured the capital Sana'a in 2014.[27]

It remains to look at Libya: Qadhafi was from the Sunni majority, and the country is relatively oil-rich. Nevertheless, Qadhafi responded to the mass protest with political violence that led to civil war. At first glance, this outcome seems at odds with Prediction 1. However, Libya is an outlier among the Arab countries in that it is particularly tribalized. According to Alesina et al. (2003), Libya is the most ethnically fractionalized country in the MENA region. Its index of ethnic fractionalization is equal to 0.79, and all ethnic groups or tribes have a population share of less than 20%. Interestingly, when seeing Qadhafi mainly as a member of a small tribe rather than the religious majority, then Qadhafi's violent response to the mass protests and the subsequent civil war in Libya are in line with my model's predictions. Moreover, Qadhafi relied primarily on paramilitary forces of well-armed tribesmen (besides mercenaries from Chad and Niger), which is even consistent with the mechanism proposed by my model.[28]

V. ALTERNATIVE EXPLANATIONS

I have documented that the dictator's affiliation with the majority or the minority group and the oil revenues are important determinants of the dictators' responses to the Arab Spring protests. Although this account supports my main thesis, it is useful to review alternative accounts. I do so in this section. I start by discussing whether and how prominent theories on political transitions and regime change can help us to understand the events surrounding the Arab Spring. I then discuss some more specific factors that might have played a key role during the Arab Spring but are missing in my model.

A. Prominent Theories of Political Transitions

Modernization. The modernization theory has been strongly inspired by the economic and political development in Western Europe and the Americas. It suggests that modernization—characterized by growing industrialization, urbanization, wealth, and education—leads to democratization (Lipset 1959). The empirical literature testing this theory offers mixed findings. For example, Acemoglu et al. (2008, 2009) find no effect of economic development on democracy and democratic transitions (once they include country-fixed effects). Boix (2011) extends the sample period back to the early nineteenth century and finds a positive effect of economic development on democracy. He argues that the different findings could be the result of him including the earlier time periods and, thereby, the democratic transitions in Western Europe. More recently, Murtin and Wacziarg (2014) find that schooling has had an even stronger effect than income over the last two centuries.

We follow these studies by using GDP per capita and schooling to investigate whether these proxies for modernization can explain differences in the Arab dictators' responses to the Arab Spring protests. Table 2 provides information on GDP per capita (purchasing power parity [PPP], current international dollar) in 2010 from the World Development Indicators, and the average years of schooling of men and women aged 15 or

26. The religious divide had not always been so salient in Syria. Pierret (2013) documents that earlier economic liberalization enabled Assad to get the support of the Sunni religious elite (ulama), but that his regime's brutality in response to the Arab Spring protests forced the Sunni religious elite to realign itself with the opposition.

27. See, e.g., "Strife in Yemen: No Easy Way Out of a Bloody Mess," *The Economist*, September 24, 2011; "Middle East and Africa: One Year On," *The Economist*, November 17, 2011; "Yemen's President: Another One Bites the Dust," *The Economist*, January 28, 2012; "Syria's Conflict: With Both Barrels," *The Economist*, March 16, 2012; "Syria's Salafists: Getting Stronger?" *The Economist*, October 20, 2012; and "Yemen: The Old Man Who Won't Go Away," *The Economist*, April 4, 2015.

28. See, e.g., "Libya's No-Fly Zone: The Military Balance," *The Economist*, March 3, 2011.

older from Barro and Lee (2013). Qatar has the highest GDP per capita, followed by Kuwait, the United Arab Emirates, Oman, Saudi Arabia, and Bahrain. None of these countries experienced any trend towards democracy during or in the aftermath of the Arab Spring. As discussed in Section IV, the dictators of the first five of these countries bribed the citizens for not protesting, and King Hamad of Bahrain suppressed the protests by the Shia majority. In contrast, both Egypt and Tunisia, where the dictators left the country and democratic elections took place, were among the poorer Arab countries in 2010. A slightly different picture emerges when looking at the average years of schooling. Schooling in Egypt and Tunisia is close to both the mean and the median of the sample. There are countries with considerably more and others with considerably less schooling in the group of countries in which the dictators bribed the citizens for not protesting as well as in the group of countries in which the dictators chose political violence. It is therefore fair to conclude that modernization theory is not helpful to understand the observed differences in the dictators' responses to the Arab Spring protests. While modernization theory may not be helpful to understand these differences, it may still help us to understand why Arab dictatorships became unstable. For example, Campante and Chor (2012, 184) argue that this instability was the result of a "lack of adequate economic opportunities for an increasingly educated populace."

