

The Quran and the Sword*

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October 2020

Abstract

This paper elucidates the willingness of an autocrat to push through institutional reforms in a context where traditional authorities represented by religious clerics are averse to them and where the military control the means of repression and can potentially make a coup. We show that although the autocrat always wants to co-opt the military, this is not necessarily true of the clerics. Exclusive co-optation of the military obtains only where the autocrat's intrinsic legitimacy and the loyalty of his army are strong while the organizational strength of religious movements is rather low. Radical institutional reforms can then be implemented. Rent economies where ultra-conservative clerics are powerful enough to block any institutional reform that they dislike represent another polar case. Empirically, the dominant regime in contemporary Muslim countries is the regime of double co-optation where the autocrat resorts to a double-edged tactic: pleasing the official clerics by slowing the pace of reforms, and ensuring the loyalty of the military to be able to put down an opposition instigated by rebel clerics.

JEL Classification: D02, D72, N40, O57, P48, Z12

Keywords: Autocracy, army, instrumentalization of religion, Islam, reforms

*We thank participants at seminars or conferences in Venice, Paris School of Economics, Toulouse School of Economics, Namur, Boston and Harvard universities for their valuable feedback. Special thanks are owed to Jean-Marie Baland, Robert Barro, Alberto Bisin, Maristella Botticini, Maxim Boycko, and Nathan Nunn. Support is gratefully acknowledged for the DFID Grant received under the EDI (Economic Development and Institutions) programme. Emmanuelle Auriol acknowledges TSE-IAST funding from the French National Research Agency (ANR) under the Investments for the Future (Investissements d'Avenir) program, grant ANR-17-EURE-0010. We thank Eva Penelope Valentine Davoine for her research assistance.

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1 Introduction

Long-term economic growth and equitable development require the presence of a state sufficiently strong to reform a social and economic order rooted in erstwhile rules and practices. The question as to whether a democratic or an autocratic state is better suited to the task is unsettled. That democracy is not necessarily a precondition of development is attested by the historical experience of many presently developed countries. What seems undisputable, however, is the need for a "modern" state that has the capacity and the strength to carry out a number of key institutional reforms, in particular growth-promoting reforms that drastically change old ways of doing.¹

After independence, many Muslim countries thus embraced secularization and passed laws to "modernize" their economic system. Yet, over the last decades and under the pressure of Islamist movements, reform reversals occurred in several countries. Was this due to a weakening of repressive forces, to a decline in the legitimacy of autocratic rulers, or to other reasons, is one of the main empirical questions behind the present attempt. In particular, why did Saddam Husayn eventually turn from a dogmatic secularist adhering to Baathism into an adept of Islam is a puzzling fact that needs elucidation. Although our illustrative and motivational material comes from the Muslim world, Christian countries also potentially fall under our purview. Thus, in some parts of Latin America (most notably in Brazil and Central America) the rapid rise of evangelical Protestantism and other religious forces has influenced politics, causing a reversal of previous achievements, particularly in matters of personal behaviour and education.²

Because of their pervasive and deep-seated presence in Muslim coun-

¹Think of measures intended for removing land access rules that hamper efficiency or maintain many people under feudal shackles; for emancipating individuals from the sway of communal or collective prescriptions; for replacing rules emphasizing status or loyalty by merit-based selection and promotion criteria; or for combating forms of social discrimination, against women and low caste members in particular.

²For example, Jair Bolsonaro, president of Brazil, has appointed a sceptic of evolution to head the agency that oversees the quality of higher education. Albeit a Catholic, Bolsonaro was rebaptized in the river Jordan by a Pentecostal pastor. We can also think of the reversal of women's rights observed in Salvador ([Viterna et al., 2018](#)), or of the political use of (Christian) religion by president Jeanine Anez in Bolivia (2019-2020).

tries (see Blaydes and Chaney, 2013), our setup is that of authoritarian states. A useful distinction here is between strong and mildly strong autocracies. An authoritarian state is strong if the ruler exclusively relies on an army powerful enough to put down a rebellion led by traditional leaders, including religious authorities. Such a strategy is obviously risky since too powerful an army may make a coup against the ruler. The alternative strategy consists of building a mildly strong state that co-opts or seduces traditional leaders and clerics, and may therefore be content with a moderately-sized army yet at the cost of more modest reforms. What guides the choice of an autocrat between these two regimes is the central theoretical issue that drives the present endeavour.

In our framework, the military and the religious clerics (or organizations) are featured simultaneously as separate actors. In tackling the problem of modeling religious authorities, we stick to [Auriol and Platteau \(2017a,b\)](#) approach to the study of the influence of a decentralized body of clerics evoking not only Islam but also Hinduism and Buddhism.³ In particular, clerics are assumed to have heterogeneous income-ethics preferences and, as a consequence, they are unequally seducible or co-optable by the autocrat. On the other hand, we follow the line of mainstream political economy of autocracy by assuming that repression and co-option are the key instruments of power.⁴ However, in our model the army is featured as a full-fledged actor rather than as a hidden hand behind the ruler's repressive arm, in sharp contrast to [Auriol and Platteau \(2017a,b\)](#) who simply ignore the role of the military. In this sense our endeavour belongs to a recent economic literature that pays attention to the specific role of the military in actual or potential dictatorships ([Egorov and Sonin, 2014](#); [Besley and Robinson, 2010](#); [Acemoglu et al., 2009](#); [Leon, 2014](#); [Aney and Ko, 2015](#)).

Where we differ from that slowly emerging literature is by considering a three-player strategic game between an autocratic ruler, a centralized army,

³Judaism and (American) Protestantism are also largely decentralized religions, yet they prevail in countries that have a democratic rather than an autocratic regime.

⁴While in many of the political economy models only two actors (the ruler and the opposition) are playing, a growing literature considers two types of opposition: the citizens and the elites with the latter being defined either generically or specifically ([Bove et al., 2017](#)).

and a decentralized set of religious clerics. In this set-up, we allow the autocrat to have access to a rich set of policy instruments. Specifically, he can decide how to allocate the available aggregate income between himself, the clerics and the military (through the payment of perks and the awarding of a defense budget). Unlike in existing theories, he also sets the level of institutional reforms, which influence the magnitude of that income. While these different features naturally complicate the model, they also highlight the important trade-offs that naturally emerge in the trilateral political structure "Ruler-Military-Clerics" that we investigate.

When choosing the size of his repressive forces (or the defence budget), the autocrat may be driven by internal political order considerations, or he may be constrained by geopolitical forces that play out on the international level. In the latter instance, ample foreign military assistance may dispense him with the need to co-opt religious (or other types of traditional) leaders, whereas its sudden discontinuation will have the opposite effect. Other external forces can affect the political economy of Muslim autocracies, such as the international diffusion of Islamist ideologies originated in Pakistan (the ideas of al-Mawdudi) and Saudi Arabia (Wahhabism). Because some of the parameters of our model can represent channels through which such influences take place, it can shed light on the role of significant external events or forces that operate in combination with the internal functioning of Muslim polities.

A central feature of our scheme is that the loyalty of religious clerics and the military can be bought off by the autocrat. If the idea of the venality of key political players is well accepted by economists and political scientists alike, its application to religious clerics and men in uniform is unconventional. Yet, such an application is fully warranted, as attested by abundant evidence about the egregious economic privileges received by both religious officials and military officers. This indicates that they are not immune to corruption and not entirely (or mainly) driven by a sense of their mission (see, in particular, [Lapidus, 2002](#) and [Platteau, 2017](#) for the former, and [Siddiqi, 2017](#) and [Sayigh, 2019](#) for the latter).⁵ While

⁵In the Muslim world, [Kuru \(2009\)](#) recently argued that the rise to dominance of the

the military are important because they own the means of repression, the clerics' critical role is in legitimizing the autocrat's regime (Coulson, 1964; Hourani, 1991; Lee, 2014; Kepel, 2005; Platteau, 2008; Coggel et al., 2012; Rubin, 2017).

Religious legitimization is needed because, owing to their status and prestige, frustrated clerics could threaten the regime by stirring (with their preaches) a popular rebellion. The magnitude of this threat depends positively on the fraction of dissenting clerics. As for the military, they have the capacity not only of putting down such a revolution but also of staging a coup against any ruler, whether civilian or religious. The problem of the autocrat is how best to maintain himself in power and simultaneously achieve as high a rent as possible, through the optimal use of the available instruments that include the level of institutional reforms.

A central result is that the double co-option of the clerics and the military (the mildly strong autocracy) may be an equilibrium even when the autocrat is able to choose the size of his army (on the basis of strictly internal considerations). For this to obtain, the price of forsaking reforms must not be too high in terms of growth opportunities foregone (like in a rent economy based on rich natural endowments), implying that the indirect cost of co-opting conservative clerics is not too high.⁶ The autocrat can then rely on an army of moderate size. When this condition is violated, political economy equilibria emerge in which only the military are co-opted and a rather large army size is chosen by the autocrat (the strong autocratic state). Equilibria in which only clerics are co-opted never arise. Under exclusive co-option of the military, a regime more likely to be established when the autocrat's legitimacy is strong, the army is loyal, and religious clerics are rather weak, reforms are always more important than under double co-option.

Equipped with our model, we can then look at empirical material related to the Muslim world with a view to illustrating its main results. This is first done by following the same comparative case study approach as in

economy by the military rather than by the merchants dates back to the Seljuk Empire in the eleventh-century.

⁶The direct cost is the wage paid by the autocrat, which is endogenous.

Auriol and Platteau (2017a,b), and Platteau (2008, 2011, 2017). That is, we succinctly discuss a number of important regime cases that correspond to different types of politico-military-religious equilibrium derived in the theory. These analytical narratives testify to the critical role of theory in helping to sort out and organize a diverse and thick empirical material. Also, they drive attention to key political economy factors that are behind observed variations in the scope of institutional reforms enacted by different autocratic regimes. In particular, we provide evidence that the double co-optation regime is empirically dominant and that legitimacy considerations play an important role in determining the prevailing regime.

In a second step, we discuss two examples of within-country regime changes drawn from present-day Saudi Arabia, and the last period of Saddam Husayn's rule in Iraq. They vividly highlight the possibility of strong policy reversals. While in the first case the autocrat reduced his reliance on the clerics and concomitantly increased the pace of reforms, the opposite scenario was observed in the second case. According to our theory, it is when they become stronger (in terms of support of the military or legitimacy) that autocrats are tempted to stop seeking the allegiance of religious clerics. Conversely, it is when they become weaker that they seek to court conservative or reactionary leaders whom they had previously ignored or put down.

The outline of the paper is as follows. Section 2 describes our three-agent model and time structure before depicting the behaviour of the military and the clerics. Section 3 proceeds by analyzing the autocrat's optimal choice, which is done in two successive steps. We initially assume that the army size is fixed and then relax that assumption to analyze the general case where the ruler chooses the magnitude of the reforms, the perks of both clerics and military, and now the army size as well. Section 4 re-groups a number of modern Muslim regimes into analytically meaningful categories and goes on to depict the transformation of three regimes hit by a series of exogenous shocks. Section 5 summarizes the main results.

2 The model

We consider an economy with an autocratic ruler, an army and a clerical body. We first describe the time structure of the game before discussing the way the army and the clerics behave, successively. We will then be ready to analyze the autocrat's problem in the following section.

2.1 Time structure of the game

Consider the following static game and time structure:

Step 1: The Ruler, a collective agent standing for the autocrat and his surrounding clique, chooses the magnitude of the reforms, α , the wage paid to the supporting clerics, w_c , the wage paid to the members of the army, w_m , and the amount of the defense budget corresponding to the size or the power of the army, $M \in [0, 1]$. For instance, it may reflect the fraction of the active population enrolled in the military. In the baseline model, we assume M to be fixed. The reform provides net economic gains to the prevailing regime, denoted by $R(\alpha)$ where $R'(\alpha) > 0$ and $R''(\alpha) < 0$. The Ruler's national legitimacy is measured by L , which is known not only by himself but also by the Military, the collective agent standing for the single command structure of the army.

Step 2: Each religious cleric needs to decide whether to support or not the regime. Supporting the autocrat entails a risk for the cleric i of losing his office (e.g., by ruining his religious credibility and authority), which decreases with the local legitimacy of the Ruler as perceived in the environment of the cleric i and with the local efficiency of the army. We suppose that the local legitimacy takes the following form $L_i = L + \epsilon_i$, while the local efficiency of the army is $\lambda M + \mu_i$, where ϵ_i and μ_i are independently and uniformly distributed in $[-\epsilon, \epsilon]$.⁷ In other words, the clerics are scattered over the national territory and over different networks between which the local legitimacy of the Ruler and the effectiveness of the

⁷Alternatively, we could take μ_i to be a random shock distributed independently and uniformly on $[-\mu, \mu]$, where $\mu \neq \epsilon$. Our results hold under this more general formulation. The computations are available from the authors upon request.

Military vary. Thus, the legitimacy may be stronger or smaller in remote rural areas depending on the reach of the regime's propaganda and the congruence of its past policies with the aspirations and values of the local population. Similarly the shape of the military repressive technology λM is locally affected by several social, geographic and demographic factors, such as ethnic diversity, urban density and roughness of terrain captured by μ_i . The fraction of supporting clerics is γ , and they receive their wage w_c from the ruling regime when they are able to maintain themselves in office.

Step 3: In front of the opposition stirred by $1 - \gamma$ clerics, the Military decides whether to put it down or not. The military obey a hierarchical structure that resembles a centralized organization. The men in uniform hold values: their patriotic values may be more or less progressive depending on the extent to which their concept of the nation is rooted in modernity rather than in tradition. At the same time, they are sensitive to the appeal of material advantages: they may care about direct transfers such as wages or defence budgets, or about specific policies that provide them with economic gains (think of the economic rents derived from productive assets that they are allowed to own and control). By offering them sufficient perks, the ruler can therefore expect to buy the allegiance of the army.

Step 4 : - In case of repression by the army, the revolution fails when the strength of the opposition is smaller than the strength of the regime. Formally, the revolution fails when $S_C(1 - \gamma) < S_R(L, \lambda M I_m)$. For convenience we assume that the strength of the cleric opposition is a linear increasing function of the fraction of clerics $1 - \gamma$ opposing the regime: $S_C(1 - \gamma) = s(1 - \gamma)$, with $s > 0$ measuring the efficiency of the clerics at organizing the rebellion. Likewise, the military strength of the regime is a linear separable function of L , the global legitimacy of the ruler, and of $\lambda M I_m$, the extent of repression applied by the military where I_m is an indicator function such that $I_m = 0$ when the Military, of size M , does not repress revolt and $I_m = 1$ when it does, and $\lambda > 0$ is a parameter capturing the efficiency of the Military at violence: $S_R(L, \lambda M I_m) = L + \lambda M I_m$.

Intuitively, the ruler’s legitimacy enters as a substitute to the force of repression in the capacity of the regime to remain into power. With these notations, the revolution fails and the Ruler stays in power when the following no-regime-change condition is satisfied:

$$s(1 - \gamma) \leq L + \lambda MI_m. \quad (1)$$

- If the clerics-led revolution succeeds with no military repression, the new religious regime (i.e., theocracy) pays to the existing Military a wage w_m^c if there is no coup, and then implements a reform program that we normalize to $\alpha^c = 0$.⁸

Step 5 : The Military decides to make a coup or not. When it makes a coup, it pays a cost $C(M)$ decreasing in the size of the army and concave (i.e., $C'(M) < 0$ and $C''(M) < 0$), with $C(0) > 0$ large enough.⁹ In the succeeding military regime, the army takes control of the economy and implements its own reform program α^m .

2.2 The military: analysis of coups

When the Military makes a coup, the benefit from seizing power is:

$$R_m^\delta = \max_\alpha \{ \delta R(\alpha) - \theta^m V(\alpha) \} \quad (2)$$

where $\delta R(\alpha)$ is the national revenue generated by the military regime when it implements a reform programme of magnitude α . We assume that $\delta (\leq 1)$ measures the relative inefficiency of the Military in carrying out reforms compared to the civilian autocrat.¹⁰ The parameter $\theta^m (> 0)$ reflects the degree of aversion of the men in uniform toward reforms, while $V(\alpha)$ stands

⁸In contemporary Muslim theocracies the most puritan clerics are in power. This is a consequence of the decentralized structure of the religion. As shown by [Auriol and Platteau \(2017a,b\)](#) the marginal cleric, who is more radical than the average one, is the pivotal cleric with a decentralized religion. We assume that in case of a successful religious revolution the most extreme clerics are ruling.

⁹These conditions imply that there exists a threshold M^{\max} such that $C(M) = 0$ for all $M \geq M^{\max}$.

¹⁰[Sayigh \(2019\)](#) thus writes that in Egypt the military economy is ”considerably less productive than commonly believed, and certainly far less cost-effective than the military itself portrays” (p. 8).

for the ideological cost of undertaking these reforms. We assume that $V(\alpha)$ is increasing convex (i.e., $V'(\alpha) > 0$ and $V''(\alpha) > 0$) and $V(0) = V'(0) = 0$.

