# THE ECONOMICS OF THEOCRACY

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ABSTRACT. This paper models theocracy as a regime where the clergy in power retains knowledge of the cost of political production but which is potentially incompetent or corrupt. This is contrasted with a secular regime where government is contracted out to a secular ruler, and hence the church loses the possibility to observe costs and creates for itself a hidden-information agency problem. The church is free to choose between regimes – a make-or-buy choice – and we look for the range of environmental parameters that are most conducive to the superiority of theocracy and therefore to its occurrence and persistence, despite its disabilities. Numerical solution of the model indicates that the optimal environment for a theocracy is likely to be one in which the "bad" (high-cost) state is disastrously bad but the probability of its occurrence is not very high. A broad review of the historical evidence yields some suggestive support to the predictions of the model. Finally, the model is shown to be applicable to the make-or-buy-government choices of other groups, such as organized labor and the military.

"Our lawgiver, however, was attracted by none of these forms of polity, but gave to his constitution the form of what (….) may be termed a 'theocracy', placing all sovereignty and authority in the hands of God." Hence, "there should be nothing astonishing in our facing death on behalf of our laws with a courage no other nation can equal."

Josephus Flavius, *Against Apion* (quoted in Frend, 1984, p. 46, p. 12)

## 1. Introduction

As Josephus's opening quote unambiguously states for ancient Israel, theocracy literally means government by God. Since, however, God is not known to have ruled worldly government directly, the word is usually understood to mean government by a clergy, or a self-appointed group who claim to speak and act on God's behalf. This will be our understanding of the term in this paper: a political arrangement by which the main functions of secular government are discharged by a priesthood who double as secular officials. It bears noting that theocracy in this strict sense is by no means coterminous with overarching power of a church or religion; to take a current example, Saudi Arabia, which is ruled by a lay royalty, is arguably more tightly dominated by religion in everyday life than Iran, which is ostensibly ruled by clerics.

Whether or not they maximize the religious intensity of a society, theocracies in history are noted for their rarity but also, when they do come into being, for their remarkable permanence. This is one of the very few safe generalizations one can make about historical theocracies; otherwise they can be warlike and aggressive as well as peaceful and benign, revolutionary as well as conservative, self-enclosed and defensive as well as expansionary and proselytizing, run by a hierarchical clergy as well as by an egalitarian community of "saints" or a charismatic leader. A non-exhaustive catalog of prominent examples is sufficient to illustrate all these varieties and combinations thereof: the Israelite theocracy after the return from the Babylonian exile (the first for which we have a written record)[1], the crusaders' kingdoms in Palestine, the Papal state in Italy from the eight century to 1870, the Jesuits' mission system in Paraguay, Savonarola's brief rule in Florence, Calvin's rule in Geneva, the Anabaptist kingdom of Muenster, the Mormon state of Utah, the Muslim caliphates, the contemporary ayatollahs' Iran, Afghanistan under the Taleban, the Mahdi state of Sudan in the 1880s, the Buddhist regimes of traditional Tibet and Mongolia.

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[1] Earlier examples may arguably be found in the temple cities of ancient Mesopotamia and perhaps other ancient societies, but our knowledge of them relies only on the archaeological record.

Over the long haul of history this is a very small crop, but nearly all of these instances were long-lasting and were in most cases terminated only by outside force. This stylized fact speaks for the existence of particular environments which are fairly uncommon but, if and when they do occur, are singularly conducive to the birth and persistence of this type of political regime.

The foregoing list also highlights a perplexing feature of historical theocracies: only *some* religions, not all, seem to be given to theocratic experiments under appropriate circumstances. These are the main branches of Islam, several varieties of Protestantism, and Buddhism. The Catholic church's contribution to the crop is exceptional and that of Orthodox Christianity entirely absent. Other non-European religions do not feature at all in the list. There is no ready explanation for this differential propensity to theocracy, but a prior understanding of the appropriate environment for a theocracy will help us toward making sense of these propensities as well.

This paper addresses the question of the appropriate environment for theocracy by treating theocratic government as an option that a religious organization or movement – here called a church for convenience – can purposely choose, the alternative option being the contracting out of the business of government to an outside party. The choice of theocracy versus secular government is here viewed as a make-or-buy choice: whether to "produce" government in-house or to outsource it under a proper procurement contract. Needless to say, the kind of government the church wants in either case is not likely to be just like any ordinary public administration: it will focus on the upholding and servicing of the ways of life that the church views as its mission to enforce on, or elicit from, the lay society. Hence, failure of delivery on a procurement contract will typically not mean delaying the release of passports to citizens, say, but allowing the heathens to defile a holy place.

The sequence of models that follow feature a "church" and a "ruler" as the principal and agent, respectively, of agency theory. In one model the ruler is a clergyman, in the other an outside contractor. The contract between church and cleric differs from the contract between church and outsider in that the latter contract must confront a problem of private information about costs whereas the former need not. Our approach departs from standard asymmetric information theory in that it views the alternative between in-house and outside production, or full-information vs hidden-information contracts, not as a feature of the world but as a *choice* that the church (the principal) is free to make.

Why would a principal ever choose a second-best, hidden-information arrangement if he can avail himself of a first-best, full-information arrangement?

Because the full-information regime, which relies on insiders to the church (clerics), has inherent disabilities. These may be of two kinds. The first possibility is incompetence: clerics have made an investment in clerical skills to the detriment of other, administrative or political skills. The basic principles of division of labor and specialization speak against professional clerics doubling as secular officials. If this skill gap is relevant the church may be willing to relax control in exchange for better governing abilities. The second possibility is corruption: if the church's control over its clergy is weak, the latter may take advantage of it and pursue a private agenda. Thus in some cases the church may want to artificially create an agency problem with an outside agent for the purpose of putting a brake on inside corruption. In this sense, our approach is analogous to the approach to enterprise privatization by Shapiro and Willig (1990), which sees privatization and its attending agency problem as a check on the private, self-serving agenda of a public official in charge of a public enterprise. Turning from priestly rule to contracted-out, secular government is, in a deep sense, tantamount to "privatizing" a theocracy.