Threat of Revolution. Acemoglu and Robinson (2000, 2006) argue in their threat of revolution theory that the elite would extend the franchise if and only if transfers are not sufficient to prevent a revolution. This theory has been inspired by political transitions in Western Europe, and has received considerable empirical support from Western Europe in the late nineteenth and early twentieth century. For example, Aidt and Jensen (2014) argue that actual revolutions in neighboring countries served as signals to the elite about how threatening the situation was, and they find that revolutions in neighboring countries indeed made an extension of the franchise more likely. We observed a very different pattern during the Arab Spring: The only political transitions from dictatorship to (at least temporary) democracy took place in Tunisia, where President Ben Ali could not have received any signal about the immediate threat as it was the very beginning of the Arab Spring protests in December 2010, and in Egypt, where protests started in January 2011, but not in any countries in which protests started later on.[29,30]

The threat of revolution theory, at least the baseline version presented in Acemoglu and Robinson (2000), offers further predictions that seem at odds with the outcomes of the Arab Spring. First, it suggests that political violence does not happen on the equilibrium path, which is in stark contrast to the political violence observed in Bahrain, Libya, Syria, and Yemen. Second, it suggests that higher inequality tends to increase the chances of a political transition from dictatorship to democracy. As I show below, the available data do not support the notion that higher inequality promoted democratization during the Arab Spring.[31] Hence, like the modernization theory, the threat of revolution theory cannot explain some important aspects of the Arab Spring, probably because this theory has been inspired by the West's experience as well.

Inequality. Inequality may well shape political transitions. Boix (2003) argues that democratization is more likely when inequality is low. In contrast, the threat of revolution theory suggests that higher inequality tends to increase the chances of democratization (see above). I therefore look at the potential of inequality to explain the different outcomes across the Arab world. I use the Gini index from the World Development Indicators and report the most recent value from the 2000–2010 period in Table 2. The Gini index is missing in all these years for the majority of the countries in my sample, including Saudi Arabia

29. I discuss the timing of the Arab Spring protests in more detail in Section V.B.

30. Przeworski (2009) and Aidt and Franck (2015) rely on protests (or riots or unrests) rather than political events in neighboring countries to test the threat of revolution theory. Przeworski (2009) finds that protests peak 1 year before extensions of the franchise and drop after extensions. For Britain, Aidt and Frank (2015) find that local protests 1 to 2 years prior to an election increased the electoral success of candidates supporting a suffrage reform. It would however be difficult to rely on protests to check whether the threat of revolution theory can explain the difference in the Arab dictators' responses to the Arab Spring, as protests occurred in most Arab dictatorships at that time (Table 2).

31. Acemoglu and Robinson (2006) extend their baseline model. Among others, they allow for repression and find a nonmonotonic relationship between inequality and democratization, with democratization occurring at intermediate levels of inequality (see chapter 6.6). As shown below, the data do not suggest that intermediate levels of inequality promoted democratization during the Arab Spring. Moreover, Acemoglu and Robinson (2006) show that revolutions can happen on the equilibrium path if they allow for the possibility that repression may fail (see chapter 6.14).

TABLE 2
Assessing Alternative Theories and Explanations

Country	GDP per Capita (in USD)	Schooling (in years)	Gini Index	First Protests	Voting Similarity: United States and Russia	U.S. Military Aid (in 1,000 USD)	Dictator's Response
Bahrain	39,424	7.1	—	Feb 2011	0.18; 0.84	1,081	Violence
Egypt	9,897	7.2	31	Jan 2011	0.16; 0.87	76,301	Exile
Jordan	11,028	9.6	34	Jan 2011	0.18; 0.83	17,263	Minor reforms
Kuwait	72,204	6.3	—	Nov 2011	0.18; 0.85	0	"Bribing"
Libya	28,583	8.0	—	Feb 2011	0.16; 0.86	29	Violence
Morocco	6,365	5.0	41	Feb 2011	0.18; 0.83	1,024	Minor reforms
Oman	45,885	—	—	—	0.16; 0.86	1,119	"Bribing"
Qatar	125,088	8.4	—	—	0.17; 0.85	0	"Bribing"
Saudi Arabia	43,352	8.5	—	Mar 2011	0.18; 0.84	2	"Bribing"
Syria	—	6.7	36	Mar 2011	0.14; 0.86	0	Violence
Tunisia	10,330	7.5	36	Dec 2010	0.16; 0.86	1,026	Exile
United Arab Emirates	56,245	9.1	—	—	0.17; 0.84	3	"Bribing"
Yemen	4,286	3.7	36	Jan 2011	0.18; 0.85	761	Violence