Definition 1 $\alpha^*(y)$, decreasing in y , is so that:

$$R'(\alpha) = yV'(\alpha). \quad (3)$$

Given that $R(\alpha)$ is increasing concave, and $V(\alpha)$ increasing convex, differentiation of (3) implies that $\alpha^*(y)$ decreases with $y \geq 0$.¹¹

The optimal reform program of the Military, α_δ^m , is given by the necessary and sufficient first order condition solution to (2): $\delta R'(\alpha) = \theta^m V'(\alpha)$. From definition 1 we deduce that $\alpha_\delta^m = \alpha^*\left(\frac{\theta^m}{\delta}\right)$ is decreasing with θ^m and increasing with δ . The equilibrium payoff of the Military when in power can be written as:

$$R_m^\delta = \delta R(\alpha_\delta^m) - \theta^m V(\alpha_\delta^m). \quad (4)$$

By contrast, the income of the M army men when they have successfully put down a clerics-led rebellion and refrained from making a coup afterwards is Mw_m , where w_m is the per capita wage paid by the Ruler while staying in power. We deduce that to avoid a coup following a successful military containment of a rebellion, the Ruler must offer the military a wage such that:

$$Mw_m - \theta^m V(\alpha) \geq R_m^\delta - C(M) \quad (5)$$

If, on the other hand, the Military chooses to let the rebellion follow its course, the incumbent government is replaced by a religious government which implements its best policy mix normalized to, $\alpha^c = 0$, and the payoff of the Military depends on whether he wants to carry a coup against the religious clerics or not. If he does not, the Military gets $w_m^c M - \theta^m V(0) = w_m^c M$, while in the opposite case, he receives $R_m^\delta - C(M)$. If the religious government does not want the military to dislodge it from power, it should therefore ensure that:

$$Mw_m^c \geq R_m^\delta - C(M). \quad (6)$$

¹¹That is $\frac{d\alpha^*(y)}{dy} = \frac{-V'(\alpha)}{-R''(\alpha) + yV''(\alpha)} \leq 0$.

It is worth noting that the incentive compatibility constraint (6) facing a religious government against an army coup is less constraining than the incentive compatibility constraint (5) facing the incumbent, as long as the latter wants to implement a reform mix $\alpha > 0$.¹² Specifically, the religious government's constraint is binding if and only if that government needs to pay a positive wage to the Military (beyond the reservation wage normalized to 0) to prevent an army's coup. This will be the case if and only if $C(M) < R_m^\delta$, that is condition (6) is binding iff $M \geq M_c$, where

$$M_c = C^{-1}(R_m^\delta). \quad (7)$$

We establish the following preliminary result.

Lemma 1 (*no-military-coup constraint*) *Assuming that (1) holds, the Ruler will stay in power if and only if*

$$w_m M \geq \theta^m V(\alpha) + \max \{R_m^\delta - C(M), 0\} \quad (8)$$

Proof. See appendix 6.1. ■

Equation (1) implies that when a revolution is repressed it ends in failure. In this case condition (8) in Lemma 1 ensures that the military has no interest in making a coup against the autocrat. Clearly, the wage paid to the Military can never be nil.

Note that in the above discussion we have assumed that making a coup entails an additional cost $C(M)$ compared to repressing a popular rebellion. The idea is that while the organization of a coup requires a great capacity for coordination and for the control of state institutions and the society, fighting against street demonstrators is a more routine task that the army is well prepared to perform.¹³

¹²We thus have $Mw_m > Mw_m^c \geq 0$.

¹³We could impute a (comparatively small) cost for the latter task, but this would not alter the results of the model. We therefore normalize it to 0, and $C(M)$ is the incremental cost of a coup.

2.3 The clerical body

We focus on decentralized religions. The clerical body is composed of a continuum of individuals with different levels of conviction and commitment to the faith identified by a parameter θ . The larger is θ , the more conservative the cleric. We assume that each member's characteristic, θ , is independently and identically distributed on $[0, \infty)$ with a continuous distribution density $g(\theta)$. The mean value of θ is $\theta^c = \int_0^\infty \theta g(\theta) d\theta$, which is the distance between the (average) measure of the values held by the religious clerics and the autocrat (as in [Auriol and Platteau, 2017b](#)). In other words, both the religious clerics and the Military have an ideological bias against reforms. In general, however, this bias is on average smaller for the latter than for the former, i.e., $\theta^m < \theta^c$, and one distinct possibility is that θ^m is very small, reflecting near agreement between the Military and the Ruler.

Under a decentralized religion, each cleric has to choose whether to support the autocrat, and hence compromise himself with the current political regime, or to oppose the Ruler's policies by refusing to endorse them. In the former instance, his utility depends on his type $\theta \in [0, \infty)$, which reflects his degree of aversion towards reforms, on the extent of reforms implemented by the Ruler, $\alpha \geq 0$, on the monetary transfer or compensation obtained from him, $w_c \geq 0$, and on the risk of having his religious standing dented as a result of his cooperation with the political regime, as measured by $1 - p \in [0, 1]$. That is,

$$U(\theta, w_c, \alpha, p) = pw_c - \theta V(\alpha) \quad (9)$$

where p is the probability that the cleric will maintain his standing or keep his ministry by supporting the autocrat, and, as before, $V(\alpha)$ stands for the ideological cost of endorsing the Ruler's reforms. An important feature of the above specification is that while the material benefit, w_c , from supporting the regime is uncertain, the psychological or ideological cost, $\theta V(\alpha)$, is certain and paid upfront. If, instead, a cleric chooses not to support the autocrat, he does not get paid but does not suffer the ideological cost, so that, compared to a complaisant cleric, the change of utility is 0.

The choice to support the regime depends on the risk to lose one's religious office by compromising with the autocrat and his clique: $p_i(\gamma^e) = P(\text{stay in office}/L_i) = P(s(1 - \gamma^e) \leq L_i + \lambda M + \mu_i)$. This probability, which depends on γ^e the fraction of cleric that also support the autocrat, is not the same everywhere. It depends on the local legitimacy of the autocrat, $L_i = L + \epsilon_i$, and on the local efficiency of the army, $\lambda M + \mu_i$. Integrating on μ_i the probability p_i yields:¹⁴

$$p_i(\gamma^e) = \frac{L_i + \lambda M - s(1 - \gamma^e) + \epsilon}{2\epsilon}. \quad (10)$$

Let $L^*(\theta, \gamma^e)$ be the threshold value of the (local) legitimacy of the Ruler so that $p_i(\gamma^e) = \frac{\theta V(\alpha)}{w}$. A cleric of type θ supports the Ruler when $L_i \geq L^*(\theta, \gamma^e)$, and chooses to enter into opposition when $L_i < L^*(\theta, \gamma^e)$. Given this, the proportion of clerics who support the Ruler writes as:

$$\gamma^* = \int_0^\infty P(L_i \geq L^*(\theta, \gamma^e))g(\theta)d\theta.$$

Under rational expectations of the equilibrium number of clerics supporting the regime, we should have that $\gamma^e = \gamma^*$. The national clerical support for the Ruler is then characterized as follows:

Proposition 1 *Assume that $2\epsilon > s$. There exists a unique equilibrium fraction $\gamma^*(M, \alpha, w_c)$ of clerics supporting the regime in the Perfect Nash Equilibrium and characterized as follows:*

$$\gamma^*(M, \alpha, w_c) = \max \left\{ \min \left\{ 1 - \frac{2\epsilon}{2\epsilon - s} \frac{\theta^e V(\alpha)}{w_c} + \frac{\lambda M + L}{2\epsilon - s}, 1 \right\}, 0 \right\} \quad (11)$$

Proof. See Appendix 6.2. ■

The assumption $2\epsilon > s$ implies that there is enough variance of the local legitimacy and of the efficiency of the army to ensure the existence of a unique equilibrium. As can be seen, at the interior solution, the opposition to the autocrat by the clerical mass decreases intuitively with the rent the religious clerics get in exchange for their support, w^c , the autocrat's national legitimacy, L , and the repressive power of the army, λM .

¹⁴That is, $p_i = P(\mu_i \geq s(1 - \gamma^e) - L_i - \lambda M) = \int_{s(1 - \gamma^e) - L_i - \lambda M}^\epsilon \frac{d\mu_i}{2\epsilon}$ equal to (10) as μ_i is independently and uniformly distributed in $[-\epsilon, \epsilon]$.

It increases with the level of reforms implemented by the autocrat, α , the (average value of) the clerics' aversion to reforms, θ^c , and the effectiveness of the clerics at organizing rebellions, s .

3 Optimal choice of the ruler

We are now in a position to consider the first stage of the game, namely the optimal policy choices of the ruler. The Ruler's problem is defined as:

$$\begin{aligned}
 & \max_{\alpha, w_c, w_m, M} R(\alpha) - \gamma^* w_c - w_m M & (12) \\
 \text{s.c.} \quad & \gamma^* = \gamma^*(M, \alpha, w_c) \text{ solution to (11)} \\
 & L + \lambda M \geq s(1 - \gamma^*) \text{ defined in (1)} \\
 & w_m M \geq \theta^m V(\alpha) + \max \{R_m^\delta - C(M), 0\} \text{ defined in (8)}
 \end{aligned}$$

The Ruler maximizes his net rents under the threat of a revolution and a subsequent military coup. Since there are no other sources of uncertainty, and there is full information between the Ruler and the Military, no actual change of regime occurs at the optimum and no coup is undertaken by the Military, thanks to the no-regime-change (1) and the no-military-coup (8) constraints. Nevertheless these constraints restrain the autocrat's actions in a way that will soon become explicit.¹⁵

3.1 Exogenous military size M

In the baseline model, the military size, M , is exogenous, and the Ruler has only three instruments available to him: α, w_c, w_m . This corresponds to situations where choosing the size of the army is not possible for the Ruler. One possible reason is that this size is essentially a legacy of the past and may not be easily modified. The country's army may have been largely financed by foreign governments driven by their own geo-political motives, as

¹⁵Of course, coups and regime changes can happen in reality. Yet in our setup they can only happen as a result of mistakes, namely a wrong appreciation of some key parameter by the Ruler. For instance, if the Ruler underestimates the military's aversion to reforms, he will offer them a wage bill too low to dissuade them from making a coup, and will be overthrown. With some learning, a new, wiser autocrat may then come up and propose a higher wage bill to the ruling junta. The military would then be prompted to quit power and serve the new Ruler.

was typically observed during the Cold War or was justified, more recently, by the need to fight against the threat of worldwide terrorism. It may also be the case that the strength of the Military is chosen nationally on the basis of objectives bypassed in the model. Here, what we have in mind are foreign policy objectives born out of the need to counter perceived foreign threats, or ambitious plans to expand the national territory or intervene in foreign battlegrounds with a view to asserting or defending the country's interests.¹⁶

3.1.1 Analysis of the Ruler's problem

We show in the appendix that the solution of the Ruler's problem (12) when M is fixed, is given by the following proposition.

Proposition 2 *Denote $F(M) = \frac{L+\lambda M}{s}$ and $\Theta = \theta^m + \frac{1-F(M)}{F(M)}\theta^c$. The optimal policy vector $(\alpha^{op}, w_c^{op}, w_m^{op})$ of the Ruler's optimization problem at any level of military force, M , is the following :*

- (a) $\left(\alpha^*(\Theta), \frac{\theta^c V(\alpha^*(\Theta))}{F(M)}, \frac{\theta^m V(\alpha^*(\Theta)) + \max\{R_m^s - C(M), 0\}}{M} \right)$ if $F(M) < 1$
- (b) $\left(\alpha^*(\theta^m), 0, \frac{\theta^m V(\alpha^*(\theta^m)) + \max\{R_m^s - C(M), 0\}}{M} \right)$ if $F(M) \geq 1$

Proof. See appendix 6.3. ■

Typically, the Ruler has two tools to promote his reforms: carrot (i.e., material privileges) and stick (i.e., military repression). When the military are weak so that $F(M) < 1$, only the carrot is effective to deter a rebellion and the clerics need to be seduced with some positive wage, $w_c^{op} > 0$. At the same time the military should receive a wage w_m^{op} sufficient to keep them on the side of the incumbent regime: they will then accept the Ruler's optimal policy mix. When the military are strong so that $F(M) \geq 1$, however, the stick is used to keep religious leaders in line, but it comes at a cost. When the army is powerful enough, it needs to be tamed through material privileges in order to prevent a coup against the autocratic rule. From

¹⁶Not infrequently, these three considerations are simultaneously at play as attested by the examples of Egypt, Pakistan, and Afghanistan.

this tradeoff, two types of regimes can emerge as described in Proposition 2 with one variant for each, depending on the capacity for coup and the strength of the men in uniform: (a) double co-option regimes A and A' and (b) exclusive military co-option regimes B and B' . Regimes A and B occur whenever $M \leq M_c$ with M_c defined in (7) (i.e., when $R_m^\delta \leq C(M)$) so that the military is relatively inefficient at secular production and therefore has few incentive to implement a coup, while regimes A' and B' occur whenever $M > M_c$ (i.e., when $R_m^\delta > C(M)$) and the military is relatively efficient at managing the economy and might be tempted by a coup.

A first feature to notice is the asymmetrical character of the typology of regimes: the Ruler can never ignore the Military (i.e., $w_m^{op} > 0$ both in regimes a and b), yet can sometimes ignore the religious clerics (i.e., $w_c^{op} = 0$ in regimes b). This asymmetry is caused by the fact that the former have the ability to beat back the latter while the opposite is not true. Otherwise, they are analogously averse to progressive reforms, albeit to a different extent and under a different organizational structure (centralized for the Military and decentralized for the clerics).

Second, the crucial element which separates the two types of regimes is $F(M) = \frac{L+\lambda M}{s}$, describing a measure of the relative force of the autocratic regime compared to the opposition force of the religious leaders. The larger $F(M)$, the more powerful the autocrat's hold on power, and the weaker the threat posed by the religious clerics. When $F(M) < 1$, which is equivalent to $M < M_F = \frac{s-L}{\lambda}$, the no-regime change constraint (1) is binding in program (12) and clerics are sufficiently threatening that they receive strictly positive equilibrium perks and a double co-option regime prevails (regimes A or A'). Conversely when $F(M) \geq 1$, which is equivalent to $M \geq M_F$, (1) is not binding. The capacity of opposition to the Ruler is weak and their religious leaders receive no perks (regimes B or B').

Third, the equilibrium level of reforms, α^{op} , differs significantly across the two types of regimes. Under the double cooption regimes A or A' , it is given by $\alpha^d(M) = \alpha^*(\Theta(M))$ and depends negatively on $\Theta(M)$, a measure of the opposition to reforms in the society (i.e., a weighted sum of the opposition to reforms by the military and by the clerical class) that

depends on M the size of the army. Since $F(M)$ increases with M , $\Theta(M) = \frac{1-F(M)}{F(M)}\theta^c + \theta^m$ decreases with M . As the military strength goes up, the resistance to reform is reduced: $\alpha^*(\Theta(M))$ increases with M . The reason is that the weight put on the clerics decreases and the reforms become more aligned with the preferences of the military, who are less averse to reforms. In the limit, when $F(M) \rightarrow 1$, the clerics preferences are simply ignored. By continuity, in the exclusive military co-option regimes B or B' , the level of reforms is $\alpha^m = \alpha^*(\theta^m)$, which depends only on the aversion to reforms of the military, θ^m .

The optimal level of reforms $\alpha^{op}(M)$ is represented in Figure 1. Monotonic in the military size, M , it reaches its maximum α^m at the threshold:

$$M_F = \frac{s - L}{\lambda}. \quad (13)$$

This threshold is the minimum size of the army ensuring that it will always successfully repress a religious rebellion (i.e., such that $F(M) = 1$), thus separating the regimes with double co-option from those with exclusive military co-option. Moreover, we have that $\alpha^d(M) < \alpha^m$, namely the equilibrium reform mix is smaller in the double co-option regimes than in the exclusive military co-option regimes, as the mix of opposition to reforms is stronger in the former than in the latter.

Under regime A , the military are very weak: $M \leq \min\{M_c, M_F\}$. They cannot prevent a full rebellion (i.e., one that would be supported by the entire clerical body) nor do they wish to stage a coup against a religious conservative government that does not implement reforms. The autocrat therefore faces two challenges to his authority: the resistance of the religious leaders, and the risk that the military refuse to repress the rebellion. In this situation, the autocrat pays positive wages to the clerics ($w_c^{op} > 0$) to mitigate their resistance, and he gives enough perks to the military to ensure their support in the event of a clerics-led rebellion. At the same time, to minimize these expenses, he also takes due account of their preferences about reforms and relatively few of them are undertaken.