Principal-agent models are in a sense reduced-form models which feature only two parties to a contract; the third party – here, the population or society at large – is left in the background. This may puzzle the reader. Is the population indifferent as between regimes? And what if the people think that the religion itself is wicked, its leadership totally corrupt, so that they want no theocracy nor church-controlled government at all? Furthermore, assigning the church the role of principal and the ruler that of agent may be puzzling too: why not the other way round?

The best way to understand our approach is to focus on a society in which there is one dominant religion, and other religions either do not exist or are clearly a minority; the larger this minority, or the more the society is split along religious cleavages, the higher the probability that the outside ruler may listen to the minority and turn out to be "bad" from the church's point of view. Within the dominant religion, by definition, people are willing members of it and have no quarrels with the church leadership, so that the latter is popularly legitimated and empowered to either directly run the government or hire a ruler on the people's behalf; for if people thought that the church leaders themselves are fundamentally corrupt they would not really be willing members and the church would not be powerful enough to be the principal to a government contract. In such a one-religion society, or subset of society, were it not for other factors, people would always want to live under a theocracy – provided it is *their* brand of theocracy. This is because clergymen have already made a sunk investment in a clerical career and therefore are more trustworthy as government officials than any lay person: other things equal, the penalty for misbehavior is higher for clerics than for

nonclerics. From this point of view, somewhat paradoxically, the right question to ask is not why there exist theocracies at all, but why there are so few of them: why are one-religion societies not all theocracies? Our answer to this question will revolve around the disabilities of theocratic government mentioned above.

Finally, a church can be the principal and make the contract choice only if it is the dominant power in a society, which implies that secular powers or monarchs are for some reason distant, vacant, weak, or uninterested; the list of theocracies given above, which will be surveyed in section 7 below, shares in fact this feature, either because of the accidents of empire or colonization or the incidents of revolution. On the other hand, it must be the case that such gaps in the web of secular power do occur somewhere, sometime; we would never observe a theocracy if the world were at all times completely partitioned into strong, established secular states. As the model to be developed below will show, we should never observe a theocracy when the probability of a "bad state" – an unfriendly ruler – is very high; in such a case the church will be wise to take cover and buy protection from the ruler. Thus, both the attitude of society and the church's power as a principal are captured by the environmental parameters that bound the regime choice in the models to follow.

The paper is organized as follows. The next section describes the economic environment and the basic choice setting. Sections 3 and 4 characterize the full-information contract, or theocracy, and the hidden-information contract, or secular government, respectively. Section 5 models the church's choice of contract as a function of environmental parameters, and section 6 resorts to numerical calculation to establish the main theoretical result of the paper. Section 7 surveys the historical evidence and finds that our theoretical findings account well for the religions' differential propensity to theocracy, for the occurrence and persistence of both conservative and revolutionary theocracies, and for the special Islamic mix of regimes. Section 8 suggests that the model can be extended beyond religion to encompass the make-or-buy choices of regimes by other groups, such as organized labor and the military. Section 9 concludes.


## 2. The economic environment

Suppose that the church's gross benefits from secular government, b, depend only on the ruler's effort, e, through a deterministic function $b(e)$, with $b(0) = 0$, $b' > 0$, and $b'' \leq 0$. The church maximizes expected net benefits, i.e. gross benefits minus wages paid to the ruler. The ruler's effort level is fully observable by the church; however, the

ruler's disutility from effort is influenced by a random factor θ, whose realization is observed by the church only if the ruler himself is a cleric, i.e. if government is managed directly by the church. We call this arrangement a theocracy. By contrast, if the business of government is contracted out to a lay ruler, only the latter, not the church, observes the state of nature θ. We call this arrangement a secular regime, though controlled by the church. The church is free to choose which regime to implement, that is, whether to run the government in-house as a theocracy or to make a deal with an outsider to get the job done. In either case, the ruler, whether lay or clerical, has to be motivated to accept the contract, hence the church's maximization problem is subject to a participation constraint. In addition, under the secular regime, an incentive-compatibility constraint arises which further bounds the church's choice of contract.

Since the church's choice of regime is in effect a choice between a full-information and a hidden-information arrangement, it is trivial to show that, other things equal, the former is always strictly superior to the latter. This basic insight from principal-agent theory captures the idea that a theocracy has a uniquely valuable asset: if the public official is a cleric, he has already posted a bond with the church, as it were, a bond whose value will be lost if he is caught shirking on his duties and fired; hence from the people's point of view a cleric is more trustworthy than a lay official. However, there are countervailing factors: incompetence and corruption, which might worsen the performance of clerical rule. If the clerics' skills at government jobs are inferior to those of a lay ruler – which they must be because of their specialization in clerical work – then other things are not equal and the church may after all prefer contracting out. Furthermore, if the church's control over its own personnel is weak enough that their self-serving activities are bad enough, then the theocracy may after all turn out to be inferior to the secular regime. In other words, the church may want to *purposely create* a hidden-information agency problem with an outside contractor, where none need exist, in order to hold its own corruption in check. Our model is compatible with both interpretations, even though we will often use the corruption interpretation for ease of exposition. Our central concern will be to establish under what environments one regime becomes preferable to the other from the church's point of view.