Notes: GDP per capita (PPP, current international dollars) for 2010 is from the World Development Indicators. Schooling is the average years of schooling in 2010 of females and males aged 15 or older from Barro and Lee (2013). The Gini index is the most recent estimate between 2000 and 2010 from the World Development Indicators. The month of first Arab Spring protests is taken from *The Guardian*. Voting similarity with the United States and Russia in the UNGA is based on the Voting Similarity Index (three category vote data) for 2005–2010 by Voeten (2013). U.S. military aid is based on U.S. Overseas Loans & Grants by USAID and averaged over the 2005–2010 period. The dictators' responses reported in the last column are based on the more detailed and nuanced discussion in the main text of Section IV. The sample selection is explained in the *Notes* to Table 1.

and all the smaller Gulf states. Given the sparsity of data, it is obviously hard to argue in favor or against a prominent role of inequality in shaping the outcomes of the Arab Spring. The available data suggest that inequality was similar in Jordan, Syria, Tunisia, and Yemen, but somewhat higher in Morocco and somewhat lower in Egypt. Given that (temporary) democratization has only been observed in Egypt and Tunisia, it seems fair to conclude that higher inequality has not been promoting democratization during the Arab Spring.[32] This finding is consistent with Boix's (2003) theory, but less so with the threat of revolution theory. Unlike my model, Boix's (2003) theory can however not explain the very different outcomes across the nondemocratizing Arab countries, that is, why some but not all of these countries experienced massive political violence.

B. Arab Spring—Specific Explanations

Timing and Learning. My model is static and does not allow the dictator to learn from what has happened in other countries in which protests started earlier. In reality, such learning may have taken place. To study whether differences in the timing of the events can explain the observed differences in the Arab dictators' responses to the Arab Spring protests, I report the month in which the first protests took place in the different countries in Table 2. I thereby rely on the timeline provided by *The Guardian*.[33] The Arab Spring protests started in Tunisia in December 2010. Arguably, President Ben Ali might have responded more aggressively if he had foreseen the protests' ferocity. The question therefore arises whether there could be a general pattern that dictators in countries in which the first protests occurred earlier responded less aggressively. The data do not confirm such a general pattern: In January 2011 protests started in Egypt, Jordan, and Yemen. As discussed in Section IV, these countries' dictators responded very differently: President Mubarak left office in February 2011, King Abdallah II only implemented modest reforms, and President Salih tried to violently repress the protest. Then, in February and March 2011 protests started also in Bahrain,

32. Arguably, one could go one step further and claim that the available data suggests that less unequal societies were more likely to democratize (at least temporarily). This claim would however be rather strong given the small sample, the intermediate Gini index for Tunisia, and doubts about the accuracy of the low reported Gini index for Egypt (Van Der Weide et al. 2016).

33. See "Arab Spring: An Interactive Timeline of Middle East Protests," available at: https://www.theguardian.com/world/interactive/2011/mar/22/middle-east-protest-interactive-timeline. Alternative timelines are provided by, e.g., *Reuters* or *The Economist*. They both cover fewer countries, but agree with *The Guardian* on the months of the first protests for all the countries they cover.

Libya, Morocco, Syria, and Saudi Arabia. These protests led to political violence in Bahrain, Libya, and Syria, but not in Morocco and Saudi Arabia. Hence, it seems that the timeline can explain relatively little of the variation in the dictators' responses to the Arab Spring protests.

External Support Structure. My model abstracts from external support structures. There are however good reasons to believe that the outcomes of political violence may have been affected by the international community: It is unclear whether King Hamad and his Sunni-dominated military forces would have been able to repress the Shia majority in Bahrain without Saudi Arabia's support. Saudi Arabia has also been involved in the leadership change and the subsequent civil conflict in Yemen.[34] Moreover, the North Atlantic Treaty Organization (NATO) was supporting the rebels in Libya, and it is unclear whether Colonel Qadhafi would have been overthrown in the absence of the NATO-led intervention. In the Syrian civil war, various external forces have been directly or indirectly involved, most notably Iran, Russia, Saudi Arabia, and the United States.[35] It is however important to highlight that my model does not aim to explain whether or not the dictator can stay in power when political violence occurs.