Under regime A' , a variant of regime A which occurs when $M_c < M < M_F$, the military are still too weak to prevent a full rebellion ($M \leq M_F$), but they are strong enough to credibly stage a coup against a religious

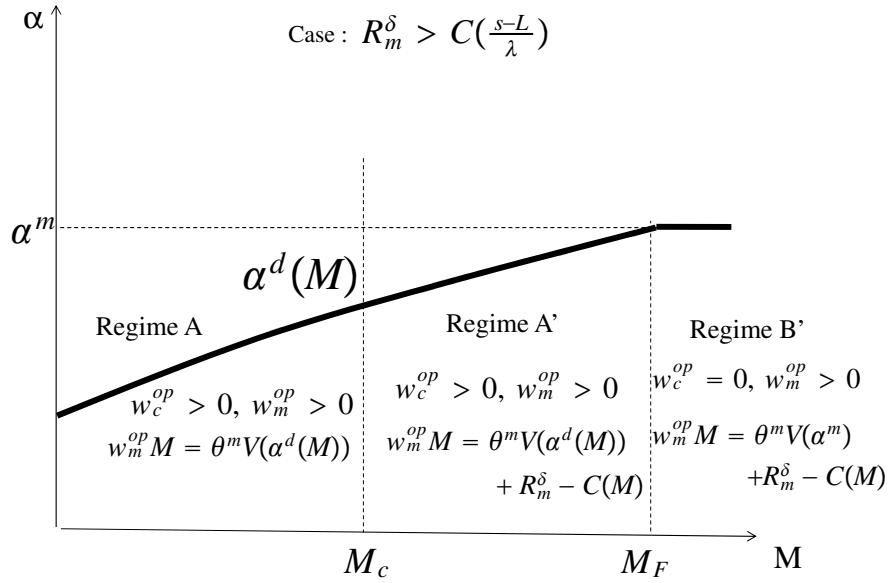
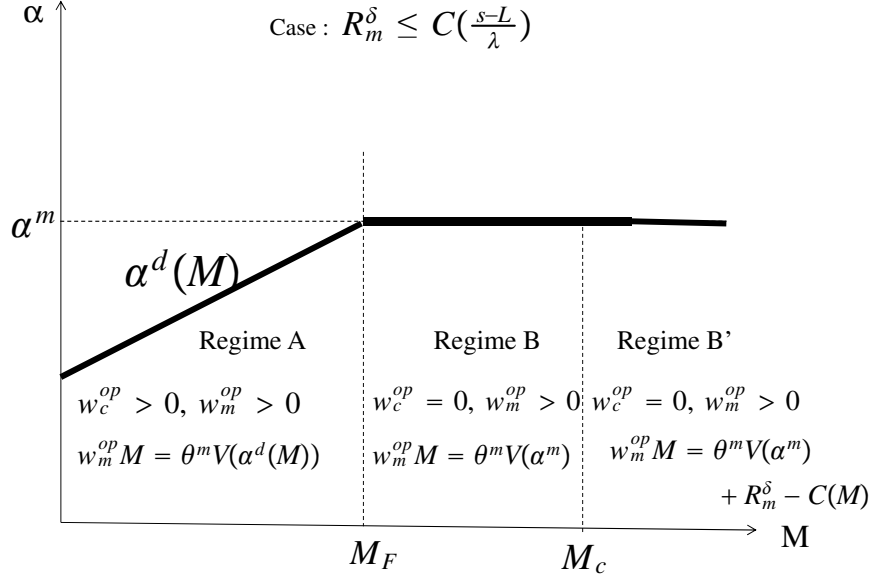


Figure 1: Optimal reform policy as a function of military size

conservative regime that shuns any reform ($M > M_c$). In such a case, the autocrat must pay attention not only to the threat of regime change by a clerics-led revolution, but also to the risk of a subsequent coup by the military. The magnitude of reforms is thus limited both by the military coup constraint and the change-of-regime constraint. A double co-option regime prevails but a more powerful military now extracts a greater wage bill from the autocrat.¹⁷ Because the military are stronger and aggregate aversion to reforms, $\Theta(M)$ is therefore weaker, the equilibrium reform level defined in (3), $\alpha^*(\Theta)$, is also greater under A' than under A .

Under regime B which occurs when $M_F < M < M_c$, the autocrat enjoys sufficient legitimacy that even with an army of moderate size $M < M_c$ (i.e., too weak to stage a coup against a religious conservative government), military repression is effective enough to tame any popular rebellion instigated by the clerics. Hence, the clerics cannot threaten the regime and receive zero perk. The main challenge for the autocratic ruler is to convince the military to stay on his side when a rebellion occurs, which is done by choosing a level of reforms, α^m , that takes their ideological preferences into account. Because they are not capable of staging a coup, however, the military receive moderate perks that do not depend on their strength ($w_m^* M$ is constant since α^m is constant).

Lastly, regime B' holds when the size of the army is very large so that $M \geq \max\{M_c, M_F\}$. With such a powerful army, religious leaders cannot threaten a regime change. They do not get any rent and their aversion to reforms is ignored. The main threat to the autocrat comes from the possibility of a military coup. To keep this risk at bay, he extends important privileges to the army (and the higher M , the greater these privileges). Concomitantly, he chooses a programme of reforms, α^m , that is close to the preferences of the men in uniform so that the weaker the aversion of these men, the higher the level of reforms.

It is now clear that the pivotal threshold that determines whether double co-option can prevail is the no-regime-threat threshold, M_F , not the

¹⁷This is because $w_m^{op} = \frac{\theta^m V(\alpha^*(\Theta)) + R_m^\delta - C(M)}{M}$, where $R_m^\delta - C(M) > 0$, while this expression is nil under regime A .

no-coup threshold, M_c . Thus, regime A is the only possible double co-option regime when M_F is below M_c , whereas regime A' is feasible only when M_c is below M_F . It is obviously when the army size is below M_F that the clerics wield greatest bargaining power.

3.1.2 Comparative statics

We discuss the comparative statics of the model along two main types of parameters: the preference parameters affecting the aversion to reforms (θ^c for the clerics, θ^m for the Military), and those affecting compactly the relative strength of the regime $F(M) = \frac{\lambda M + L}{s}$. Proposition 2 indicates that the Ruler's optimal policy choice crucially depends on $F(M)$.

- **Exclusive Military co-option regimes:** $F(M) \geq 1$

In equilibrium regimes B and B' , the antagonized clerics do not endorse the autocrat's policies, no matter what. Their latent opposition to his reforms is maximal: $\gamma^* = 0$. The pace of reforms, constant at $\alpha^m = \alpha^*(\theta^m)$, is therefore relatively high and insensitive to marginal changes in the strength of the regime or the radicalisation of the religious leaders (i.e., it is unaffected by changes in $F(M)$ or in θ^c). It only goes down with θ^m so that the effect of a radicalization of the Military on their wage w_m^{op} is ambiguous. This ambiguity arises from the fact that for a given reform level α , a higher wage w_m needs to be paid for a higher disutility of reform of the military. At the same time, the equilibrium reform level chosen by the Ruler α^m is itself moderated by the increased reform aversion of the military. We show in Appendix 6.4 that both effects might dominate.

- **Double co-option regimes:** $F(M) < 1$

In regimes A and A' , the autocrat aims to co-opt both the army and a fraction of the religious leaders so that the equilibrium reform level is $\alpha^*(\Theta)$. Since $\Theta = \theta^c \left(\frac{1}{F(M)} - 1 \right) + \theta^m$, any change in $F(M)$, θ^c or θ^m impacts the pace of reforms and the share of rents between the three agents.

Radicalization: It is intuitive that an increase in the aversion to reforms of either the clerics or the army leads to a decrease in the pace of reforms.

Interestingly, whether the effect of θ^c on Θ is stronger or weaker than the effect of θ^m critically depends on $F(M)$. The former effect outweighs the latter if and only if $F(M) \leq 1/2$, which is obviously more restrictive than the condition $F(M) \leq 1$ under which regimes A and A' are relevant. In other words, it is when the autocratic regime is weak that an increase in the anti-reform zeal among the clerics carries a stronger weight than an increase of the same among the military.

Focusing on the rents, when θ^m increases, not only are reforms moderated but also the wage of the clerics, w_c^{op} , decreases, as there is less need to compensate them for their disutility of reforms. Symmetrically, when θ^c increases, w_m^{op} , the wage of the military, decreases for the same reason. By contrast, the effect of an increase of the average reform aversion of the clerics θ^c (respectively of the army θ^m), on their own wage w_c^{op} (respectively on w_m^{op}), is ambiguous. On the one hand, there is a direct positive effect according to which more reform-averse clerics/military need a larger compensation to support any *given* level of reforms. On the other hand, a higher θ^c/θ^m leads to a larger social aversion to reforms, Θ , thereby prompting the Ruler to choose a lower equilibrium level of reforms. This reduces the equilibrium wage w_c^{op}/w_m^{op} needed to compensate the disutility of reforms. Which of these two effects dominates depends on the elasticity conditions that we discuss in Appendix 6.4 and 6.5.

Strengthening the regime power: An increase of the regime strength, $F(M)$, by decreasing the global opposition to reforms Θ , raises the pace of reforms.¹⁸ In turn, this upsets the most conservative clerics who withdraw their support to the Ruler. Hence the fraction of supporting clerics, $\gamma^* = 1 - F(M)$, falls with $F(M)$ (see Appendix 6.5 for a discussion).

The wage of the army increases with $F(M)$ (see appendix 6.4). By contrast the effect of a rise in $F(M)$ on the equilibrium perks of the clerics, $w_c^{op} = \frac{\theta^c V(\alpha^*(\Theta(M)))}{F(M)}$, is ambiguous due to two opposite effects. First, when $F(M)$ increases, the equilibrium level of reforms $\alpha^*(\Theta)$ goes up. This *positive reform effect* leads to an increase in the clerics' disutility cost of reform,

¹⁸Since α^* decreases with Θ , which itself decreases with $F(M)$, any increase in $F(M)$ in the double co-option regime raises the pace of reforms $\alpha^d(M) = \alpha^*(\Theta(M))$.

implying that the Ruler must pay them a larger compensation to obtain their support. At the same time, an increase in $F(M)$ reduces the probability of a successful rebellion, thus reducing the need to buy the clerics off. This is a *negative deterrent effect* on the clerics' dissidence. In Appendix 6.5, we provide a necessary and sufficient condition for the negative deterrent effect to dominate the positive reform effect, and therefore for w_c^{op} to be decreasing in $F(M)$.¹⁹

It is interesting to note that *across* the different equilibrium regimes, the clerics' wage, w_c^{op} , may be a non monotonic function of the regime's strength. Indeed as long as for some value of $F(M) < 1$, the positive reform effect overcomes the negative deterrent effect, the discussion above indicates that w_c^{op} is increasing in $F(M)$. On the other hand, once $F(M) \geq 1$, the clerics do not receive any wage ($w_c^{op} = 0$). This implies a discontinuity in the Ruler's policy between the regimes A/A' and B/B' . In the vicinity of $F(M) = 1$, small changes in $F(M)$ due to changes in the military efficiency, the Ruler's legitimacy, or the influence of the clerics, may then lead to sharp changes in the way the regime deals with religious leaders.²⁰ We discuss such abrupt policy reversals in some of our case studies.

3.2 Endogenous choice of the military

3.2.1 Equilibrium analysis

So far we have focused on situations where the size of the military was fixed by exogenous forces, either external or internal. However, there are cases where the autocrat is able to choose the size of the army. He then has available two instruments to influence the behaviour of the men in uniform: w_m , their perks/privileges, and M , the defence budget that determines the army's size. In this section we study the optimal size of the military from the autocrat's point of view. We have seen that to stay in power he needs to prevent both a successful clerics-led popular revolution and a successful

¹⁹This condition is more likely to hold for a resource-rich economy where the return to reforms on the economy is weak (ie. $R(\alpha)$ is strongly concave) and when clerics are intensely opposed to modernization (ie. $V(\alpha)$ is very convex).

²⁰In the appendix 6.5 we provide a parametric example of such non monotonicity with constant cost and revenue elasticities.

military coup. Providing enough defense resources to the army reduces the risk of rebellion, but presents the drawback of increasing the risk of a successful military coup. This risk can nevertheless be mitigated by paying high wages and awarding large economic rents to the military, which reduces their incentive to meddle in politics and simultaneously increases their incentive to crush a clerics-led revolution. Yet, since resources available to the Ruler are limited, a better-paid army may mean the curtailing of its size, which would not be an effective strategy to protect the regime. The choice of the optimal army size is trading off those different dimensions. In order to address this issue, we need to consider two specifications of the Ruler's objective function depending on how R_m^δ compares to $C(M_F)$.

The payoff function of the Ruler can be written (see equations (29) and (32) in the appendix 6.3):

$$W(M) = R(\alpha^*(\Theta)) - \Theta V(\alpha^*(\Theta)) - \max\{R_m^\delta - C(M), 0\} \quad (14)$$

$$\text{where } \Theta = \begin{cases} \theta^m + \frac{1-F(M)}{F(M)}\theta^c & \text{if } F(M) < 1 \\ \theta^m & \text{if } F(M) \geq 1 \end{cases}$$

Let M^* be the solution to the following equation:

$$C'(M) + \frac{s\lambda\theta^c}{[\lambda M + L]^2} V(\alpha^*(\Theta)) = 0 \quad (15)$$

Recall that $M_c = C^{-1}(R_m^\delta)$ and $M_F = \frac{s-L}{\lambda}$. The next proposition depicts the equilibrium values of the optimal army size from the Ruler's point of view distinguishing between two cases, and taking into account the possibility of several shapes of the function $W(M)$ in the second case.²¹

Proposition 3 *The optimal size M^{op} of the army is as follows.*

- If $M_c > M_F$, then $M^{op} = \{M \in [M_F, M_c]\}$

- If $M_c \leq M_F$, then

$$M^{op} = \begin{cases} M_c & \text{if } W'_+(M_c) \leq 0 \\ M^* \in]M_c, M_F[& \text{if } W'_+(M_c) > 0 > W'_-(M_F) \\ M_F & \text{if } 0 \leq W'_-(M_F) \end{cases}$$

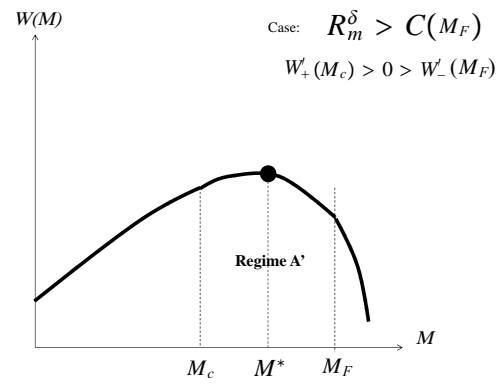
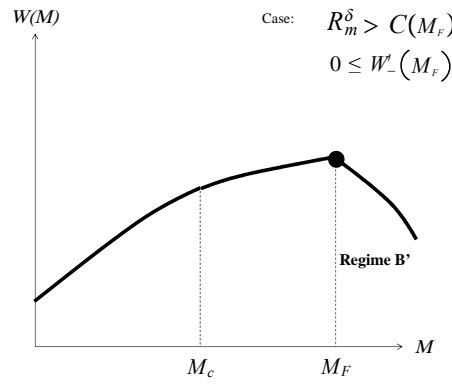
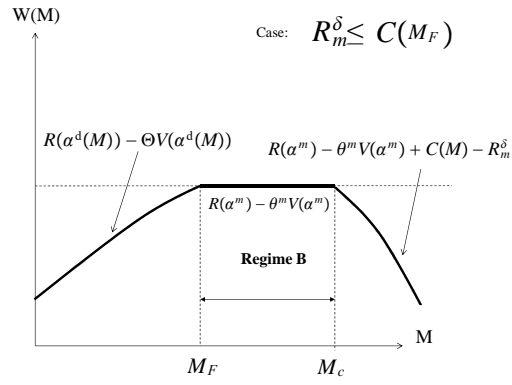


Figure 2: Optimal military size

Proof. See Appendix 6.6 ■

If the Ruler is sufficiently powerful to choose the size of the army, he never picks a regime where it is so low that $M < \min(M_c, M_F)$.²² Given its (moderate) aversion to reforms, the army would not be a credible threat to a religious government. It therefore needs to be bought off. In short, the military must be both willing and able to crush a clerics-led rebellion. Figures 2 illustrates the three possible optimal cases. The optimal regime for the Ruler among regimes B , B' and A' then depends on how easy it is to eradicate rebellions and enlist the support of the military for his reforms.

When $M_F < M_c$, the Ruler does not need a strong army to counter the threat of a rebellion instigated by the clerics (i.e., when M_F is relatively low it means that the autocrat legitimacy is relatively high). The Ruler's best choice is regime B with no co-option of clerics, a moderately-sized army, and a reform mix essentially driven by the preference of the military. Once the threat of a religious rebellion is under control (i.e., $M \geq M_F$), the autocrat is indifferent to the optimal size of the army as long as it remains below M_c , which is the critical level at which the military become powerful enough to extract large perks because of their capacity to stage a coup. In the range $M \in [M_F, M_c]$ the total army wage bill and the optimal level of reforms –and therefore the autocrat rents– do not vary with army size (see the top part of Figure 2).²³

When $M_F > M_c$, the Ruler legitimacy is relatively weak and he needs a strong army to defeat any popular rebellion. The problem is that such an army is a serious threat to his own regime, thus justifying the payment of large perks to the military in order to prevent a coup. In this case, depending on how costly it is to buy off the clerics compared to the military, the Ruler either opts for a double co-option regime A' in which both the military and the clerics receive positive rents, or for a regime B' with no

²¹We denote $W'_+(M)$ the right-side derivative of $W(\cdot)$ at point M and $W'_-(M)$ the left-side derivative of $W(\cdot)$ at M .

²²We show in the Appendix 6.6 that $W(M)$ is increasing in M for $M < \min\{M_c, M_F\}$, and decreasing in M for $M > \max\{M_c, M_F\}$. The optimal army size lies necessarily between $\min\{M_c, M_F\}$ and $\max\{M_c, M_F\}$.

²³The autocrat is indifferent between having a large army with low wages or a smaller army with higher wages.

co-option of the clerics but a larger army size given by $M^{op} = M_F$.

To better understand the rationale behind the Ruler's choice of army size when $M_F > M_c$, it is useful to consider two polar cases. The first limit case corresponds to a rent economy based on huge and valuable oil resources, so that the function $R(\alpha)$ rapidly flattens: $R'(\alpha)$ is low in equation (3), and the value of α^{op} is very small. Little income is lost as a result of the absence of reforms (Auriol and Platteau, 2017b). In the range $M \in [M_c, M_F[$, the first term in the expression $W'(M)$ in (42) is then close to zero even when θ^c is high (see Appendix 6.6). We thus have that $W'(M) \simeq C'(M) < 0$ over the whole range, and the optimal army size is at the lower threshold value, M_c . The intuition is the following: when conservative clerics are easy to buy off in the sense that the forsaking of reforms does not harm the economy much, the Ruler does not need a strong army to crush a rebellion.

The opposite polar situation is obtained when the Ruler's rent is very sensitive to institutional reforms because the economy is rather sophisticated and productivity of both labour and capital is strongly dependent on the institutional environment. We then have that $R'(\alpha)$ is high and α^{op} is well above zero. Now, when $M \in [M_c, M_F[$, the first term in the expression $W'(M)$ in (42) is rather high, especially so if θ^c is high. Hence, it is likely that $W'(M) > 0$ over at least part of the interval. The optimal army size may be as large as the level corresponding to the upper threshold, M_F , in which case the Ruler dispenses with clerical co-option (see the middle part of Figure 2). The intuition is the following. When conservative clerics are costly to buy off in the sense that they slow down institutional reforms that are crucial for economic growth, to carry on with his advantageous reforms program, the Ruler finds it more profitable to finance a large army than to compensate reform-averse clerics through high perks. In the intermediate case what prevails is the interior solution characterized by an army size larger than M_c but smaller than M_F (see the lower part of Figure 2).