Under either regime, the ruler is a risk-neutral expected utility maximizer. His utility from wages, w, and effort, e, depends on the state of nature θ. We use an additively separable utility function of the form:

$$U(w,e,\theta) = w - c(e,\theta) \qquad\qquad (1)$$

The cost of effort function c(e, θ) has the following specifications:

$$
\begin{aligned}
&c(0,\theta) = 0 && \text{for all } \theta \\
&c_e(e,\theta) \begin{cases} > 0 & \text{for } e > 0 \\ = 0 & \text{for } e = 0 \end{cases} \\
&c_{ee}(e,\theta) > 0 && \text{for all } e \\
&c_\theta(e,\theta) < 0 && \text{for all } e \\
&c_{e\theta}(e,\theta) \begin{cases} < 0 & \text{for } e > 0 \\ = 0 & \text{for } e = 0 \end{cases}
\end{aligned}
\tag{2}
$$

In words, the ruler's cost of effort is increasing and strictly convex in the effort level. Higher values of θ denote more productive states of nature in the sense that both total and marginal cost of effort are lower when θ is higher. For simplicity, we assume that θ can take on only one of two values, $\theta_H > \theta_L$, with Prob $(\theta_H)$ = P. The ruler has a reservation utility level U°. In addition, in any state of nature, when he is a clergyman, the ruler can secure private benefits to the amount K (or, his effort cost is higher – his productivity lower – by the amount K): the church must take this into account when designing a contract that satisfies the participation constraint.

In this setup, under any regime, effort itself is always observable, so the contract can explicitly state the effort level required. However, an efficient contract that maximizes the principal's payoff must make the level of effort responsive to the cost incurred by the ruler, and hence to the realization of θ.

### 3. Theocracy

As explained above, a theocracy makes the state of nature observable by the church but is liable to be incompetent or corrupt. Thus, a complete information contract directly specifies effort level and wage contingent on each realization of θ and ensures the cleric an expected utility that is no lower than his reservation utility plus his private benefits from corruption (or his additional effort cost). With only two states of nature, the church solves the following problem:

$$
\begin{aligned}
&\max_{w_H, w_L, e_H, e_L} P\big(b(e_H) - w_H\big) + (1-P)\big(b(e_L) - w_L\big) \\
&s.t. \quad P\big(w_H - c(e_H, \theta_H)\big) + (1-P)\big(w_L - c(e_L, \theta_L)\big) \geq U° + K
\end{aligned}
\tag{3}
$$

At the optimal solution, the participation constraint must bind. Note that the degree of corruption, or the extra cost, K, is analytically equivalent to an increase in the agent's reservation utility. Risk neutrality implies that wages and utilities in each state are indeterminate at the optimum, but this does not matter as long as the agent's expected utility satisfies the constraint. Denoting by $e^*_H$, $e^*_L$ the solutions to this problem, for strictly positive effort levels, the first-order conditions for an interior solution yield:

$$b'\left(e^*_H\right) = c_e\left(e^*_H, \theta_H\right) \qquad (4a)$$
$$b'\left(e^*_L\right) = c_e\left(e^*_L, \theta_L\right) \qquad (4b)$$

Thus, predictably, the optimal level of effort in each state equates its marginal benefit with its marginal cost.

## 4. Secular government

Under this regime, only the ruler knows the true state of nature, so he may lie to the church and claim that it is $\theta_L$ when it is in fact $\theta_H$, thereby lowering the church's net benefits; therefore the full-information contract described above is unfeasible.

To characterize an optimal contract in this setting, we rely on the revelation principle (Myerson, 1979; Baron and Myerson, 1982). By this principle, the principal can never do better than implementing a contract which requires the agent to announce which state has occurred, specifies an outcome (w, e) for each possible announcement of θ, and makes it optimal for the agent always to report the state *truthfully*. Thus an incentive-compatibility, or truth-telling, constraint is added on to the principal's contract design problem.

Of course, since only the ruler observes the state, if he is to accept the contract he must be guaranteed a utility of at least U° in *each* state. Given the revelation principle, the contract specifies two pairs of values, ($w_H$, $e_H$) and ($w_L$, $e_L$), which are the outcomes (wage and effort levels) that are assigned to different *announcements* of the state by the ruler. To find the optimal wage-effort pairs, the church solves the following problem:

$$\max_{w_H, w_L, e_H, e_L} P(b(e_H) - w_H) + (1-P)(b(e_L) - w_L)$$

$$s.t. \quad (i) \quad w_L - c(e_L, \theta_L) \geq U^\circ$$

$$(ii) \quad w_H - c(e_H, \theta_H) \geq U^\circ \tag{5}$$

$$(iii) \quad w_H - c(e_H, \theta_H) \geq w_L - c(e_L, \theta_H)$$

$$(iv) \quad w_L - c(e_L, \theta_L) \geq w_H - c(e_H, \theta_L)$$

The first two constraints are the participation constraints for each state, as described above. The last two are the incentive-compatibility or truth-telling constraints for each state. For example, constraint (iii) says that when state $\theta_H$ obtains, the agent's utility if he reports the truth is no lower than if he claims that state $\theta_L$ has occurred instead. Constraint (iv) is interpreted similarly.

The solution to this problem is developed in the Appendix. There it is shown that only constraints (i) and (iii) bind in the optimal contract. This immediately implies that constraint (ii) holds as a strict inequality: thus the agent receives just his reservation utility in the bad state whereas he earns a surplus in the good state. Furthermore, denoting by $\hat{e}_L$, $\hat{e}_H$ the solutions to this problem, optimal effort levels are given by the following equations:

$$b'(\hat{e}_H) = c_e(\hat{e}_H, \theta_H) \tag{6a}$$

$$(1-P)[b'(\hat{e}_L) - c_e(\hat{e}_L, \theta_L)] + P[c_e(\hat{e}_L, \theta_H) - c_e(\hat{e}_L, \theta_L)] = 0 \tag{6b}$$

Equation (6a) is identical to (4a). In equation (6b), the second bracketed expression is negative (recall (2)), hence the first bracketed expression must be positive to satisfy the equation. Therefore, $\hat{e}_H = e^*_H$ and $\hat{e}_L < e^*_L$. The optimal contract sets the level of effort in state $\theta_H$ at its full-information level $e^*_H$, whereas in state $\theta_L$ it sets effort strictly below its first-best level $e^*_L$. As a consequence, the church's expected net benefits are strictly lower than those it receives (absent incompetence or corruption) when $\theta$ is observable. It is worth noting that here the church has two sources of losses in comparison with the full-information contract: one is a deadweight loss (an inefficiently low effort level in state $\theta_L$), the other is a transfer to the ruler (a surplus wage for the same, efficient effort level in state $\theta_H$). The relative weight of each type of loss depends on the relative probabilities of the two states.