Instead, my model focuses on whether a dictator chooses to concede power, to bribe the citizens, or to engage in political violence. There is much less anecdotal evidence that external support structures and alliances have shaped this decision. Nevertheless, I try to look into this possibility in a systematic manner, using two different data sets: First, I use the data by Voeten (2013) on the similarity in the different countries' voting patterns in the General Assembly of the United Nations (UNGA). Their Voting Similarity Index (VSI) ranges from 0 to 1, with 1 implying identical voting decisions. Voting patterns in the UNGA may well shape international politics. As an example, Alesina and Dollar (2000) document that donor countries provide more generous foreign aid to recipient countries that vote more similarly in the UNGA. I list the VSIs between the different Arab dictatorships, on the one hand, and the United States and Russia, on the other hand, for the 2005–2010 period in Table 2. All Arab dictators voted quite similar to Russia (VSIs 0.83–0.87), but not to the United States (VSIs 0.14–0.18). More importantly, there is little variation in the voting similarity with the United States and Russia across Arab dictators. The reason is that all Arab dictators have very similar voting patterns. As a result, there is also very little variation in the VSIs between the different Arab dictators and regional powers, for example, Iran (VSIs 0.94–0.99) or Saudi Arabia (VSIs 0.96–1.00). Hence, these data provide no strong indication that external support structures should have been remarkably different across the Arab world when the Arab dictators had to decide how to respond to the Arab Spring protests.

Second, I use data on military aid by the United States from the so-called Greenbook (U.S. Overseas Loans & Grants) by the United States Agency for International Development (USAID). I report the average annual U.S. military aid to the different Arab countries during the 2005–2010 period. Egypt received around USD 76 million, followed by Jordan with around USD 17 million.[36] Interestingly, the dictators' behavior and their fate differed remarkably across these two countries: President Mubarak had to concede power in Egypt, while King Abdallah could stay in power without political violence even though Jordan is oil-poor as well. Bahrain, Morocco, Oman, and Tunisia are the only other countries that received more than USD 1 million in U.S. military aid per year. These four dictators also responded very differently to the Arab Spring protests (see discussion in Section IV and last column in Table 2). Hence, it seems highly unlikely that military support by the United States was a key determinant of the Arab dictators' responses to the Arab Spring protests.

While it is impossible to establish that no aspect of international politics played a key role in shaping the Arab dictators' responses, it is noteworthy that neither of these two systematic and data-driven approaches hints at such a key role.

Military Organization. My model does not take the military elite as an independent player. However, Bellin (2012) argues that in order to understand the different responses to the Arab Spring protests, we need to understand why the military decided to shoot at the protesters in some

34. See, e.g., "Yemen: The Old Man Who Will Not Go Away," *The Economist*, April 4, 2015.

35. See, e.g., "Still No Hint of a Compromise: The Big Powers and the Regional Ones Cannot Even Muster a Quorum for Peace Talks," *The Economist*, November 7, 2013.

36. Generous United States assistance to Egypt since the Camp David Accords is well-documented (e.g., Alesina and Dollar 2000).

countries, but refused to do so in others. She suggests that differences in military organization are a main reason. She argues that if the military is institutionalized, as in Egypt and Tunisia, then the military elite is not personally invested in the regime's survival and, therefore, unlikely to shoot at protesters. In contrast, if the military elite is selected based on sharing the same religious identity as the dictator, as in Bahrain or Syria, then it becomes deeply invested in the regime's survival and, therefore, willing to shoot at protesters if necessary.

Bellin's (2012) explanation for the different responses to the Arab Spring protests is consistent with my account in Section IV. My model even illustrates a likely reason for the different military organization and different behavior of the military elite. In Bahrain and Syria, the dictators and their ruling families are from the religious minority. These dictators know that by promoting members of their own religious group into the most important military positions, they end up with a military elite that understands that political transitions and regime change would be detrimental for them as well. This military elite is therefore willing to violently support the dictator. The presidents of Egypt and Tunisia came from the majority group. They were aware that this constellation makes it much harder to appoint a military elite with the same level of determination to fight for them. The facts that these presidents chose a more institutionalized military organization and that the military decided not to shoot at the protesters are thus likely consequences of them being (oil-poor) dictators from the majority group.

VI. CONCLUDING REMARKS

Many factors may have influenced the Arab dictators' different responses to the Arab Spring protests, but I have argued that 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 religious majority or the minority group. In particular, my model predicts that dictators from the majority group can stay in power by bribing the people if their country is oil-rich, but have to concede power if their country is oil-poor. In contrast, dictators from the minority group are likely to rely on the violent support of other members of their group to repress protests and to fight the majority group if necessary. The model's focus on the dictator's affiliation to the majority or the minority group is novel. The same holds true for the insight that a dictator from the minority group finds it cheaper and easier than a dictator from the majority group to motivate members of his own group to fight for the survival of his autocratic regime.

I have shown that my model's theoretical predictions are largely consistent with how the different Arab dictators responded to the Arab Spring protests. I thus view this model as complementary to existing theories of political transitions that were developed based on the West's experience. It remains to be seen whether my model (and these theories) will be helpful for understanding future waves of revolutionary protests and the elite's responses thereto. I expect my model to become most helpful in shedding light on political transitions and political violence in ethnically or religiously polarized societies.

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