3.2.2 Comparative statics of the equilibrium regimes

In this final stage of our analysis, we discuss the comparative statics of the model's structural parameters on the likelihood of a double co-option regime when the military size is endogenous. The key parameters we are interested in are: the efficiency of the military at repression, λ , and at running the economy, δ , as well as the clerics' and the military's aversion to reforms, θ^c and θ^m . For this, it is useful to illustrate Proposition 3 in a figure describing the pattern of the different equilibrium regimes in terms of L , the autocrat's legitimacy, and of s , the rebellious strength of the clerics.

Note first that the condition $M_F < M_c$ delimiting regime B from the other regimes can be restated as $s < L + \lambda M_c$. Conversely, the condition $W'_-(M_F) < 0$ that defines the boundary of the double co-option region A' can be stated as:

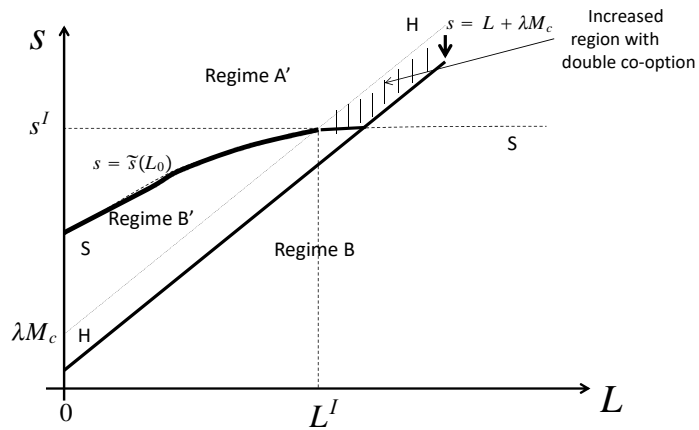
$$W'_-\left(\frac{s-L}{\lambda}\right) = C'\left(\frac{s-L}{\lambda}\right) + \frac{\lambda\theta^c}{s}V(\alpha^m) < 0 \quad (16)$$

as $\Theta = \theta^m$ at $M = M_F$. In the appendix, we show that condition (16) is equivalent to $s > \tilde{s}(L)$ where $\tilde{s}(L)$ is an increasing function of L with $d\tilde{s}/dL \in (0, 1)$. Intuitively, the double co-option regime can only arise when the clerics' strength, s , is large enough (i.e., larger than the threshold $\tilde{s}(L)$, which is itself increasing in the incumbent's legitimacy).

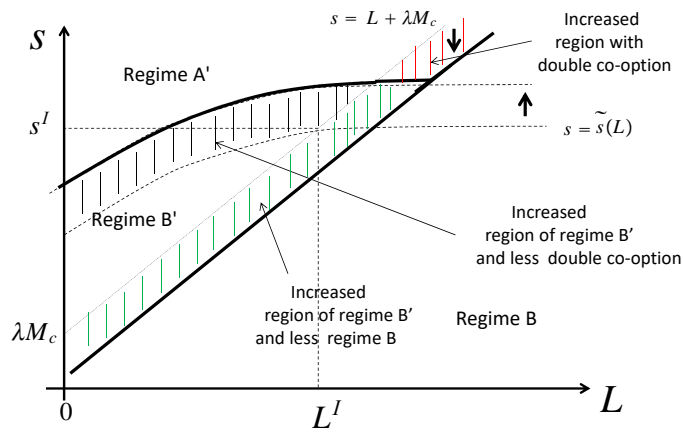
Figure 3 depicts the two locus $s = L + \lambda M_c$ and $s = \tilde{s}(L)$ in the space (L, s) , and the way variations in our structural parameters affect them.²⁴ These two curves initially intersect at a point characterized by coordinates (L^I, s^I) , and they determine the three regions corresponding to the equilibrium regimes A' (double co-option), B and B' (co-option of the army only). Clearly, when s is low and/or the incumbent's legitimacy L is high, there is no religious co-option, and regimes B and B' prevail. The diagrams displayed in Figure 3 highlight the effects of shifts in $(\delta, \theta^m, \theta^c)$ on the likelihood of a double co-option regime.

First, an increase in the ability of the military to run the economy due to a positive shift of δ yields a larger value of R_m^δ , which translates into a

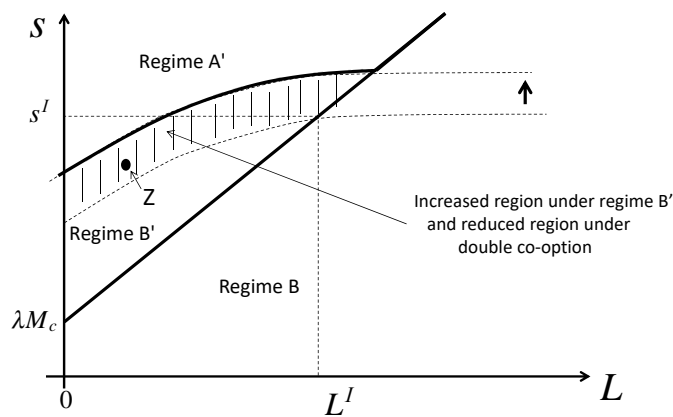
²⁴We consider the parametric case where the clerics' aversion to reforms is large enough and/or the incentive of the military to make a coup is strong enough, so that $-C'(M_c)M_c < \theta^c V(\alpha^m)$.



Increase in the Military's ability to rule, δ



Decrease in military aversion to reform θ^m



Increase in average clerics' aversion to reform, θ_c

Figure 3: Equilibrium regimes with endogenous military size

smaller M_c , inducing a downward shift of the locus $s = L + \lambda M_c$ without affecting the other curve $s = \tilde{s}(L)$. This leads to an expansion of the double co-option region. Indeed, the Military has now higher incentives to undertake a coup. This prompts the Ruler to decrease M . Given the reduced capacity to deter a rebellion, his optimal political strategy consists in buying off the clerics to maintain himself in power.

Second, a Military more aligned with the Ruler's objectives is reflected in a smaller value of θ^m . This causes an increase in both R_m^δ and α^m . While the latter effect induces an upward shift of the locus $s = \tilde{s}(L)$, the former effect causes a downward shift of $s = L + \lambda M_c$. This leads to an expansion of the region corresponding to regime B' and to a shrinking of the region corresponding to regime B . The double co-option region is narrowed down for intermediate values of the Ruler's legitimacy and the clerics' strength, while it expands for high enough values of these parameters. This expansion is explained as follows. When the Ruler's legitimacy is strong, he has less need of a powerful army since the clerics are less willing to oppose him. Co-opting the latter is an especially attractive strategy if their rebellious power is somewhat important.

Finally, an increase in θ^c , the average aversion to reforms of the clerics, causes an upward shift of the threshold curve $s = \tilde{s}(L)$ without affecting the locus $s = L + \lambda M_c$. There ensues an expansion of regime B' to the detriment of the double co-option regime. The mechanism is straightforward. A more reform-averse clerical body makes the double co-option political strategy more costly at the margin (since higher wages need to be paid to the co-opted clerics) so that increasing the size of the military to the point where there is no more need for clerical support becomes relatively more attractive to the Ruler. In particular, when the strength of the clerics is not too large compared to the regime's legitimacy, the Ruler is tempted to dispense with any religious support and to increase the army size to fully deter a cleric-led rebellion. This is illustrated by point Z in Figure 3. This point was initially located in the double co-option region A' but belongs to region B' after the increase in θ^c .

4 Regime case studies

In this final section of the paper, we focus on post-World War II Muslim autocracies to construct a reasoned typology of these regimes in the light of our theory. More precisely, we succinctly discuss a number of important country or regime cases regrouped on the basis of configurations of dichotomized values of the model's variables that we can plausibly assign to them. This comparative approach therefore contains analytical narratives about different types of politico-military-religious equilibrium prevailing in autocratic countries where a decentralized religion (Islam) dominates.

The closest effort in a similar direction is found in [Platteau \(2017\)](#), Chap. 10 and [Auriol and Platteau \(2017a,b\)](#). In these accounts, however, attention is focused on strategic interactions between the autocratic ruler and the religious clerics while the role of the military is essentially ignored. Here, we begin by regrouping different empirical regimes in three categories or types derived from the theory. Because these empirical regimes belong to different countries, inter-country variations in variables that we do not observe or are outside of our model may affect the outcomes which we are interested in. This is why in a last section (Section 4.4), we use our theory to analyze a few cases of regime change that took place inside a given country.

4.1 Strong popular legitimacy of the autocrat and loyal army

To begin with, *Turkey under* Mustapha Kemal *Ataturk* (1923-1938) and *Tunisia under* Habib *Bourguiba* (1957-1987) fall into a first category of regimes characterized by the strong popular legitimacy of the autocratic leader (high values of L) and the strong loyalty of the military, police, and intelligence services. While Ataturk gained a lot of prestige from his military victory against Greek troops in the battle of the Dardanelles, Bourguiba came out of the anti-colonial struggle with a wide aura and his highly charismatic character helped him win much support in the population. The strong loyalty of the state defence establishment is reflected in low values

of θ^m (weak aversion to progressive reforms) and possibly high values of λ (high effectiveness of the military in exerting violence, as a result of strong motivation of top officers).

The above configuration of key parameters implies that we are in the case where $F(M)$, the force of the regime for any army size, is high, implying that M_F is low. The relevant regime is thus *regime B* in which, since they do not constitute a threat, the clerics do not need to be co-opted ($w_c = 0$), and reforms are adopted by the Ruler with magnitude $\alpha^{op} = \alpha^*(\theta^m)$, which is high since θ^m is low. On the other hand, to the extent that the Ruler is able to choose the size of the army, the theory predicts that it will be anywhere between M_F and M_c , which corresponds to a rather narrow interval insofar as the two bounds are low. The optimal army is of a moderate size. This prediction is borne out only for Tunisia. In Kemalist Turkey, external factors (most notably, a delicate geopolitical situation) and foreign policy objectives played a big role in determining a defence budget significantly larger than the optimal amount. Given the large army size, and in accordance with the theory, Ataturk awarded a large aggregate amount of perks and privileges to the men in uniform.²⁵ A large army was no serious threat to the president: Ataturk was directly coming from the army, and there was little antagonism or disagreement between them. The Turkish military body was strongly loyal to the country's political leader, and they espoused the secular-nationalist values that inspired his actions.

The central message from the above is therefore that the two autocratic leaders were in a position to push through important institutional reforms, particularly secular and progressive reforms that encroach upon the erstwhile privileges and prerogatives of traditional agencies such as religious authorities. In Tunisia, this is amply attested by Bourguiba's promulgation of the Personal Status Code (in 1956, when he was Prime Minister), which aimed at strengthening the nuclear family and reducing existing inequalities between men and women.²⁶ A few years later (1961), he absorbed the two

²⁵We are in the case where for exogenous reasons $M > M_c$.

²⁶The Code prohibited polygamy, granted women the right of divorce and to approve arranged marriages, expanded women's existing rights in matters of inheritance and

existing sharia courts into the state judicial system and the main mosque-university complex (al-Nahda) into the state education system (Platteau 2017: 382-8). While in Tunisia Bourguiba was keen to vindicate his reforms in the name of a new interpretation of the sharia, the bold reforms enacted by Ataturk were entirely justified by the need to modernize and Westernize Turkey’s institutions. His approach to Islam has thus been characterized as one of ”assertive secularism”, inspired by the French Jacobite model (Kuru, 2009). It succeeded in suppressing autonomous Islamic institutions and excluding religion from the public sphere, confining the role of the ulama to the realm of family law (Zürcher, 2004).

4.2 Weak autocrat and strong religious leaders

Saudi Arabia lies at the other opposite end of our regime spectrum. Before it was formed as a modern national entity, the country was a set of different tribes and heterogeneous regions (with Mecca and Medina much more conservative than other areas, the coastal part of the Nadj province in particular). The question of national identity was therefore a hugely difficult task, complicated by the fact that the (founding) family of Abd al Aziz Ibn Saud (1902-1953) lacked any strong connection with tribal confederations, so that his intrinsic legitimacy L was low. This is a case where initially $F(M)$ was very low (i.e., M_F was very high). Moreover, due to considerable resource rents, R_m^δ turned out to be large so that $M_c < M_F$. Therefore, the prevailing regime is A' , corresponding to double co-option. The Saud chose to form a military-religious alliance with Wahhabi religious leaders (the mutawwa) and their powerful militia known as the Ikhwan (the Brothers).²⁷ Anchored in the deep-rooted patriarchal values of the Bedouin society, Wahhabism is profoundly puritanical and allergic to all sorts of innovations (i.e., θ^c is very large).

In the context of such a strong alliance with the men of religion, the

child custody, set minimum ages for marriage, and ended the male right of repudiation.

²⁷Founded much earlier by Muhammad Ibn Abd al-Wahhab (1703-1792), the Wahhabi doctrine was thus adopted by the Saudis as the ideology of the new nation. This ultra-conservative brand of Islam sticks to a principle that is generally accepted even among moderate Muslim scholars: to avoid chaos and anarchy, all Muslims should obey a secular ruler however despotic (Lee 2014: 222-33; Platteau 2017: 125-37).

king must pay a lot of attention to their preferences. We thus expect him to distribute large rewards to them as well as to forsake (secular) reforms in order to meet their ultra-conservative demands (i.e., Θ is extremely large when $F(M)$ is very low). This second arm of the autocrat's tactic was especially attractive because of its low cost: Saudi Arabia being endowed with ample oil resources, its economic growth does not depend much on the institutional environment. This is the first polar case discussed at the end of Subsection 3.2. Overall, the theory predicts that shunning institutional reforms, which comes at a low cost (in terms of growth opportunities foregone), takes precedence over the payment of generous perks as a way to entice the clerics. The monarchy is able to enlist the support of a very large proportion of them (γ^* is close to one). The equilibrium is a super conservative society ruled according to puritan religious principles, and in which the influence of the clerics on the monarch's policies is paramount.

The above conclusion leaves aside the role of the army which we now consider. In the absence of external or foreign policy considerations, the Saudi king would likely have chosen an army of moderate size. The army size has nevertheless exceeded the optimal size determined in our model because of the initial Saud family's strong ambition of gaining a leadership position in the Arabian peninsula and the wider Arab world.²⁸ Wahhabism was especially useful to project the country as a major regional player. For the latter role, Wahhabism has the advantage that its doctrine pretends to be more true to the original message of Islam than the versions prevailing in rival countries. Moreover, it supplies a concept of jihadism justifying the use of violence for an expansion inside the Arab world itself (Platteau 2017 : 434).

After the second world war, the determining factor behind the strong Saudi army was no doubt the unabating political support and significant military assistance provided by the United States. The US interests were guided by two main objectives: to secure access to the vast oil resources of the kingdom, and to make its ally a bastion of anti-communism in a

²⁸Initially, Ibn Saud wanted to conquer Bagdad but was prevented from doing so by the resolute opposition of his international protector, England.

highly disputed region. It is therefore not surprising that today Saudi Arabia comes out as one of the most militarized countries in the world, and that to counter the threat of a coup, the king pays ample dividends to the military ($w_m^* M$ is large), especially so because R_m^δ is high.

That the large co-option of the clerics and the military by the monarch has been quite effective has been attested on several occasions. In particular, the loyalty of the army and the official clerics was manifested on the occasion of the occupation of the Grand Mosque in 1979²⁹ and again in the 1990s when the Saudi regime was threatened by Islamist protests and jihadi attacks. In both cases, the state sought authorization of the Council of Senior Ulama to use force to put down the rebellion, and the military duly followed suit (Ayubi 1991: 100-103; Lee 2014: 228, 233).

4.3 Strong army and strong clerics

In between the above two polar cases lay the great majority of postwar Muslim regimes. Under these regimes, the military can credibly threaten to make a coup and the clerics can credibly threaten to trigger a change of regime. Therefore, the army's top commanders and a sufficiently large number of clerics need to be bought into submission by the sovereign. As a consequence, economic advantages need to be granted to them and radical institutional reforms are avoided especially when the values of the military are close to those of the clerics and are conservative. If the autocrat were able to choose the army size, it would be neither too small, so that the success of a religious rebellion can be prevented, nor too large, lest the army itself should be tempted to make a coup. In many countries, however, a major feature is the existence of a strong army whose size has been determined by important external ambitions or perceived (or exaggerated) threats coming from neighbours.³⁰ Based on a variety of indicators, Algeria, (post-Nasser) Egypt, and to a lesser extent Pakistan and Sudan thus come

²⁹Juhayman al-Utaibi and hundreds of armed followers denounced the Saudi monarchy for corruption and promoting Westernisation.

³⁰In Egypt, it is enmity with the neighbouring state of Israel, in Pakistan the perceived threat from neighbouring India, and in Algeria the legacy of the liberation war against France, that were the central factors behind the emergence of a powerful army.

out as strongly militarized countries.³¹

However, although sizeable, the army is not so large or so effective that it can eliminate the risk of a clerics-led rebellion, even when due account is taken of the existence of strong intelligence and internal security services. This is largely because dissenting clerics (those with a comparatively strong aversion to reforms) tend to be regrouped in powerful organizations: the Muslim Brothers in Egypt and Sudan, the Front of Islamic Salvation (FIS) in Algeria, and numerous Islamic outfits and madrasa-based movements in Pakistan. In terms of our model, the organizational strength s of the religious opposition, combined with low values of the autocrat's legitimacy, L , are reflected in low values of $F(M) = \frac{L+\lambda M}{s}$. At the equilibrium we expect $M < M_F$, corresponding to *regime A* or *A'*.