The intuition for these results is that the ruler's private information about $\theta$ is an asset that is valuable to the church; if the ruler is to release his control of this asset (i.e. report the truth) he must be paid what is in effect a monopoly rent. This takes the form of making it in the ruler's best interest to report $\theta_H$ when it occurs by allowing him a

surplus, whereas reporting $\theta_L$ earns him no surplus. (Recall that were it not for this incentive, he would be tempted to report $\theta_L$ when $\theta_H$ occurs.) This is costly to the church, the more so the higher is P, the probability of the good state. By combining constraints (i) and (iii) as equalities, it is easy to check that the agent's surplus utility in state $\theta_H$ is equal to $c(e_L, \theta_L) - c(e_L, \theta_H)$, the cost difference between states for the same level of effort; were he not paid this rent, the ruler would again report $\theta_L$ when $\theta_H$ occurs. Now this difference shrinks as e falls (recall from (2) that it vanishes as e goes to zero). Therefore when the probability of $\theta_H$ is high, the church will be driven to lower $e_L$ even more, thereby losing benefits from state $\theta_L$ (whose probability is low anyway), in order to reduce its losses from the rents paid out in state $\theta_H$. Differentiation of equation (6b) confirms that the optimal $\hat{e}_L$ falls as P rises (see the Appendix). Figure 1 illustrates the optimal hidden-information contract in the w-e space.

(Figure 1 about here)

Here the upward-sloping, convex curves are the indifference curves for each state corresponding to the reservation utility, while the increasing concave curves are iso-benefit curves. When the state is observable the solution is at the tangency points $e^*_H$ and $e^*_L$ (equations (4a) and (4b)). When the state is not observable the solution for state $\theta_H$ is still at a tangency point for the same level of effort (equation (6a)), but for a higher wage. This surplus wage insures that the agent does not lie when state $\theta_H$ occurs by giving him the same utility as in state $\theta_L$ (constraint iii): hence the tangency point occurs with a $\theta_H$ indifference curve which is above reservation utility and passes through the (w, e) pair that obtains in state $\theta_L$. If this pair were the efficient one as under full observability, the surplus would be too high, so effort falls below $e^*_L$ to $\hat{e}_L$ in order to relax the truth-telling constraint and reduce the surplus wage at $e^*_H$ (equation (6b)). The surplus is therefore measured by the vertical distance between the two relevant indifference curves for state $\theta_H$, i.e. by the cost difference between states at $\hat{e}_L$.

An implication of this analysis underlines a key difference between the two regimes. Under the full-information regime (theocracy), optimal effort levels do not depend on the probabilities of the two states (although of course the church's total expected benefits do). In the hidden information contract, by contrast, optimal effort level in state $\theta_L$ does depend on the probabilities (equation (6b)). Keeping this in mind, we can proceed to consider the choice of regimes.

**5. Choosing between regimes**

The church will naturally choose the arrangement that yields the largest expected net benefits. By substituting the constraint into expected benefits when θ is observable, $EB_O$ (equation (3)), and substituting constraints (i) and (iii) into expected benefits when θ is not observable, $EB_N$ (equation (5)), and simplifying, we find that $EB_O - EB_N \geq 0$ if and only if

$$(1-P)\left[\left(b\left(e_L^*\right) - c\left(e_L^*, \theta_L\right)\right) - \left(b\left(\hat{e}_L\right) - c\left(\hat{e}_L, \theta_L\right)\right)\right] + P\left[c\left(\hat{e}_L, \theta_L\right) - c\left(\hat{e}_L, \theta_H\right)\right] - K \geq 0 \quad (7)$$

If this condition holds, theocracy is superior to secular government. It will be noticed that although the outcome in state $\theta_H$ is part of total benefits under each regime, it drops out from (7) since in both regimes $e^*_H$ is efficient and independent of probabilities. The first bracketed expression on the LHS is the net benefit difference between regimes in state $\theta_L$ and is positive because $e^*_L$ is efficient whereas $\hat{e}_L$ is not, and the second expression is also positive as it measures the surplus wage at $e^*_H$. Therefore condition (7) would always be satisfied with strict inequality if K were equal to zero: absent incompetence and corruption, a first-best contract is trivially superior to a second-best one. Clearly, though, incompetence or corruption can be serious enough to overturn the inequality and make secular government superior to theocracy.

However, for any given level of K, the LHS of (7) is a function of two parameters: the probabilities of the two states and the distance between them, that is, how bad the bad state is and how likely it is to occur. There will be configurations of these parameters that make theocracy more resilient, or more profitable, despite incompetence or corruption: these environments will be the most favorable to the occurrence and persistence of theocracy. To find out what these look like, we treat P and $\theta_L$ (given $\theta_H$) as variables and ask how the difference in expected net benefits between regimes, $EB_O - EB_N$ (i.e. the LHS of (7)), changes as those variables change. The difficulty lies in the fact that, as condition (7) shows, there are two sources of loss to the church under the secular regime, a transfer to the ruler at $\theta_H$ and an efficiency loss at $\theta_L$, and the two vary inversely with each other: reducing the transfer involves increasing the efficiency loss and viceversa.

For analytical purposes, we treat the LHS of (7) – itself a maximum value function in $e^*_L$ and $\hat{e}_L$ – as an objective function and proceed to maximize it with respect to P and $\theta_L$: the combination of parameters that solves this problem, if it should happen to be realized, is where the comparative advantage of theocracy is at its best. Making use of the first-order conditions of the previous two problems throughout (i.e.