The detailed presentation of the four regime cases selected for illustration, i.e., Zia's rule in Pakistan, the regimes of al-Sadat and Mubarak in Egypt, those of Boumedienne and Bendjedid in Algeria, and those of al-Nimeiri and al-Bashir in Sudan, is in Appendix 6.9. In accordance with the theory, the fraction of official clerics supporting the regime is smaller in the four aforementioned countries than in Saudi Arabia, yet is higher than it was in Ataturk's Turkey and Bourguiba's Tunisia. In addition, fewer reforms have been implemented in the same four countries than in the latter two regimes, but more reforms when compared to Saudi Arabia. As pointed out in Section 3, however, the optimal level of reforms is predicted to be rather low in the specific case, well illustrated by Pakistan, where the army holds conservative values (θ^m high and close to θ^c).

In Table 4, we summarize our discussion by characterizing the three types of regimes that emerged from our short survey of regime case studies: exclusive co-option of the military with bold reforms (I), double co-option with weak reforms (II), and double co-option with moderate reforms (III). We can see that in differentiating (II) and (III) from (I), intrinsic legitimacy of the autocrat, the strength of religious organizations, and aversion of clerics to reforms play a significant role while the distinction between (II)

³¹In the ranking based on the Global Militarization Index (GMI), Algeria occupies the 15th position and Egypt the 28th while Pakistan is found in the 58th position and Sudan in the 60th (2017 data).

Regimes	Exogenous Parameters					Endogenous Var.		
	L	λ	θ^m	θ^c	s	M^*	α^*	γ^*
Exclusive co-option of the military (Ataturk, Bourguiba, Quasim) (I)	high	high	low	low or medium	low	high ¹	high	nil
Double co-option with strong clerics (Saudi Arabia) (II)	low	high or medium	high	very high	very high	high	very low	very high
Double co-option with moderate clerics (al-Sadat and Mubarak, Zia ul-haq, Boumedienne and Chadli, al-Nimeiri and al-Bashir) (III)	low	medium or low ²	medium or low ³	medium	high	high ⁴	low	medium

(1) With the exception of Bourguiba's Tunisia (where M was endogenous).

(2) Low under Zia (Pakistan) and Nimeiri and al-Bashir (Sudan). Medium under Mubarak (Egypt) and Boumedienne and Chadli (Algeria).

(3) Medium (or high) under Zia (Pakistan). Medium under Nimeiri and al-Bashir (Sudan). Low under Mubarak (Egypt) and Boumedienne and Chadli (Algeria).

(4) With the exception of Sudan (where M was endogenous).

Figure 4: A schematic characterization of a set of case study regimes

and (III) is largely based on aversion to reforms of both the military and the clerics, and the strength of religious organizations.

4.4 Within-country regime changes

The advantage of looking at within-country changes of regimes is that we control for time-invariant country-specific variables. In terms of Table 4, a regime change is reflected in a shift from one row to another as caused by a variation of one of the parameters of the model. As it is standard in economics, the static comparative exercises conducted in the paper allows us to focus on the main insights we want to highlight, while avoiding the intricacies of a dynamic model explaining the transitioning from one equilibrium to the next.

In the previous subsection, we discussed the case of *Saudi Arabia*, which, proposed an illustration of the transformation of an autocratic regime from within. Until recently it was aptly described as an equilibrium of immobilism to placate the ultra-conservative religious, made possible by the availability of formidable oil rents. It is no coincidence that the new strong man of Saudi Arabia, the crown prince *Muhammad bin Salman* (known as MBS), has recently embarked upon a number of secular reforms with the dual objective of diversifying the economy of the country and modernizing its institutions. While the Saudi rulers were initially weak (because of their low legitimacy) and therefore needed to strongly rely on

the Wahhabite clerics, they could gradually build a powerful army thanks to the country's immense wealth and the unfailing financial and political support of the major world power. Today Saudi Arabia occupies one of the top world positions in terms of military expenditures.³² As a result, the ruler is now able to reduce his dependence on the clerics and to implement policy and institutional reforms susceptible of antagonizing them. Seen in this light, the rise to power of MBS does not appear as an anomaly but as a logical consequence of the newly acquired strength of the regime, reflected in larger $F(M)$. There, an increase in army size largely induced by external forces has allowed the current ruler MBS to reduce his dependence on the clerics and to concomitantly consider long-awaited reforms (see Appendix 6.8 for a detailed discussion of MBS regime).³³

Let us now look at an experience that is the exact opposite of the case of Salman's Saudi Arabia. The example is drawn from modern *Iraq* and concerns a major turnaround that happened during the rule of *Saddam Husayn*.

Post-independent Iraq quickly adopted an authoritarian model of governance justified by a romantic view of pan-Arabic unity and a sort of socialist approach to development (Makiya 1998 : 208-9). In the first part of Saddam Husayn's rule, who seized power through brutal force, the regime was one of exclusive co-optation of the military and Iraq's clerics were tightly controlled by Saddam and his military associates. Husayn adopted a major change of tactic toward the end of the 1970s when events profoundly disturbed the international environment of the country, namely the rise

³²It occupies the top world position in terms of military expenditures per capita, and the second position in terms of military expenditures measured as a proportion of the Gross Domestic Product, or as a proportion of government spending (source: dataset of the Stockholm Peace Research Institute, available at: <https://www.sipri.org/databases>).

³³Among the reforms causing the hostility of the clerics are all the measures taken (generally by decree) or announced to increase the mobility and the autonomy of women, improve the status of Shia subjects (which includes the removal from school textbooks and television networks of anti-Shia statements or pronouncements), and curb the religious police (who enforced Sunni supremacy). By contrast, measures aimed at rooting out high-level corruption (such as extracting repayments of "stolen" revenues from dozens of prominent princes entrapped in the Ritz Carlton in November 2017) do not arouse opposition among the clerics.

of Ayatollah Khomeini to power in Iran (1979) and the subsequent stirrings of a Shi'i revolt in southern Iraq, as well as Saddam's catastrophic miscalculation in the war with Iran and the invasion of Kuwait.

In terms of our theory, $F(M)$, the regime's strength, abruptly fell due, first, to the fall of λM , the power of the army, depleted by the dramatic losses suffered during the war with Iran, demoralized by defeats and plagued by the tensions between Sunni officers and Shi'a footsoldiers and, second, to the considerable loss of legitimacy and prestige L of Saddam himself. Consistently with our analysis, the response of Saddam Husayn is what [Baram \(2014\)](#) calls "a revised, 'Shi'ified' version of his earlier blood-and-soil nationalism adapted to the political necessity of the time" (p. 63). The central motivation behind this cynical metamorphosis was to regain lost legitimacy through continuous appeals to religion. A major step in Saddam's about-face coincided with the 9th Congress of the Regional Command of the Bath (1982) on the occasion of which the significance of religion, together with the primacy of Iraq, was stressed with special vigour ([Tripp 2000](#): 228). His fear of the allegiances of the Shi'a footsoldiers who formed the bulk of Iraq's conscript army prompted him to stress the Arab identity of the Iraqi Shi'a and the Islamic credentials of the regime.

More ominously, new laws were enacted that were repressive and regressive: crack down on nightclubs and prostitution (punishable by death), ban of public alcohol consumption, imposition of the Ramadan fasting, Islamization of the legal and educational systems, enforcement of barbaric penalties.³⁴ Finally, women's status, which had improved remarkably during the first decades of the Ba'ath revolution (especially under Quasim), suffered a frontal attack at the height of the "Campaign for the Faith" (1993-2003). The fact of the matter is that, to restore his legitimacy, Saddam mostly wanted to please senior Sunni and less senior Shi'a clerics

³⁴To illustrate, as per RCC Decree No 59 of June 4, 1994, amputation of the hand at the wrist was introduced to punish theft and robbery -which had become widespread as a result of the deepening economic crisis-, and amputation of the left foot at the ankle was to sanction second offenses. Subsequent decrees enlarged the definition of theft and robbery to make the draconic punishments applicable to unauthorized money changers, forgers of official documents, merchants, and profiteering bakers ([Dawisha 2009](#): 238; [Baram 2014](#): 265-67, 321).

whose prestige and material status were given a major boost consistently with the theoretical predictions.³⁵ Saddam's radical turnabout from previous commitment to the Baathist ideology with its emphasis on secularism and Arabism rather than Islam (in 1977, he declared that the sharia was irrelevant to modern life) to Islamic ruling, despite its obvious economic cost particularly evident for the measures touching on education and women's status, is best seen as a shift from a regime of exclusive co-option of the military to a regime of double co-option following a drastic reduction in $F(M)$.

5 Conclusion

This paper is an attempt to understand variations in the willingness of an autocrat to push through institutional reforms in a context where traditional authorities represented by religious clerics are averse to them and where the military, who have their own preferences about reforms, control the means of repression and can potentially make a coup. This is a complex political economy game in which three key players interact strategically.

A central result is that although the autocrat always has an interest in co-opting the military, this is not necessarily true for the clerics. Only when the exogenous army size is sufficiently low, the autocrat chooses to co-opt the clerics in addition to the military. In the range where the double co-option regime prevails, the wage bill paid to the military and the magnitude of reforms increase with the army size. As for religious support, it decreases because the positive effect caused by a greater deterrent power of the army is counteracted by the negative effect of a bolder reform program. Under exclusive co-option of the military, reforms are always more important than under double co-option, as they are determined by the military's preferences only.

When the autocrat can freely choose the size of the army, it is not necessarily the case that only the interests of the military are taken into

³⁵In the words of [Baram \(2014\)](#): "by upgrading their socioeconomic status, he [Saddam] could hope to buy off the clerics, and through them gain much-needed public support." (p. 257).

account. Thus, when the clerics are rather easy to seduce because of the low cost of abstaining from reforms, the autocrat simultaneously chooses to seduce clerics and to equip himself with an army of moderate size. If the clerics are costly to buy because economic growth requires a progressive institutional environment, he chooses a large army size and ignores the clerics.

Empirically, the dominant regime in contemporary Muslim countries is the regime of double co-option. Exclusive co-option of the military has characterized only a few regimes in which the autocrat's intrinsic legitimacy and the loyalty of his army are both very strong while the organizational effectiveness of religious movements is comparatively weak. Radical institutional reforms can then be implemented.

Double co-option regimes, which always involve low intrinsic legitimacy of the autocrat, tend to vary significantly depending upon the proportion of clerics seduced and how well they are treated by the regime. A polar case arises when abundant oil resources create the conditions of a rent economy. Because the autocrat does not need to carry out reforms to obtain rents, he chooses the double co-option regime and a very low level of reforms to please the clerics, including the ultra-conservative ones. In other and more frequent situations, the autocrat resorts to a double-edged tactic: pleasing the official clerics by slowing the pace of reforms and ensuring the loyalty of the military to be able to put down an opposition instigated by rebel clerics. It implies that only a fraction of the clerics (the moderate ones) endorses the regime's policies. The clerics are then strongly polarized between official clerics, who are loyal and even subservient to the autocratic regime, and non-official clerics who stand in opposition to it.

Finally, within-country regime changes can happen: the pace of reforms, itself determined by the degree of the autocrat's reliance on religious clerics, is then abruptly adjusted to new circumstances well captured by the model's parameters.

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6 Appendix

6.1 Proof of Lemma 1

Recall from (7) that $M_c = C^{-1}(R_m^\delta)$. Two cases can be discussed.

i) $M \geq M_c$: the Military being indifferent between repression and passivity against a rebellion, we assume that the Ruler is ready to pay a small wage premium to the Military so as to tilt the decision in favor of repression. In such a case, as long as the revolution is anticipated to fail when the Military chooses to put it down (i.e., as long as $s(1 - \gamma) \leq L + \lambda M$), the Military will always choose to prevent the clerics from acceding to power. Indeed under an alternative religious regime, the army will receive their reservation payoff $R_m^\delta - C(M) \geq 0$. The secular incumbent is ready to give them at least that same utility (in the presence or absence of a coup) in order to avoid a clerics-led revolution. The wage bill paid by the Ruler to the Military is then given by: $w_m M = \max[\theta^m V(\alpha) + R_m^\delta - C(M); 0]$. Since by definition $C(M_c) = R_m^\delta$, $C(M)$ is decreasing, and $M_c \leq M$, we deduce that $C(M) \leq C(M_c) < \theta^m V(\alpha) + R_m^\delta$ as long as $\alpha > 0$. Then the military coup's constraint is always binding so that the wage bill is simply

$$w_m M = \theta^m V(\alpha) + R_m^\delta - C(M) > 0$$

ii) $M < M_c$: the military, who never attempt a coup against any ruling religious government, receive their reservation payoff, normalized to 0. As a consequence, the Military accepts to put down the rebellion and to support the Ruler (as long as such repressed revolution is anticipated to fail) if and only if $w_m M - \theta^m V(\alpha) \geq 0$. The wage bill that the Ruler needs to pay to the Military is then given by

$$w_m M = \theta^m V(\alpha). \quad (17)$$

We deduce Lemma 1.QED

6.2 Proof of Proposition 1

From the main text, the probability p_i that a cleric i stays in office when he endorses the autocrat with local legitimacy L_i , and expects a fraction $1 - \gamma^e$ of fellow clerics to make the opposite choice of antagonizing the regime is given by

$$p_i(\gamma^e) = P(\text{stay in office}/L_i) = P(s(1 - \gamma^e) \leq L_i + \lambda M + \mu_i) \quad (18)$$

where μ_i is a random shock on the local efficiency of the Military, which is distributed independently and uniformly on $[-\epsilon, \epsilon]$. This rewrites as

$$p_i(\gamma^e) = P(\mu_i \geq s(1 - \gamma^e) - L_i - \lambda M) = \int_{s(1 - \gamma^e) - L_i - \lambda M}^{\epsilon} \frac{d\mu_i}{2\epsilon}$$

or

$$p_i(\gamma^e) = \frac{L_i + \lambda M - s(1 - \gamma^e) + \epsilon}{2\epsilon}. \quad (19)$$

Given this probability, there exists a threshold value of the (local) legitimacy of the Ruler, $L^*(\theta, \gamma^e)$, such that a cleric of type θ is indifferent between supporting and opposing the regime. From (9), this threshold is characterized by: $P(\text{stay in office}/L^*(\theta, \gamma^e)) = \frac{\theta V(\alpha)}{w_c}$ or

$$\frac{L^*(\theta, \gamma^e) + \lambda M - s(1 - \gamma^e) + \epsilon}{2\epsilon} = \frac{\theta V(\alpha)}{w_c} \quad (20)$$

We deduce that when $L_i \geq L^*(\theta, \gamma^e)$, a cleric of type θ supports the Ruler. and he chooses to enter into opposition when $L_i < L^*(\theta, \gamma^e)$.

From this, the proportion of clerics who support the Ruler is given by :

$$\gamma^* = \int_0^\infty P(L_i \geq L^*(\theta, \gamma^e))g(\theta)d\theta$$

or using $L_i = L + \epsilon_i$

$$\gamma^* = \int_0^\infty P(\epsilon_i \geq L^*(\theta, \gamma^e) - L)g(\theta)d\theta = \int_0^\infty \frac{\epsilon + L - L^*(\theta, \gamma^e)}{2\epsilon}g(\theta)d\theta.$$

This rewrites as

$$\gamma^* = \frac{\epsilon + L - \overline{L^*}(\gamma^e)}{2\epsilon} \quad (21)$$

where $\overline{L^*}(\gamma^e) = \int_0^\infty L^*(\theta, \gamma^e)g(\theta)d\theta$.

Integrating then (20) over all types of clerics yields:

$$\int_0^\infty \frac{L^*(\theta, \gamma^e) + \lambda M - s(1 - \gamma^e) + \epsilon}{2\epsilon}g(\theta)d\theta = \int_0^\infty \frac{\theta V(\alpha)}{w_c}g(\theta)d\theta \quad (22)$$

which is equivalent to:

$$\frac{\overline{L^*}(\gamma^e) + \lambda M - s(1 - \gamma^e) + \epsilon}{2\epsilon} = \frac{\theta^e V(\alpha)}{w_c} \quad (23)$$

Under rational expectations of the equilibrium number of clerics opposing the regime, we have $\gamma^e = \gamma^*$. Joining equations (21) and (23), for given values of λ, M, w_c, α and L , the equilibrium number of clerics $(1 - \gamma^*)$ opposing the regime and the average equilibrium signal threshold $\overline{L^*} = \overline{L^*}(\gamma^*)$ are obtained from the system:

$$\begin{aligned} \frac{\overline{L^*} + \lambda M - s(1 - \gamma^*) + \epsilon}{2\epsilon} &= \frac{\theta^e V(\alpha)}{w_c} \\ \gamma^* &= \frac{\epsilon + L - \overline{L^*}}{2\epsilon} \end{aligned}$$

Taking care of the fact that $2\epsilon - s > 0$ and solving for the interior solution in γ^* yields:

$$\gamma^* = 1 - \frac{2\epsilon}{2\epsilon - s} \frac{\theta^e V(\alpha)}{w_c} + \frac{\lambda M + L}{2\epsilon - s}$$

Restricting γ^* to be between 0 and 1, we obtain (11). **QED**

6.3 Proof of proposition 2

1) Note first that the no-military coup constraint (*nmc*) will always be binding since, everything else given, the Ruler always wants to minimize the wage bill, $w_m M$, paid to the Military, and $w_m M$ only enters into the constraint (*nmc*): $w_m M = \theta^m V(\alpha) + \max [R_m^\delta - C(M), 0]$.

2) Second, in order to solve the Ruler's optimization problem, it is useful to denote $F(M) = \frac{L+\lambda M}{s}$ and to write the different values of γ^* in (11) in terms of the variable $x = \frac{\theta^c V(\alpha)}{w_c}$, which can be interpreted as the "cost-benefit ratio" of supporting the regime for the average cleric:

$$\gamma^* = \begin{cases} 0 & \text{if } \frac{s}{2\epsilon} F(M) + \frac{2\epsilon-s}{2\epsilon} < x \\ 1 - \frac{2\epsilon}{2\epsilon-s} x + \frac{s}{2\epsilon-s} F(M) & \text{if } x \in \left[\frac{s}{2\epsilon} F(M), \frac{s}{2\epsilon} F(M) + \frac{2\epsilon-s}{2\epsilon} \right] \\ 1 & \text{if } x < \frac{s}{2\epsilon} F(M) \end{cases} \quad (24)$$

Simple inspection of (24) reveals $\gamma^* = \gamma^*(x)$ is a decreasing function of x . Intuitively, the larger is x , the higher the average disutility cost of the reform α compared to the pecuniary benefit religious leaders might get from supporting such reform. Consequently, the smaller the effective clerics' support γ^* for the regime.

Given this, the no-regime-change constraint (*nrc*) in problem (12) under military repression becomes $1 - \gamma^* \leq F(M)$, which rewrites as

$$\begin{aligned} 1 &\leq F(M) && \text{if } \frac{s}{2\epsilon} F(M) + \frac{2\epsilon-s}{2\epsilon} < x \\ x &\leq F(M) && \text{if } x \in \left[\frac{s}{2\epsilon} F(M), \frac{s}{2\epsilon} F(M) + \frac{2\epsilon-s}{2\epsilon} \right] \\ 0 &\leq F(M) && \text{if } x < \frac{s}{2\epsilon} F(M) \end{aligned}$$

3) To solve the Ruler's problem (12), two sub-cases need to be distinguished depending on whether the (*nrc*) constraint is binding or not.

CASE I: $F(M) < 1$. In this case, the no-regime-change (*nrc*) constraint is binding. That is, were all the clerics to oppose the regime, the Ruler would be overthrown (the Military is relatively weak). Substituting the interior value of γ^* , as given in (24), in the (*nrc*) constraint $1 - \gamma^* \leq F(M)$ yields: $x \leq F(M)$. Bearing in mind the definition of $x = \frac{\theta^c V(\alpha)}{w_c}$, this constraint indicates that in order to ensure no-regime change, the "cost-benefit ratio" of supporting the regime for the average cleric must be below

the threshold $F(M)$. Substituting $w_c = \frac{\theta^c V(\alpha)}{x}$ and $\gamma^* = 1 - \frac{2\epsilon}{2\epsilon-s}x + \frac{s}{2\epsilon-s}F(M)$ in (12), yields:

$$\begin{aligned} & \max_{\alpha, x} R(\alpha) - \left[1 - \frac{2\epsilon}{2\epsilon-s}x + \frac{s}{2\epsilon-s}F(M) \right] \frac{\theta^c V(\alpha)}{x} - w_m M \\ \text{s.c.} \quad & 0 \leq x \leq F(M) \quad (\text{nrc}) \\ & w_m M = \theta^m V(\alpha) + \max[R_m^\delta - C(M), 0] \quad (\text{nmc}) \end{aligned}$$

Since the maximand is increasing in x , the (nrc) constraint is binding. Substituting $x = F(M) < 1$ and using the binding constraint (nmc), the Ruler finally solves:

$$\max_{\alpha \geq 0} R(\alpha) - \theta^c V(\alpha) \left[\frac{1}{F(M)} - 1 \right] - \theta^m V(\alpha) - \max[R_m^\delta - C(M), 0]$$

This expression is equivalent to $R(\alpha) - \Theta V(\alpha) - \max[R_m^\delta - C(M), 0]$, where

$$\Theta = \theta^c \left(\frac{1 - F(M)}{F(M)} \right) + \theta^m. \quad (25)$$

The optimal interior level of reform in this double co-option regime is then given by:

$$\alpha^d(M) = \alpha^*(\Theta) \quad (26)$$

where the function $\alpha^*(\Theta)$ defined in (3) is decreasing in Θ . Since $F(M) = \frac{L+\lambda M}{s}$ is increasing in M , Θ is decreasing in M . We deduce that $\frac{d\alpha^d(M)}{dM} = \frac{d\alpha^*(\Theta)}{d\Theta} \frac{d\Theta}{dM} \geq 0$. Moreover, we have that $\alpha^d(M) \leq \alpha^m$.

The equilibrium wage paid by the Ruler to the clerics and the wage bill paid to the Military are then given by, respectively:

$$w_c^{op} = \frac{\theta^c V(\alpha^d(M))}{F(M)} > 0 \quad (27)$$

$$w_m^{op} = \frac{\theta^m V(\alpha^d(M)) + \max[R_m^\delta - C(M), 0]}{M} > 0 \quad (28)$$

and the equilibrium payoff of the Ruler writes as :

$$W^{op}(M) = R(\alpha^*(\Theta)) - \Theta V(\alpha^*(\Theta)) - \max[R_m^\delta - C(M), 0] \quad (29)$$

Summarizing, for $F(M) < 1$, the optimal policy vector (α, w_c, w_m) is given by:

$$(\alpha^{op}, w_c^{op}, w_m^{op}) = \left(\alpha^*(\Theta), \frac{\theta^c V(\alpha^*(\Theta))}{F(M)}, \frac{\theta^m V(\alpha^*(\Theta)) + \max[R_m^\delta - C(M), 0]}{M} \right)$$

CASE II: $F(M) \geq 1$. In this case, the no-regime-change (*nrc*) constraint is never binding. The religious clerics are not a threat to the regime since, even if all clerics enter into opposition, they are unable to defeat the Ruler. In this instance, given that the Ruler wants to minimize the wage bill paid to the clerics, w_c he sets $w_c = 0$, which implies $\gamma^* = 0$. Problem (12) then rewrites as :

$$\begin{aligned} & \max_{\alpha, w_m} R(\alpha) - w_m M \\ & \text{s.c. } w_m M = \theta^m V(\alpha) + \max [R_m^\delta - C(M), 0] \quad (nmc) \end{aligned}$$

and the optimal reform policy solves:

$$\max_{\alpha} R(\alpha) - \theta^m V(\alpha) - \max [R_m^\delta - C(M), 0]$$

The optimal interior level of reform is such that $R'(\alpha) = \theta^m V'(\alpha)$. By virtue of (3) it is given by

$$\alpha^m = \alpha^*(\theta^m). \quad (30)$$

The per capita wage paid to the Military is then

$$w_m^{op} = \frac{\theta^m V(\alpha^m) + \max [R_m^\delta - C(M), 0]}{M} > 0 \quad (31)$$

and the equilibrium payoff for the Ruler is

$$W(M) = R(\alpha^m) - \theta^m V(\alpha^m) - \max [R_m^\delta - C(M), 0] \quad (32)$$

As a conclusion, the optimal policy vector writes as:

$$(\alpha^{op}, w_c^{op}, w_m^{op}) = \left(\alpha^*(\theta^m), 0, \frac{\theta^m V(\alpha^m) + \max [R_m^\delta - C(M), 0]}{M} \right)$$

4) Finally, bearing in mind that $R_m^\delta = C(M_c)$ by definition, and that $C(M)$ is decreasing in M , we deduce that regime A (resp. regime B) occurs in the case $F(M) < 1$ (resp. $F(M) \geq 1$) if and only if $C^{-1}(R_m^\delta) = M_c \geq M$. In such situation, the wage of the military is smaller since $\max\{R_m^\delta - C(M), 0\} = 0$. **QED.**

6.4 Comparative statics on the military's wage

- **regimes B and B':** $F(M) \geq 1$

First of all, observe that w_m^{op} defined in (31) is independent of θ^c and $F(M)$. However it depends on θ^m . We study how w_m^{op} defined in (31) changes when θ^m increases. The result is ambiguous as two forces play in opposite direction. On the one hand, for a given reform level α , a higher wage w_m needs to be paid for a higher disutility of reform of the military. On the other hand, the equilibrium reform level chosen by the Ruler α^m is itself moderated by the increased reform aversion of the Military. Depending on the value of the different parameters both effects might dominate. Let first consider the case where $R_m^\delta < C(M)$, we have:

$$\begin{aligned} \frac{dw_m^{op}}{d\theta^m} &= \frac{1}{M} \left\{ V(\alpha^m) + \frac{\theta^m (V'(\alpha^m))^2}{R''(\alpha^m) - \theta^m V''(\alpha^m)} \right\} \\ &= \frac{1}{M} \left\{ \frac{R''(\alpha^m)V(\alpha^m) + \theta^m (V'(\alpha^m))^2 - V''(\alpha^m)V(\alpha^m)}{R''(\alpha^m) - \theta^m V''(\alpha^m)} \right\} \end{aligned} \quad (33)$$

Since $R(\alpha)$ is concave and $V(\alpha)$ is convex, the denominator in (33) is negative. A necessary and sufficient condition for $\frac{dw_m^{op}}{d\theta^m} > 0$ is that $R''(\alpha^m)V(\alpha^m) + \theta^m ((V'(\alpha^m))^2 - V''(\alpha^m)V(\alpha^m)) < 0$. This is always true as soon as $V(\alpha)$ is log convex. Conversely if $V(\alpha)$ is log concave and $R''(x) \simeq 0$ then $\frac{dw_m^{op}}{d\theta^m} < 0$. Consider next the case where $R_m^\delta \geq C(M)$, we have:

$$\frac{dw_m^{op}}{d\theta^m} = \frac{1}{M} \left\{ V(\alpha^m) - V(\alpha_\delta^m) + \frac{\theta^m (V'(\alpha^m))^2}{R''(\alpha^m) - \theta^m V''(\alpha^m)} \right\}. \quad (34)$$

If δ is close to 0 then the preceding results hold as $V(\alpha_\delta^m) \simeq 0$. However if δ is close to 1 (i.e., the army is able to manage the economy relatively efficiently) then $V(\alpha_\delta^m) \simeq V(\alpha^m)$ so that $\frac{dw_m^{op}}{d\theta^m} < 0$.

- **regimes A and A':** $F(M) < 1$

In regimes A and A', the autocrat aims to co-opt both the army and a fraction of the religious leaders so that the equilibrium reform level is $\alpha^*(\Theta)$. We have that $w_m^{op} = \frac{\theta^m V(\alpha^*(\Theta)) + \max[R_m^\delta - C(M), 0]}{M}$. Since $\Theta = \theta^c \left(\frac{1}{F(M)} - 1 \right) +$

θ^m , any change in $F(M)$, θ^c or θ^m impacts the share of rents received by the army.

Let first consider the case where $R_m^\delta < C(M)$, we have:

$$\frac{dw_m^{op}}{d\theta^m} = \frac{1}{M} \left\{ V(\alpha^*(\Theta)) + \frac{\theta^m (V'(\alpha^*(\Theta)))^2}{R''(\alpha^*(\Theta)) - \theta^m V''(\alpha^*(\Theta))} \right\} \quad (35)$$

The reasoning applied to (33) still holds here. Similarly in the case where $R_m^\delta \geq C(M)$, we have:

$$\frac{dw_m^{op}}{d\theta^m} = \frac{1}{M} \left\{ V(\alpha^*(\Theta)) - V(\alpha_\delta^m) + \frac{\theta^m (V'(\alpha^*(\Theta)))^2}{R''(\alpha^*(\Theta)) - \theta^m V''(\alpha^*(\Theta))} \right\} \quad (36)$$

so that the same reasoning as in (34) applies. Finally it is straightforward to check that $\frac{dw_m^{op}}{d\theta^c} = \frac{1-F(M)}{F(M)M} \left\{ \frac{\theta^m (V'(\alpha^*(\Theta)))^2}{R''(\alpha^*(\Theta)) - \theta^m V''(\alpha^*(\Theta))} \right\} \leq 0$ and that $\frac{dw_m^{op}}{dF(M)} = -\frac{\theta^c}{F(M)^2} \left\{ \frac{\theta^m (V'(\alpha^*(\Theta)))^2}{R''(\alpha^*(\Theta)) - \theta^m V''(\alpha^*(\Theta))} \right\} \geq 0$.

6.5 Comparative statics on the clerics' support to the autocrat and wage in the double co-option regime

- **Effect of $F(M)$ on clerics' support γ^* :**

An increase in $F(M)$ has two contradictory effects on γ^* . To see that, write γ^* extensively as: $\gamma^* = 1 - \frac{2\epsilon}{2\epsilon-s}F(M) + \frac{s}{2\epsilon-s}F(M)$. On the one hand, a stronger regime constitutes a more powerful deterrent to rebellion, thereby inducing a higher proportion of supporting clerics γ^* (the term $\frac{s}{2\epsilon-s}F(M)$). On the other hand, more extensive reforms undertaken by the Ruler spark a greater hostility among the clerics, causing a decrease in γ^* (the term $-\frac{2\epsilon}{2\epsilon-s}F(M)$). As it turns out the "reform effect" outweighs the "deterrent effect", implying that at equilibrium the level of religious support decreases with $F(M)$: $\frac{\partial \gamma^*}{\partial F(M)} = -1 < 0$.

- **Effect of $F(M)$ on clerics' wage w_c^{op} :**

We show the following result :

Corollary 1 *The wage of the clerics, w_c^{op} , increases with $F(M) \leq 1$ if and only if*

$$\epsilon_\alpha^V \cdot \epsilon_\Theta^{\alpha^*} > 1 - F(M) \left(\frac{\theta^c - \theta^m}{\theta^c} \right) \quad (37)$$

where $\epsilon_\alpha^V = \frac{V'(\alpha)}{V(\alpha)}\alpha$ is the elasticity of the clerics' disutility with respect to reforms, and $\epsilon_\Theta^{\alpha^*} = \left[\frac{-R''(\alpha)\alpha}{R'(\alpha)} + \frac{V''(\alpha)\alpha}{V'(\alpha)} \right]^{-1}$ is (the absolute value of) the elasticity of optimal reform effort, $\alpha^*(\Theta)$, with respect to Θ .

Proof of corollary 1: The equilibrium wage of the clerics writes as:

$$w_c^{op} = \frac{\theta^c V(\alpha^*(\Theta))}{F(M)} \quad (38)$$

Recall that

$$\Theta = \frac{1 - F(M)}{F(M)}\theta^c + \theta^m$$

Bearing in mind that

$$R'(\alpha^*) = \Theta V'(\alpha^*)$$

we get

$$\begin{aligned} \frac{d\alpha^*}{d\Theta} \frac{\Theta}{\alpha^*} &= \frac{V'(\alpha^*)\Theta}{R''(\alpha^*)\alpha^* - \Theta V''(\alpha^*)\alpha^*} = \frac{R'(\alpha^*)}{R''(\alpha^*)\alpha^* - \Theta V''(\alpha^*)\alpha^*} \\ &= \frac{1}{\frac{R''(\alpha^*)\alpha^*}{R'(\alpha^*)} - \Theta \frac{V''(\alpha^*)\alpha^*}{R'(\alpha^*)}} = \frac{1}{\frac{R''(\alpha^*)\alpha^*}{R'(\alpha^*)} - \frac{V''(\alpha^*)\alpha^*}{V'(\alpha^*)}} < 0 \end{aligned}$$

In absolute terms, the elasticity of the magnitude of reforms with respect to social (aggregate) aversion to them is written as:

$$\epsilon_\Theta^{\alpha^*} = -\frac{d\alpha^*}{d\Theta} \frac{\Theta}{\alpha^*} = \frac{1}{\frac{-R''(\alpha^*)\alpha^*}{R'(\alpha^*)} + \frac{V''(\alpha^*)\alpha^*}{V'(\alpha^*)}}$$

Note that this elasticity, $\epsilon_\Theta^{\alpha^*}$, depends on the shapes of the revenue function $R(\alpha)$ and the cost function $V(\alpha)$. In particular, it is inversely related to the concavity of $R(\alpha)$ and the convexity of $V(\alpha)$. More specifically, $\epsilon_\Theta^{\alpha^*}$ is expected to be quite low in a resource-rich economy ($R(\alpha)$ is very concave) and in the presence of radical clerics intensely opposed to modernization ($V(\alpha)$ is very convex).

Given that

$$\Theta = \theta^c \left(\frac{1}{F(M)} - 1 \right) + \theta^m$$

we have

$$\frac{d\Theta}{dF(M)} \frac{1}{\Theta} = -\frac{\theta^c}{\Theta} \frac{1}{(F(M))^2}$$

Log differentiation of (38) provides:

$$\frac{dw_c^{op}}{w_c^{op}} = \left[\left(\frac{V'(\alpha^*)}{V(\alpha^*)} \right) \cdot \left(\frac{d\alpha^*}{d\Theta} \frac{\Theta}{\alpha^*} \right) \cdot \left(\frac{d\Theta}{dF} \frac{1}{\Theta} \right) - \frac{1}{F} \right] dF$$

or

$$\frac{dw_c^{op}}{dF} \frac{1}{w_c^{op}} = \frac{1}{F} \left[\epsilon_\alpha^V \cdot \epsilon_\Theta^{\alpha^*} \frac{\theta^c}{\Theta} \frac{1}{F} - 1 \right]$$

where $\epsilon_\alpha^V = \frac{V'(\alpha)}{V(\alpha)}\alpha$ is the cost elasticity of reform for the clerics (more precisely, the elasticity of the clerics' disutility with respect to reform level). Substituting the value of Θ , one gets

$$\frac{dw_c^{op}}{dF} \frac{1}{w_c^{op}} = \frac{1}{F} \left[\epsilon_\alpha^V \cdot \epsilon_\Theta^{\alpha^*} \frac{\theta^c}{\theta^c(1-F) + \theta^m F} - 1 \right]$$

Thus, w_c^{op} is increasing in $F(M)$ if and only if

$$\epsilon_\alpha^V \cdot \epsilon_\Theta^{\alpha^*} > \frac{(1-F(M))\theta^c + F(M)\theta^m}{\theta^c} \quad (39)$$

QED.