11

making sure that all contracts are optimal at all parameter values), the FOC for a maximum of $EB_O - EB_N$ (the LHS of (7)) are:

$$\frac{\partial(EB_O - EB_N)}{\partial P} = -\left[b(e_L^*) - c(e_L^*, \theta_L)\right] + \left[b(\hat{e}_L) - c(\hat{e}_L, \theta_L)\right] + \left[c(\hat{e}_L, \theta_L) - c(\hat{e}_L, \theta_H)\right] = 0$$

(8a)

$$\frac{\partial(EB_O - EB_N)}{\partial \theta_L} = -(1-P)c_\theta(e_L^*, \theta_L) + c_\theta(\hat{e}_L, \theta_L) = 0 \qquad \textbf{(8b)}$$

These equations define the values $(P, \theta_L)$ that maximize the comparative advantage of theocracy (second-order conditions are given in the Appendix). Each of them is simply the difference between the derivatives of $EB_O$ and $EB_N$ with respect to P and $\theta_L$, respectively; again in equation (8a) the expression for $e^*_H$ drops out as it appears identical on both sides of the difference. The first bracket in (8a) is the loss of net benefits in the theocracy as P increases, which is constant as $e^*_L$ is independent of P. The last two brackets measure the net benefits at $\theta_L$ plus the surplus wage paid out at $\theta_H$ under the secular regime, which both decrease as P increases (see (6b)). When P is small these two brackets are large and make the derivative positive, and conversely when P is high. When (8a) holds, P is such that these losses to the two regimes exactly balance out. Analogously, equation (8b) says that the theocracy's gain in cost reduction from an increase of $\theta_L$ when state $\theta_L$ occurs, i.e. (1-P) times $c_\theta$ (first term), exactly balances the secular regime's similar gain in all states, because here the cost reduction affects also the surplus wage at $\theta_H$ (second term).

To gain a better insight into the problem, let us look at the changes in $EB_O$ and $EB_N$ separately as P and $\theta_L$ change (see the Appendix). $EB_O$ increases linearly in P (see equ. (3)). $EB_N$ is first decreasing then increasing in P, reaching an interior minimum. For a given $\theta_L$, there will be a maximum difference $EB_O - EB_N$ at a value $\overline{P}$ where (8a) is satisfied. On the other hand, $EB_O$ and $EB_N$ are both increasing and convex in $\theta_L$, but $EB_O$ increases faster (more slowly) than $EB_N$ when P is lower (higher) than the value defined by (8b), at which the two rates of increase are exactly equal and the difference $EB_O - EB_N$ is at a maximum. Call this critical value P*. An example is shown in Figure 2, which depicts $EB_O$ and $EB_N$ as functions of P. An increase in $\theta_L$ results in upward shifts of these curves. $\overline{P}$ is the optimal P that satisfies (8a) at the initial level of $\theta_L$. P* is the level at which $\partial EB_O / \partial \theta_L = \partial EB_N / \partial \theta_L$, satisfying (8b). Clearly, as P* is below $\overline{P}$, the rise in $\theta_L$ increases $EB_O$ by less than it increases $EB_N$, making the benefit difference fall. The figure also suggests that an infinitesimal change in $\theta_L$ would not change $EB_O - EB_N$ if P*=$\overline{P}$, which is the full optimum satisfying (8a) and (8b)

simultaneously. Finally, an increase in K, the level of corruption, would be simply captured by a parallel downward shift of $EB_O$ in the figure, squeezing the range of P values where theocracy remains superior to the secular regime.

(Figure 2 about here)

Characterizing the full optimum (8a) and (8b) in the $P - \theta_L$ space must account for the fact that both $\overline{P}$ and P*, defined by (8a) and (8b) respectively, are functions of $\theta_L$. These functions are implicitly defined by equations (8a) and (8b); by implicit differentiation (given in the Appendix) we can calculate their slopes. It turns out that $\overline{P}$ and P* can either be both monotonically decreasing or both monotonically increasing in $\theta_L$, and that in either case, in the neighborhood of the optimum where the two curves cross, $P^*(\theta_L)$ must be steeper than $\overline{P}(\theta_L)$. The decreasing case obtains when a change in $\theta_L$ has a greater effect on the total cost of effort than on the marginal cost of effort, while the increasing case obtains when the reverse is true – we can find no compelling reason for either assumption.

All this is not saying much, however, unless we can more precisely locate the theocratic optimum in the parameter space. Unfortunately, in general, there is no way of telling in what region of the $P - \theta_L$ space the theocratic optimum T may lie, let alone whether it is unique; indeed, it is not even clear whether it may be an interior or a corner solution. The fact that with respect to the probability range the optimal $\overline{P}$ lies to the right of the minimum of $EB_N$, which is in turn an interior point (see Figure 2), strongly suggests that for a given $\theta_L$ this optimal probability cannot be too close to the lower end of the range. With respect to the low-productivity state $\theta_L$, it is unlikely that its optimal value be too close to the upper end of its range, where (for $\theta_L$ close to $\theta_H$) the two regimes become virtually indistinguishable. But beyond that, to gain some insight into the location of the optimum we must resort to specific functions and numerical calculation, to which we now turn.

## 6. Some numerical examples

In keeping with the assumptions of our general model, let us pick a standard gross benefit function which is strictly concave in the level of effort:

$$b(e) = \alpha \sqrt{e} \qquad \text{with} \quad \alpha > 0 \qquad\qquad (9)$$

and a simple cost function which is strictly convex in the effort:

$$c(e,\theta) = \frac{1}{2}\frac{e^2}{(1+\theta)} \qquad (10)$$

The latter satisfies all of the requirements for the cost function (2) above[2]. For the moment, set $\alpha = 2$ in (9). Define $\theta_H = 1$ as the upper bound of $\theta_L$ and zero as its lower bound. We thus have a 1x1 space.