- Discussion of corollary 1:

When condition (37) holds, the equilibrium level of reform $\alpha^*(\Theta)$ is quite sensitive to a decrease in social aversion (large enough value of $\epsilon_\Theta^{\alpha^*}$), and this also translates into a large effect on the clerics' disutility of reforms (large enough value of ϵ_α^V). In such a case, the positive reform effect associated to an increase in $F(M)$ dominates the negative deterrent effect and the equilibrium clerics' wage, w_c^{op} , rises with $F(M)$. Conversely, our model suggests that the deterrent effect is likely to dominate, with w_c^{op} decreasing in $F(M)$ (and thus in army size, M) in a resource-rich economy ($R(\alpha)$ is very concave) and in the presence of radical clerics intensely opposed to modernization ($V(\alpha)$ is very convex).

Since $F(M) = \frac{\lambda M + L}{s}$ we conclude that w_c^{op} is increasing in M , λ , and L , and decreasing in s , if and only if condition (37) is satisfied. In the

equilibrium regime with double co-option, the wage of the seduced clerics should then increase as a result of any change of structural parameters that induces the Ruler to implement more reforms (i.e, an increase in military efficiency, in the Ruler's legitimacy, or a reduction in the influence or strength of the clerics). Conversely, when condition (37) is violated, the reform effect is weaker than the deterrent effect, and the opposite result obtains.

- **Non monotonicity of w_c^{op} with $F(M)$ across equilibrium regimes**

Across the different equilibrium regimes, the clerics' wage, w_c^{op} , may be a non monotonic function of the regime's strength. On the one hand, when $F(M) < 1$, the society is in a double co-option regime A or A' and $w_c^{op} = \frac{\theta^c V(\alpha^*(\Theta))}{F(M)} > 0$. As long as the elasticity condition (37) is satisfied for some value of $F(M)$, Corollary 1 indicates that w_c^{op} is increasing in $F(M)$. It is worth noting that since $F(M) \in (0, 1]$, then $1 > 1 - F(M) \left(\frac{\theta^c - \theta^m}{\theta^c}\right) \geq \frac{\theta^m}{\theta^c}$. From (37), it is evident that a sufficient condition for w_c^{op} to be increasing in $F(M)$ is $\epsilon_\alpha^V \cdot \epsilon_\Theta^{\alpha^*} > 1$ while, conversely, a sufficient condition for w_c^{op} to be decreasing in $F(M)$ is $\epsilon_\alpha^V \cdot \epsilon_\Theta^{\alpha^*} < \frac{\theta^m}{\theta^c}$.

On the other hand, once $F(M) \geq 1$, the relevant regime becomes B or B' and the clerics do not receive any wage ($w_c^{op} = 0$). This implies a discontinuity in the Ruler's policy. In the vicinity of $F(M) = 1$, small changes in the military efficiency, in the Ruler's legitimacy, or in the influence of the clerics, will lead to a sharp change in the way the regime deals with religious leaders.

- **Constant elasticity example:** We provide here an example of such non monotonicity with constant cost and revenue elasticities. Let $V(\alpha) = v \cdot \frac{\alpha^{\eta+1}}{\eta+1}$ and $R(\alpha) = R_0 + r \cdot \frac{\alpha^\rho}{\rho}$ with $\eta > 0$ and $\rho \in (0, 1)$. It is easy to see that $\epsilon_\alpha^V = 1 + \eta$ and that $\epsilon_\Theta^{\alpha^*} = \frac{1}{1+\eta-\rho}$. Condition (37) is then always satisfied in the double co-option regimes: $\frac{1+\eta}{1+\eta-\rho} \geq 1 > 1 - F(M) \left(\frac{\theta^c - \theta^m}{\theta^c}\right)$. As a consequence, w_c^{op} is increasing in $F(M)$ if $F(M) < 1$, and equal to 0 if $F(M) \geq 1$, illustrating the possibility of non-monotonic patterns.

- **Effect of average clerics' reform aversion θ^c on clerics' wage, w_c^{op}**

We have the following result:.

Corollary 2 *Let $F(M) \in (0, 1)$. The clerics' wage, w_c^{op} , increases with θ^c if and only if*

$$\epsilon_\alpha^V \cdot \epsilon_\Theta^{\alpha^*} < 1 + \frac{\theta^m F(M)}{\theta^c (1 - F(M))}. \quad (40)$$

Proof of corollary 2: Log differentiation with respect to θ^c provides $\Theta = \theta^c \left(\frac{1}{F(M)} - 1 \right) + \theta^m$

$$\begin{aligned} \frac{dw_c^{op}}{w_c^{op}} &= \frac{d\theta^c}{\theta^c} - \epsilon_\alpha^V \cdot \epsilon_\Theta^{\alpha^*} \cdot \frac{d\theta^c}{\Theta} \frac{1 - F}{F} \\ &= \frac{d\theta^c}{\theta^c} \left[1 - \epsilon_\alpha^V \cdot \epsilon_\Theta^{\alpha^*} \frac{\theta^c (1 - F)}{\theta^c (1 - F) + \theta^m F} \right] \end{aligned}$$

and, consequently, w_c^{op} is increasing in θ^c if and only if

$$1 > \epsilon_\alpha^V \cdot \epsilon_\Theta^{\alpha^*} \frac{\theta^c (1 - F)}{\theta^c (1 - F) + \theta^m F}$$

which is equivalent to (40) **QED**.

- **Discussion of corollary 2:** Condition (40) is more likely to be satisfied if the initial value of θ^c is relatively small (i.e., close to θ^m), and more likely to be violated if θ^c is initially high compared to θ^m . This result is according to intuition: when θ^c is initially small, it is not profitable for the Ruler to respond to a rise in clerics' aversion by backtracking much on his promises of reforms, hence the domination of the indirect over the direct effect. And vice-versa when θ^c is initially high. The direct, positive effect follows from the fact that more reform-averse clerics need a higher compensation to support any given level of reforms. The indirect, negative effect results from the induced increase in the social (aggregate) aversion to reforms, Θ , which prompts the Ruler to put the brake on reforms. This

reduces the clerics' disutility and hence the level of the wage needed to compensate them. Note that w_c^{op} can be increasing in both $F(M)$ and θ^c (i.e., conditions (37) and (40) can be simultaneously satisfied as $F(M) > 0$).

- **Constant elasticity example (continued):** Computing condition (40) in the constant elasticity example, where condition (37) is always true, yields:

$$\frac{1 + \eta}{1 + \eta - \rho} < 1 + \frac{\theta^m F(M)}{\theta^c (1 - F(M))}$$

or, after rearranging terms:

$$\frac{\frac{\rho}{1 + \eta - \rho} \frac{\theta^c}{\theta^m}}{1 + \frac{\rho}{1 + \eta - \rho} \frac{\theta^c}{\theta^m}} < F(M)$$

This condition is automatically satisfied, for example, if ρ is very small or η very large. **QED.**

6.6 Proof of Proposition 3

Recall that M_F is so that $F(M) = \frac{\lambda M + L}{s} = 1$, which yields: $M_F = \frac{s - L}{\lambda}$. Since $\Theta(M) = \theta^c \left(\frac{1}{F(M)} - 1 \right) + \theta^m = \theta^c \left(\frac{s}{\lambda M + L} - 1 \right) + \theta^m$, we deduce that $\frac{d\Theta(M)}{dM} = -\frac{\theta^c \lambda s}{(\lambda M + L)^2} = -\frac{\lambda \theta^c}{s} \left(\frac{1}{F(M)} \right)^2 < 0$. Moreover $\Theta(M_F) = \theta^m$ so that $\alpha^*(\Theta(M_F)) = \alpha^*(\theta^m) = \alpha^m$.

From equations (29) and (32) in the appendix 6.3, the payoff function of the Ruler is

$$W(M) = \begin{cases} R(\alpha^*(\Theta)) - \Theta V(\alpha^*(\Theta)) - \max\{R_m^\delta - C(M), 0\} & \text{if } M < M_F \\ R(\alpha^m) - \theta^m V(\alpha^m) - \max\{R_m^\delta - C(M), 0\} & \text{if } M \geq M_F \end{cases}$$

Re-writing:

$$\Theta = \begin{cases} \theta^m + \frac{1 - F(M)}{F(M)} \theta^c & \text{if } F(M) < 1 \\ \theta^m & \text{if } F(M) \geq 1 \end{cases}$$

and rearranging the expression of $W(M)$ yields (14).

Similarly M_c is so that $C(M) = R_m^\delta$, which yields: $M_c = C^{-1}(R_m^\delta)$.

Taking the derivatives of the autocrat payoff functions $W(M)$ and applying the envelope theorem yields:

- For $M_F \leq M_c$ (i.e., for $R_m^\delta \leq C(M_F)$, which, since $C(M)$ is decreasing, is equivalent to $C^{-1}(R_m^\delta) = M_c \geq M_F$):

$$W'(M) = \begin{cases} V(\alpha^*(\Theta)) \frac{\theta^c \lambda s}{(\lambda M + L)^2} & \text{if } M < M_F \\ 0 & \text{if } M \in [M_F, M_c[\\ C'(M) & \text{if } M_c \leq M \end{cases} \quad (41)$$

The function $W(M)$ is increasing in the range $M < M_F$, flat in the interval $M \in [M_F, M_c[$ and, since $C'(M) < 0$, decreasing for $M_c \leq M$. Hence the optimal size of the Military is any $M^{op} \in [M_F, M_c[$ and regime B prevails.

- For $M_c < M_F$ (i.e., $R_m^\delta > C(M_F)$):

$$W'(M) = \begin{cases} V(\alpha^*(\Theta)) \frac{\theta^c \lambda s}{(\lambda M + L)^2} & \text{if } M < M_c \\ V(\alpha^*(\Theta)) \frac{\theta^c \lambda s}{(\lambda M + L)^2} + C'(M) & \text{if } M \in [M_c, M_F[\\ C'(M) & \text{if } M_F \leq M \end{cases} \quad (42)$$

The function $W(M)$ is increasing in the range $M < M_c$ and it is decreasing when $M \geq M_F$. The optimal solution therefore belongs to $[M_c, M_F[$. Differentiation of $W'(M)$ in this range of the parameters yields:

$$W''(M) = \frac{(s\lambda\theta^c)^2}{(\lambda M + L)^4} \frac{[V'(\alpha^*(\Theta))]^2}{\Theta V''(\alpha^*(\Theta)) - R''(\alpha^*(\Theta))} - \frac{2s\theta^c \lambda^2 V(\alpha^*(\Theta))}{(\lambda M + L)^3} + C''(M)$$

Since $C''(M) \leq 0$, a sufficient condition for the concavity of the function $W(M)$ is simply that:

$$s\theta^c [V'(\alpha^*(\Theta))]^2 \leq 2(\lambda M + L) V(\alpha^*(\Theta)) [\Theta V''(\alpha^*(\Theta)) - R''(\alpha^*(\Theta))]$$

For instance, consider the quadratic payoff and disutility functions, $R(\alpha) = R_0 + r\alpha - \varphi \frac{\alpha^2}{2} > 0$ and $V(\alpha) = v \frac{\alpha^2}{2}$ with $r, \varphi, v > 0$, the sufficient condition is equivalent to $\theta^c - \theta^m \leq \frac{\varphi}{v}$. More generally, when the functions $R(\cdot), C(\cdot)$ are concave enough, and $V(\cdot)$ is convex enough, $W''(M)$ is negative for all $M > 0$: the objective function $W(M)$ is concave in the Military size M and the FOC are sufficient.

- First, since $W'_-(M_c) > 0$ (i.e., the LHS derivative of $W(M)$ at M_c is positive), if $W'_+(M_c) < 0$ (i.e., the RHS derivative of $W(M)$ at M_c is negative), then the concavity of $W(M)$ implies that $M^{op} = M_c$ and regime A' prevails.

- Second if $W'_-(M_F) > 0$, the LHS derivative $W(M)$ at M_F is positive, again the concavity of $W(M)$ and the fact that $W(M)$ is decreasing in the range $M \geq M_F$ implies that M^{op} is equal to M_F .
- Finally in the last case where $W'_+(M_c) > 0 > W'_-(M_F)$, we obtain that M^{op} is equal to the interior solution $M^* \in]M_c, M_F[$ such that $W'(M) = 0$:

$$C'(M) + \frac{s\lambda\theta^c}{[\lambda M + L_0]^2} V(\alpha^*(\Theta)) = 0$$

QED.

6.7 Derivation of Figure 3 in the space (L, s)

- **Equilibrium regimes with endogenous military size (Figure 2)**

i) Condition $R_m^\delta = C(\frac{s-L}{\lambda})$, which delimits regime B in Proposition 3, is obviously defined by the locus $s = L + \lambda M_c$ which provides a line with a 45 degrees slope and intercept $s = \lambda M_c$ at $L = 0$

ii) Condition $W'_-(\frac{s-L}{\lambda}) = 0$, which characterizes the boundary of the double co-option region A' , is:

$$W'_-\left(\frac{s-L}{\lambda}\right) = C'\left(\frac{s-L}{\lambda}\right) + \frac{\lambda\theta^c}{s} V(\alpha^m) = 0$$

as $\Theta = \theta^m$ at $M = \frac{s-L}{\lambda}$. This can be rewritten as

$$-sC'\left(\frac{s-L}{\lambda}\right) = \lambda\theta^c V(\alpha^m) \tag{43}$$

The function $\varphi(s) = -sC'\left(\frac{s-L}{\lambda}\right)$ is an increasing function of s (as $C' < 0$ and $C'' < 0$) with $\varphi(L) = 0$ (assuming $C'(0) = 0$) and $\lim_{s \rightarrow \infty} \varphi(s) = +\infty$. Therefore, (43) defines a threshold $s = \tilde{s}(L) \in [L, +\infty[$. Differentiation provides

$$\frac{d\tilde{s}}{dL} = \frac{-\frac{s}{\lambda}C''\left(\frac{s-L}{\lambda}\right)}{-C'\left(\frac{s-L}{\lambda}\right) - \frac{s}{\lambda}C''\left(\frac{s-L}{\lambda}\right)} \in (0, 1)$$

and $\tilde{s}(L)$ is an increasing function of L with $d\tilde{s}/dL \in (0, 1)$.

iii) Note that at $L = 0$, the intercept of the locus $s = L + \lambda M_c$ is obviously λM_c . Conversely, the intercept of the locus $s = \tilde{s}(L)$ is \tilde{s}_0 characterized by $-\tilde{s}_0 \cdot C'(\frac{\tilde{s}_0}{\lambda}) = \lambda \theta^c V(\alpha^m)$. It is easy to see that $\tilde{s}_0 > \lambda M_c$ as shown in figure ?a) if and only if

$$-M_c \cdot C'(M_c) < \theta^c V(\alpha^m)$$

We assume this condition to be satisfied (ie, M_c is small enough and/or θ^c is large enough).

iv) Finally it is easy to see that the two locus $s = \tilde{s}(L)$ and $s = L + \lambda M_c$ intersect at the point (L^W, s^W) such that

$$s = L + \lambda M_c \quad \text{and} \quad -s C'(\frac{s-L}{\lambda}) = \lambda \theta^c V(\alpha^m)$$

or

$$s^W = \frac{\lambda \theta^c V(\alpha^m)}{-C'(M_c)}, \quad L^W = \lambda \frac{\theta^c V(\alpha^m) + M_c \cdot C'(M_c)}{-C'(M_c)} > 0$$

Considerations i), ii), iii) and iv) provide the construction of figure ?a).

QED.

• **Comparative statics of equilibrium regimes (Figure 3).**

i) An increase in λ clearly shifts upwards the locus $s = L + \lambda M_c$, while the impact of a shift of λ on the locus $s = \tilde{s}(L)$ is obtained by partial differentiation of (43):

$$\frac{\partial \tilde{s}(L)}{\partial \lambda} = \frac{-s \frac{s-L}{\lambda^2} C''(\frac{s-L}{\lambda}) + \theta^c V(\alpha^m)}{-C'(\frac{s-L}{\lambda}) - \frac{s}{\lambda} C''(\frac{s-L}{\lambda})} > 0$$

Clearly, the locus $s = \tilde{s}(L)$ is shifted upwards by an increase in λ . These two shifts have the effect of shrinking the region in which double co-option prevails at equilibrium.

ii) An increase in R_m^δ due to a larger value of δ (increased ability of the military to capture rents when in power) translates into a decrease in M_c . This obviously shifts the locus $s = L + \lambda M_c$ downwards while the locus $s = \tilde{s}(L)$ is not affected. What takes place is thus an expansion of the region with double co-option.

iii) An increase in θ^c obviously does not move the locus $s = L + \lambda M$ while it shifts the locus $s = \tilde{s}(L)$ upwards. We indeed have that

$$\frac{\partial \tilde{s}(L)}{\partial \theta^c} = \frac{\lambda V(\alpha^m)}{-C'(\frac{s-L}{\lambda}) - \frac{s}{\lambda} C''(\frac{s-L}{\lambda})} > 0$$

This leads to an enlarged region under regime B' at the expense of the double co-option regime A' .

iv) A decrease in θ^m causes an increase in both R_m^δ and in α^m . The former effect shifts the locus $s = L + \lambda M_c$ downwards while the latter effect shifts the locus $s = \tilde{s}(L)$ upwards. It is indeed the case that

$$\frac{\partial \tilde{s}(L)}{\partial \alpha^m} = \frac{\lambda \theta^c V'(\alpha^m)}{-C'(\frac{s-L}{\lambda}) - \frac{s}{\lambda} C''(\frac{s-L}{\lambda})} > 0$$

What happens is an expansion of the region under regime B' . The region under double co-option is enlarged but only for high enough values of s and L (for intermediate values, it is narrowed down).

QED.