With these functions, the complete optimization system simultaneously determines $(e^*_L, \hat{e}_L, \theta_L, P)$ in such a way that contracts of each type are optimal throughout and parameter values yield a maximum of theocratic advantage (7). We can thus write down the specific counterparts of equations (4b), (6b), (8a), (8b), which after slight manipulation turn out to be as follows:

$$e^*_L = (1+\theta_L)^{2/3} \qquad (4b')$$

$$(1-P)\left(\frac{1}{\sqrt{\hat{e}_L}} - \frac{\hat{e}_L}{1+\theta_L}\right) + P\left(\frac{\hat{e}_L}{2} - \frac{\hat{e}_L}{1+\theta_L}\right) = 0 \qquad (6b')$$

$$-\left(2\sqrt{e^*_L} - \frac{1}{2}\frac{e^{*2}_L}{(1+\theta_L)}\right) + \left(2\sqrt{\hat{e}_L} - \frac{1}{2}\frac{\hat{e}_L^2}{2}\right) = 0 \qquad (8a')$$

$$(1-P)e^{*2}_L - \hat{e}_L^2 = 0 \qquad (8b')$$

First, ignore the last equation. The first three can be numerically solved for $e^*_L$, $\hat{e}_L$, and $\overline{P}$ for given values of $\theta_L$. This exercise yields a slowly increasing, convex $\overline{P}(\theta_L)$ curve, which starts at P =0.66 for $\theta_L$ =0, rises to 0.68 for $\theta_L$ =0.25, to 0.72 for $\theta_L$ =0.5, to 0.78 for $\theta_L$ =0.75, to 0.85 for $\theta_L$ =0.9, and ends up at P =1 for $\theta_L$ =1. Now take the starting point of this curve, where at $\theta_L$ =0 we have $e^*_L$ =1, $\hat{e}_L$ =0.64, $\overline{P}$ =0.66, and plug these numbers into (8b'): this expression turns out negative. Hence a further fall of $\theta_L$ below zero would still increase $EB_O - EB_N$. In other words, the function $P^*(\theta_L)$ that satisfies (8b') lies outside and to the left of the square box that bounds our parameter values. Therefore we have a corner solution at $\theta_L$ =0, P =0.66. Figure 3 depicts the solution with some indifference curves. The reader can readily check that the partial-equilibrium example of Figure 2 fits neatly in this P − $\theta_L$ space.

(Figure 3 about here)

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[2] We also tried out a logarithmic benefit function, as well as some variations on the cost function. None of our results were materially affected.

If we go back to function (9) and change the scale parameter $\alpha$, our results are unaffected: effort levels are scaled up or down but the $\overline{P}(\theta_L)$ curve shifts only minimally and the corner solution remains. This is what one would expect as a parametric shift of the benefit (or of the cost) function that affects both regimes leaves the comparative advantage unchanged.

Interestingly, an interior solution obtains when only costs are strictly convex but benefits are linear – which is still compatible with problems (3) and (5). If we replace equation (9) with b(e) = e, keep function (10) unchanged, and rework the calculations, we find a $\overline{P}(\theta_L)$ curve, satisfying the linear counterpart of (8a′), which is almost unchanged: it starts at P =0.59 for $\theta_L$ =0, is slowly increasing and convex, and ends at P =1 for $\theta_L$ =1. Furthermore, however, taking the linear counterparts of (4b′), (6b′), (8b′) and solving numerically for $e^*_L$, $\hat{e}_L$, and $\theta_L$ for given values of P, we now find a steeply increasing, concave $P^*(\theta_L)$ curve which lies fully inside the parameter space. It starts at $\theta_L$ =0 for P =0, then rises to $\theta_L$ =0.07 for P =0.25, to $\theta_L$ =0.17 for P =0.5, to $\theta_L$ =0.33 for P =0.75, to $\theta_L$ =0.52 for P =0.9, and ends at $\theta_L$ =1 for P =1. The full theocratic optimum T is at the crossing of the two curves in Figure 4, at P =0.61 and $\theta_L$ =0.28. So the optimal $\theta_L$ is now positive but relatively low.

(Figure 4 about here)

This exercise cannot of course lay any claim to generality. However, the specific functions that we have used do not seem special or biased in any way. While it may be possible to find plausible cost functions that behave differently in some respects – for example, yielding decreasing $\overline{P}(\theta_L)$ and $P^*(\theta_L)$ curves, which is a possibility left open by the theoretical model of the previous section – the results here found seem robust and consistent enough to be taken seriously and deserve comment.

The first finding that deserves stressing is that under all specifications the $\overline{P}(\theta_L)$ curve starts high, well above the midpoint of the probability range, and then remains almost flat as $\theta_L$ rises until it starts picking up near the end and converges to the (1, 1) corner. This implies that for the greatest part of the range of $\theta_L$ values, the optimal probability $\overline{P}$ is nearly constant at a value between 2/3 and 3/4. Theocracy is at its best when the good state is substantially more likely to occur than the bad state.

The second finding that deserves emphasis is the corner solution at $\theta_L$ =0: theocracy is at its best when the bad state, even though not very likely to occur, is really bad when it does occur. The interior solution that obtains in the limit case of constant marginal benefits is due to the fact that in this case, $e^*_L$ must fall by more than in the decreasing returns case to keep equality with marginal cost in the theocracy as $\theta_L$ falls

(see equation (4b)), so that too large a fall reduces its advantage. But even so the optimal $\theta_L$ is low, around ¼. So in what follows we will concentrate the discussion on the decreasing returns case of Figure 3.

This is the main theoretical result of this paper: the optimal environment for a theocracy is one which is very bad on one dimension but fairly good on the other. Taken jointly, these two findings are counterintuitive, but on reflection they fit neatly into the logic of our model. Loosely speaking, theocracy is at its best when secular government is at its worst. In the latter regime, we know that the church has two sources of losses compared to a theocracy: an inefficiently low output in the bad state and a transfer to the ruler in the good state. We also know that the two are related in that the output loss in the bad state is purposely incurred in order to reduce the transfer. Now when the good state is very frequent (very high P) transfers are large but the overall weight of the output distortion in the bad state, which is aimed at mitigating them, is low in the church's expected net benefits since this state occurs so infrequently. On the other hand, when the bad state is moderately to very frequent (middle to low P) transfers are small so the distortion need not be very large, although it occurs fairly frequently. But for high enough values of P, transfers are substantial as the good state occurs fairly frequently, and output distortions weigh heavily in expected benefits as they are both not insubstantial and occur frequently enough. So a critical value of P around 2/3 compounds and exacerbates both weaknesses of the secular regime.

On the other hand, we have seen that the difference in performance between regimes hinges entirely on the bad state: the worse this is (the larger the gap between $\theta_L$ and $\theta_H$), the greater the inefficiency of the secular regime. It can be demonstrated (see the Appendix) that a change in $\theta_L$ has always a larger impact on $\hat{e}_L$ than on $e^*_L$. Therefore for any given level of P, a fall in $\theta_L$ monotonically widens the effort gap between regimes and hence the output loss in the secular regime, so that this loss is maximized at $\theta_L = 0$.


## 7. A look at the historical evidence

The foregoing model directs us to look for theocracies in situations in which the bad state is not very likely but, when it does occur, is very bad – indeed the worst possible for the church. The first question then is, what would the worst state of affairs be for a religion? One obvious answer immediately comes to mind: the prospect of termination of the religion itself. There is a real possibility that the next ruler might decide to make an about-turn and start disestablishing the church and suppressing and

persecuting its practices. Then the church will be wise to fend off the threat by becoming a government unto itself. This terminal threat, however, must not be too likely, for if it is very likely it becomes more practical and less expensive for the church to "buy protection", ie to scale down its requests and expectations somewhat and compensate the ruler for behaving himself.

### Propensity to theocracy

The answer just given, however, begs a further question: what does "termination of the religion" exactly mean? The answer to this further question hinges critically on he type of religion, and more accurately, on whether the religion is mainly behavior-based or doctrine-based. A behavior-based religion asks relatively little of the believer in terms of profession of faith and focuses mostly on the person's publicly observable, outward behavior in everyday life: this group includes Islam, Judaism and Protestantism. By contrast, a doctrine-based religion demands orthodoxy of belief and, since theological subtleties in the believer's mind cannot possibly be monitored, it focuses on practice and ritual inside the church and has very little in the way of behavioral restrictions: both Catholic and Orthodox Christianity belong here. Elsewhere (Ferrero 2006a, 2007) I elaborated this distinction in detail and showed how it differentially affects the propensity to, and the form taken by, religious extremism or fundamentalism. Here we must only note that a heathen ruler intent on suppressing the religion faces a very different task in the two cases.

Suppressing a behavior-based religion is relatively easy, because it has to deal with public behavior. Kings beholden to heathen cults introduced the worship of foreign gods and encouraged the marriage of foreign women in the land of Israel. In the territory of Utah a heathen ruler (ie the United States) would at once outlaw polygamy and legalize saloons and brothels. A religiously lax sultan would permit the unveiling of women and the operation of non-shari'a courts of law. A lay Tibetan prince might weaken or break the ordinary people's dependence on the Buddhist monasteries for all their needs. These things are not desirable implications of the religion: they are the religion. This accounts for the vast majority of cases in the theocracies' list.

By contrast, suppressing Catholic or Orthodox churches would literally require burning down the churches and prohibiting the rituals, which would drive them underground as in the glory days of early Christianity: something that not even the Roman emperors at the height of their persecutions ever seriously attempted to achieve (see Ferrero, 2006b). In other words, being focused on practices behind closed doors, these religions can survive in a hostile environment in a way that those of the first group cannot. Ulemas don't marry people, the state does: hence a marriage is not a good

Muslim marriage if the state is not a proper Caliphate. By contrast, Catholic marriages have to be performed by ordained priests, irrespective of whether the state recognizes them as legally valid. Hence, Catholic theocracies are confined to peculiar, exceptional circumstances: the very heartland of the religion (the Papal states), the protection of native converts in Paraguay against enslavement by the nearby Portuguese raiders, or warring colonial kingdoms whose raison d'etre was the defense of the holy places in Palestine and which were therefore run by orders that were religious and military at the same time. Finally, being acephalous and non-missionary, at least after the early days, the Orthodox churches never found themselves in any such predicaments.

A glance at other religions that never turned theocratic provides tentative support to our approach. For example, consider another major world religion which deeply permeated its society: Hinduism. Here the caste system enforced a division of labor which was not negotiable and could never be altered. As a consequence, the option of Brahmins turning warriors (rulers) could never be an issue and the choice problem that lies at the heart of our model never arose. On the other hand, the same system guaranteed institutionalized protection of the religion, so that the main motive for resorting to theocracy was lacking in the first place – at least as long as the ruler was himself a Hindu bound by the caste system rules. So, for better or worse, traditional India was spared the option of theocracy.


Benign theocracies

Thus, identifying a threat to the very survival of the religion as a prime motive for the rise of a theocracy provides an explanation for the differential occurrence of theocracies in different religions. We now turn to a bird-eye review of historical instances of "benign", or conservative, theocracies to show that they nicely fit our model's predictions.

The history of the two kingdoms (Shanks, 1999) which comprised the land of Israel between the death of king Solomon and the Babylonian exile is dotted by kings who lapsed back into multiple religious allegiances and sparked the outcry of a string of prophets from Amos to Jeremiah, followed in each case by a "reforming" king who promoted the religion of Yahweh back to the leading position. Overall, this four-centuries-odd period was one in which Yahweh was Number One, not the Only One (Lane Fox, 1992). The lesson was not lost to the Yahwist minority in exile who subsequently returned to Judea to reclaim their homeland and rebuild the Temple under Persian protection: from the return to the onset of Roman rule Israel was a theocracy where there was no secular authority above or beside the High Priest and Yahweh was at last the Only One. Those were relatively quiet times as long as the Persian empire,

and then the Greek successors to Alexander, kept a distant oversight and let the Jews alone to go about their own affairs. The threat did materialize on one occasion, however, when in the 160's BCE the Seleucid despot Antiochus IV decided to overthrow the Temple cult and enforce all-out hellenization of the place. This sparked a successful theocratic revolution that established the Hasmonean dynasty in which the king was also the High Priest. Thus the legacy of ancient Judaism for us includes the invention of both the conservative theocracy and the revolutionary theocracy.