6.8 MBS regime in Saudi Arabia

In a context where religious legitimacy is largely dispensed with, progressive reforms entail huge costs in the form of increased use of brutal force and absolute intolerance toward any dissent. Modernization as conceived by MBS does not include political liberalization, quite the opposite: the concentration of powers in his hands, and the strength and loyalty of the intelligence services are unprecedented in the history of Saudi Arabia (Hubbard, 2020). Hubbard, 2020). And if the role of religion is toned down, national grandeur is extolled and imperial ambitions are re-asserted with especial vigour. The major objective proclaimed by MBS is thus to make the country become the leader of the Middle East and a major world power.³⁶ Any opponent or dissenter is labeled a traitor, and mutual denunciation and electronic spying of all citizens are systematically used for the purpose

³⁶The breaking of diplomatic relations with Qatar, considered to be close to Iran, and the military intervention in Yemen to crush Houthi rebels supported by Iran are steps in this direction.

of not only crushing critics but also silencing those who express neutral opinions.³⁷ It is no exaggeration to say that MBS exerts genuine tyranny to achieve his so-called "Vision 2030".

To this date, however, progress with the most contentious reforms is disappointing as witnessed by the fact that women who dare put pressure on the crown prince to accelerate reforms and get them properly enforced are immediately arrested, intimidated and even tortured. Moreover, there are still no Shia members of the top religious authority, no Shia judges sitting on national courts, no Shia police officers or ambassadors. A plausible explanation is that the absolute power claimed by MBS is questioned inside the country: his ruthlessness and megalomania have stirred resistance among part of the elite, even among those who initially supported him (such as Jamal Kashoggi, who ended up being murdered in the Saudi embassy of Turkey on October 2, 2018). This resistance compels MBS to avoid head-on confrontation with the religious establishment, hence his careful treading in matters sensitive for the clerics. In other words, the transition from a mildly strong to a strong autocracy cannot be considered to have been fully accomplished yet in the Saudi kingdom. And there is presently no guarantee that it will eventually be successful.

6.9 Strong army and strong clerics: Illustrative regime cases

Each of the regime cases selected for illustrating the configuration "strong army, strong clerics" is discussed in some detail below. We begin with the regime of *Zia ul-Haq* (1977-1988) in *Pakistan*, under which a powerful army and powerful clerics coexisted and shared a strong aversion to progressive institutional reforms (so that social aversion to reforms, is very large). It is under Zia that the country's military, intelligence service and police, which largely escaped civilian control, came to be formed of many religiously committed cadres and Zia's loyalists.³⁸ The coziness between the

³⁷For example, just to say that placing ARAMCO on the stock exchange is not a good idea has sent Saudi experts to jail.

³⁸Pakistan's intelligence sector operates in a legal vacuum and does not fall under the authority of the federal government. Yet, it is under the control of the high command

military commanding structure and the clerics, not only the urban ulama of the official establishment but also the Sufi masters and shrine guardians of the countryside or remote towns, was thus closer than ever (Malik and Malik 2017; Martin 2016). It is therefore no surprise that for the first time in the short history of Pakistan, Islamization acquired legitimacy and the backing of the state, thereby guaranteeing a wide support from religious parties and movements. In a revealing move, Zia presented the military as "the ideological vanguard of an Islamic state", and he vowed to bring not only the army but also the economy, the judiciary, and the education system closer in line with the sharia (Haqqani 2005: 132-3, 146-8; Abbas 2005: 101-108). He actually took many drastic steps in that direction and, among the most reactionary ones were his infamous Hudood Ordinances, his Blasphemy Law, and his laws against (religious) minorities (Zaman 2007: 72-3; Abbas 2005: 103-6; Haqqani 2005: 140-5).³⁹

Moreover, under Zia's rule the army perfected the practice of using Islamic parties and radical Islamic groups "as pawns in domestic and international politics" (Cohen 2004: 113). Unlike other Pakistani rulers, Zia was even ready to grant clerics, religious leaders and parties a significant role in the civilian administration and the affairs of the state, going as far as allowing Islamist journalists to operate within the government-owned media (Haqqani 2005: 132, 148-9). As for the military, not only were their role and interest in politics entrenched (Mohmand 2019 : 74-76), but they also benefited from enormous privileges and opportunities for personal enrichment, particularly in the form of participation in, and ownership of, luxury properties as well as highly profitable and well-sheltered business firms forming the Milbus complex.⁴⁰ Revealingly, not only did Zia expand

of the army (Shah 2014: 273).

³⁹While the Hudood Ordinances made the victim of a rape practically guilty of fornication, the Blasphemy Law carried a mandatory sentence of death or life imprisonment for anyone making derogatory remarks against the sacred person of the Prophet or for desecrating the Quran.

⁴⁰The Defence Housing Authority (DHA) developed a sprawling property empire that includes the entire district of Clifton, a swanky suburb of Karachi with half a million residents and 15km of beachfront, and the entire south-east quarter of Lahore, in which the main business district is located. Pakistan's supreme court admonished the DHA for ignoring orders to open its accounts to public scrutiny, and a judge remarked that the agency "seems like a government operating within the government", while another

Milbus considerably, but he also took active measures to establish the military's financial autonomy and he empowered senior commanders by putting special secret funds at their free disposal (Siddiqi 2017 : 161-5).

It is important to avoid the temptation to consider Zia as a simple representative of the army, thus confounding the roles of the Ruler and the Military. Besides being an army man and a religious zealot, Zia was above all a shrewd politician adept at subduing the army and using religious forces against his political opponents (Platteau 2017: 215). And although he did not hesitate to manipulate extremist religious organizations, he knew where to stop and his most radical measures were not necessarily implemented. In any case, the institutional setup of Pakistan cannot be compared with the setup of Saudi Arabia and the Emirates of the Persian Gulf where traditional Islamic law has remained the fundamental law up to the present day (Coulson 1964: 151-5). Still, it is striking that Zia's regime has left a deep imprint on the polity and the entire fabric of Pakistan. As a matter of fact, none of his successors, including civilians (Benazir Bhutto, Nawaz Sharif, and Imran Khan), has dared effectively challenge the obscure interference of the radical clerics, and above all the military, in the country's affairs that Zia had encouraged and organized.

The regimes of Anwar *al-Sadat* (1970-1981) and Hosni *Mubarak* (1981-2011) in *Egypt* differ from Zia's regime in two senses. First, the body of religious clerics is rather sharply divided between, on the one hand, the official establishment of al-Azhar, and, on the other hand, the Muslim Brotherhood, and movements or organizations of the extreme religious right (such as the Islamic Group -"Jama'at Islamiya"- and "Excommunication and Exodus"- "Takfir wa-l Hijra"). Second, the values of the military differ from those of the Muslim Brothers and other extremist religious organizations. Both Sadat and Mubarak have therefore been able to work in close cooperation with the army whose top commanders hold secular values (i.e., are not very averse to reforms). They have also systematically sought to co-opt al-Azhar's official clerics and to gain the support of the Muslim

went so far as saying that "You people run your business by using widows and martyrs as a shield, and you pocket royalties in their name" (Economist, May 11-18 2019).

Brothers. Because members of the religious establishment can be bought at a reasonable price, coopting them proved rather easy while attempts to court the Muslim Brothers were met with variable success.⁴¹ It corresponds to a case where only a partial co-option of the religious class is optimal (i.e., γ^* is significantly smaller than one).

Sadat's decision to strike peace with Israel was considered as an act of treason by many Egyptians, including the Brothers and the extreme religious right. The support of al-Azhar clerics remained unbending, however, as witnessed by their fatwa, called the "Religious Legal Verdict", that provided religious sanctioning of the peace treaty and the Camp David Agreement (Ramadan 1993: 169; Kepel 2005: 51). As a result of the treaty, his legitimacy fell sharply. Moreover, the adverse effects of his liberalization policies on the popular masses prompted the Brothers to organize social protests while their prestige simultaneously increased thanks to their effective and benevolent efforts to relieve poverty. By appearing to give in to the Brother's demand for the gradual Islamization of the Egyptian state, Sadat played a dangerous game because he was not actually prepared to make such a move. He overestimated its impact as well as the army's willingness to intervene against demonstrators denouncing peace with the erstwhile enemy: $\theta^c - \theta^m$ is small when the issue of Israel becomes salient, and λ becomes also small as a result. He was assassinated by a religious extremist from the "al-Jihad" group.

Mubarak learned the lesson and was more cautious in dealing with Islamists. He also pursued the same liberal economic policies as Sadat and continued the strategic partnership between Egypt and the United States by engaging his country on the side of the US in the first Gulf War. This move obeyed a constant preoccupation of Egyptian leadership to obtain sophisticated weaponry and financial assistance for the army (including the military, the intelligence service, and the police), so that it can enhance

⁴¹Sadat tried to woo the Muslim Brothers when he let them take control of the prestigious professional associations of engineers, doctors, lawyers, scientists, and pharmacists, and when he appointed a well-known religious fundamentalist (Muhammad Uthman Ismail) as governor of Asyut province (Cook 2012: 123-5). Likewise, he encouraged the movement called Islamic Community to take over the Egyptian Student Union (Dreyfuss 2005: 154; Ayubi 1991: 74-5).

its external dissuasive power and beat back active religious movements. Confronted with unabating and determined political opposition, Mubarak chose to demonize the Brothers by conflating them with religious extremist groups.⁴² The religious support for his regime was thus limited to the official clerics of al-Azhar whose own credibility was dented by their unconditional justification of Mubarak's policies and their refusal to denounce the deeply authoritarian character of the Egyptian state (Platteau 2017 : 196-200). As a consequence, the society became polarized between ordinary Egyptians many of whom identified themselves with the Brothers, and the regime clique supported by the religious officialdom. The regime clique was formed by the presidential circle and a narrow business elite tightly linked to a deep state constituted by top military, "intelligence barons" and police officers who all enjoyed enormous economic privileges (see Sayigh 2019, for evidence on the military economy).

Closer to Zia's Pakistan than to Sadat's and Mubarak's Egypt are the regimes of *Houari Boumedienne* (1965-1978) and *Chadli Bendjedid* (1986-1992) in *Algeria* and the regimes of *Muhammad al-Nimeiri* (1969-1989) and *Omer al-Bashir* (1989-2019) in *Sudan*.

Under Boumedienne (first as prime minister, then as president), a bizarre alliance was sealed between the new socialist, anti-imperialist regime and the ulama represented by the Supreme Islamic Council. Boumedienne chose to use Islam to counteract any opposition movement and prevent the emergence of a genuine civil society.⁴³ In exchange for their support, he did not hesitate to give free rein to the most reactionary clerics among the ulama.⁴⁴ In particular, he granted them the right to lead the Arabization of

⁴²This is despite the fact that "There never was a single, essential character of the Muslim Brotherhood, because the Brothers themselves never fully agreed with one another" about most issues (Kirkpatrick 2018: 122). In addition, they had long renounced the use of violent means.

⁴³This alliance was motivated by the need to obtain a religious defense of socialism (actually a system of state control of the economy) and an active support for the regime (through religious speeches) whenever political opposition manifested itself in street demonstrations (Tamzali 2007: 199-202; Laribi 2007: 53-4).

⁴⁴ He also strove to reach out to extremist religious forces beyond the influence of the official Muslim establishment and propagated their messages of hatred through a number of unofficial mosques and schools harboring an independent Muslim community life (Lapidus 1988: 697; Chachoua 2001).

the country (with disastrous consequences), to manage the education system (including the right to rewrite school textbooks), and to even meddle in mundane matters like dress code, alcohol consumption, etc.

The regime went quite far in co-opting religious clerics, including those of radical stripe, and this was done with the consent of the army (and intelligence services) which were never far from the presidency and often acted behind the scene. Most notably, Boumedienne encouraged the rise of the Islamic Salvation Front (FIS), whose most radical strand was headed by a puritanical cleric (Ali Belhadj) who called for the formation of an Islamic state, if necessary by violent means (Bouamama 2000: chap. 3; Lapidus 2002: 599-600).⁴⁵ Like in Saudi Arabia, this double co-option strategy was feasible because of the presence of natural resources that could be exploited without significant modernization of institutions. Members of the Algerian deep state amply participated in the rents extracted from the state exploitation of abundant natural gas resources (see Garçon 2020: 45-47; Malti 2020: 196-202).

Chadli essentially continued his predecessor's policies: he used Islamist support to defeat the opposition, a strategy justified by the fact that the FIS defended private property rights and justified the intervention of the International Monetary Fund to help rescue Algeria from an economic and financial crisis (Bouamama 2000: 214-8). This was allegedly for the purpose of controlling it, yet it is probably closer to the truth to say that the deep state of Algeria cooperated with the FIS (which was officially constituted as a party in 1989), but viewed it as a potentially dangerous ally given the violent character of its most extremist wing.⁴⁶ This tactic was apparently repeated for other Islamist outfits.⁴⁷ Consistent with the theory, the price paid for the religious support of the regime was high in terms of reforms foregone. For example, a reactionary Family Code was enacted (1984), and

⁴⁵As was later revealed, the intelligence service actually infiltrated the FIS and held no less than half of the seats in the Consultative Council (Laribi 2007: 74).

⁴⁶ Thus, one of the leaders of the FIS, Ali Benhadj, was a puritan cleric who called for the formation of an Islamic state, if necessary by violent means (Bouamama 2000: chap. 3; Lapidus 2002: 599-600).

⁴⁷ Colonel Samraoui thus accused the intelligence service of having placed one of its men at the head of the Islamist organization "El Hijra oua Takfir" ("Exile and Expiation") during the 1980s (Laribi 2007: 53).

a radical Islamist was appointed as president of the University of Islamic Sciences at Constantine ([Platteau 2017](#): 227).

Finally, in Sudan, because he himself came from the army, Nimeiri was able to rely on the military to counter political opposition. But he did not consider that the military offered sufficient protection, perhaps because having himself seized power through a coup, he feared the presence of too powerful an army. Here is therefore one of the clearest instances in which the autocrat chose the army size with essentially internal security considerations in mind (in conformity with the section 3.2 of our model). Because of his overwhelming concern with maintaining himself in power, Nimeiri opted for a double-edged tactic consisting of relying on a moderately-sized army and on strong religious support (regime *B*). Revealingly, he struck an alliance with Islamist factions, going as far as inviting into his government (in 1977) two prominent Islamists, including Hassan al-Turabi, leader of the Muslim Brotherhood and founder of the National Islamic Front (NIF). Appointed attorney-general, Turabi exerted steady pressure for the Islamic reform of the legal system ([Lapidus 1988](#): 859; [Jok 2007](#): 74; [De Waal 2015](#): 69-73).

In 1983, Nimeiri completely reversed his initial secular policy by declaring an "Islamic revolution" and transforming the Sudanese state into an Islamic republic to be governed by Islamic law, with no exemption for non-Muslim regions. Sudanese law was to be immediately reformed according to the sharia, and the so-called September laws gave rise to highly publicized public executions, amputations of limbs for theft, and lashing for alcohol consumption ([Jok 2007](#): 74-6). Similarly to what Zia ul-Haq did in Pakistan, Nimeiri demanded an oath of unconditional allegiance from all members of the civil service and judiciary, thereby causing the departure of prominent secularists and the dominance of the civil service, the army and the financial sector by Islamists ([De Waal 1997](#): 88). Members of the NIF and Muslim Brotherhood were left free to gain influence within the civil service, intelligence, and institutions of government in charge of education and welfare. By thus modifying selection and promotion rules, Nimeiri, like Zia in Pakistan, obviously influenced the aversion to reforms of the military

and the administration (which, for the sake of analytical tractability, had to be assumed exogenously fixed in our model).

As soon as he acceded to power, al-Bashir professed his goal of creating a theocratic rather than a democratic state. He promulgated the Sudanese Penal Code (in 1991), which includes a provision on the crime of apostasy, and he actively pursued the Arabization and Islamization policies of the previous junta.⁴⁸ During the years 1990-1999, al-Turabi was a dominant force in Sudanese politics and he was the speaker of the national assembly. The cost of Islamic support for the regime in Khartoum proved enormous, as attested by the official sanctioning of reactionary tribal customs justified on religious grounds, appalling bloodsheds in Darfur and southern Kordofan, and the eventual secession of the Christian South (in 2014).

Inflamed by the Islamist imperialism of the North, the southern region's rebellion was revived and could not be defeated by the national army (Jok 2007: 89-90, 120-7). This incapacity of the Sudanese military to deal with an internal insurrection was the consequence of a deliberate choice of the autocratic regime. Not only did it refrain from creating a strong army but it also made no serious attempt to control and disarm the malicious militia which developed in the wake of Islamist movements or as a reaction against them. Worse still, besides the official national army, al-Bashir controlled half a dozen semi-formal military outfits, from the much-feared National Intelligence and Security Services (NISS) to pro-government militias (such as the notorious Janjaweed responsible for mass rape and massacres in Darfur) which he tried to balance against each other in order to stay in power. In Darfur, for example, there were violent incidents in which "government-armed paramilitaries fought against one another and against the army, police and security forces, and even different arms of the official security establishment fought one another" (De Waal 2015: 58).⁴⁹

As witnessed by the popular uprising which caused the demise of al-Bashir (in early April 2019), the Sudanese military were not able to deal

⁴⁸ In a way reminiscent of Zia in Pakistan, al-Bashir formed his own Islamic militia, the People's Defence Force, and training was made compulsory for civil servants, teachers, students and higher-education candidates.

⁴⁹ In these circumstances, it is difficult to give much weight to the various indicators of military strength and militarization presented earlier.

with an internal insurrection. Indeed, its fragmentary and divisive approach easily leads to fights between soldiers affiliated with different parts of the state's defense system (?: 57-62). In terms of our model, a convenient way to represent this fragmentation is by positing a low value for military effectiveness (λ). It is to make up for this military failure that the Ruler is keen to gain strong religious support.⁵⁰

⁵⁰Things are actually more complicated because the example of Sudan suggests that λ is at least partly chosen by the autocrat. The simplest way of addressing this problem formally is by considering that the Ruler chooses the composite variable λM instead of M only. All the results of our model would hold *mutatis mutandis*.