The history of ancient Tibet (Stein, 1972; Norbu and Turnbull, 1972) is similar to that of ancient Israel in that since the dawn of recorded history (7th century AD) the country was ruled by a monarchy whose kings alternatively promoted Buddhism and the competing, older Bon religion; worse, they often meddled into church affairs by favoring one Buddhist sect against the others. Then in the 11th century the kingdom fell apart through internecine strife and since then no single local ruler was ever able to claim sovereignty over the whole country again. For several centuries thereafter the country was torn apart by conflict between rival monasteries and sects allied with different groups of lay nobility and territorial princes. Then the reformed Buddhist sect (Gelug-pa), established in the early 15th century, evolved a hierarchical system of high incarnations which peaked at the Dalai Lama, first recognized as supreme ruler of Tibet by the Mongol emperors in the late 16th century. Since the 13th century the country had fallen under the distant but benevolent oversight first of the Mongols and then of the Chinese empire. These powers were happy to leave local affairs entirely in Tibetan hands, and so after centuries of anarchy, for about four centuries, until the Chinese communist takeover of the 1950's, Tibet was a theocracy, where the Dalai Lama, as the supreme head of the church, exercised whatever governmental functions were needed in a traditional society locked away from the rest of the world.

A remarkably similar development occurred in Outer Mongolia (Bawden, 1968), which was converted to Buddhism by the Tibetans in the late 16th century. Here, since the beginning of the 17th century, the Buddhist church evolved a system of high incarnations which peaked at the Jebtsundamba Khutuktu. This figure, while acknowledging a spiritual subordination to the Tibetan "mother church", in fact exercised absolute control over the spiritual and temporal affairs of the Mongols, although the country was nominally a province of the Chinese empire. The theocracy was overthrown by the Soviet-inspired communist revolution of 1921.

The development which led to the establishment of the Papal theocracy follows the same broad pattern. The three centuries between the fall of the Western Roman empire and the granting of sovereign territory to the pope by a Frankish king saw the political situation in Rome swinging widely as Italy passed from one foreign

domination to the other, not always friendly to the Papacy. So when the opportunity for independent political sovereignty materialized in the 8th century the pope gladly seized it and never released it again until the kingdom of Italy took over the city in 1870.

### Revolutionary theocracies

Addressing the Protestant theocracies involves turning from conservation to revolution. A string of dissident groups tried to break away from the grip of the established church since the Middle Ages and then on through the Reformation and beyond, and to establish a "republic of the saints" where religion and worldly politics would be one. The list includes the Savonarola dictatorship in Florence, the Taborites in Bohemia, the Anabaptist "kingdom" of Muenster, Geneva under Calvin, the English Puritans, the Mormons in 19th century America, and many more; most of them, especially the early attempts, were wiped out. For illustration we will pick two examples: the Anabaptists and the Mormons.

The key to the Anabaptist story is the millenarian belief (Bax, 1970; Lewy, 1974): the expectation that the Second Coming of the Lord was imminent and therefore the true Christians should ready themselves to the inception of His earthly kingdom. Persecuted in Holland and Northern Germany, they flocked to the city of Muenster where a group led by a prophet had managed to secure control of the city government in early 1534. As ordinary citizens fled and immigration swelled the numbers of true believers, the theocracy turned more and more extreme until, after a long siege and appalling suffering, it fell to the army of the Lutheran prince-bishop of Saxony in June 1935. Clearly, the "bad state" for them would have been truly catastrophic: the collapse of a unique opportunity to reap the rewards awaiting the saints at the upcoming end of time.  With the advantage of hindsight, we could say that their chances of survival as an independent "kingdom" were nonexistent, thus disproving the predictions of our model, but apparently they did not see the situation that way. In the turbulent political and religious conditions of Germany in those times, initially it was not at all clear that the bishop might not agree to give up control of the city and let the Anabaptists alone; moreover, hopes of an "international revolution of the saints" that might spread to other cities ran high at the beginning. But even when these two bets turned out to be a delusion and the saints were left alone to confront hugely superior military forces, they took it as evidence that the final clash of good and evil was drawing near and therefore the Lord could at any time come to the rescue of His chosen people. Therefore buying protection or survival from a secular ruler would have proven disproportionately costly, in their view, compared to holding fast to their theocracy to the end.

The Mormons trekked to a distant no-man's land to the West in 1847 to break free from harassment and hostility in their native homeland in upstate New York. They thought they were rehearsing the Exodus to the Promised Land, properly led by the self-appointed successors to their first prophet. These "saints" ran the Mormon society of Utah until the church had to surrender to American pressure in the 1890's. In the 1840's and for some time afterwards, the place was isolated enough that there was little to fear from the "gentile" government faraway in Washington; so buying protection and compromising on the standards of public religious behavior was clearly inferior to the theocratic regime. Things began to change toward the end of the century as communications, civilian settlement and military control increasingly covered the West, until in the 1890's a compromise on the conditions for statehood became inevitable.

These groups reacted to the demise of theocracy in different ways. The Mormon church became a powerful state-based pressure group within the federal framework of the American constitution, after giving up on some nonnegotiable issues such as polygamy. The Mennonites, the Hutterites, the Amish, and other groups heir to the Anabaptists retreated into mini-theocracies on a local community scale, negotiating their relationship with the government and exploiting the margins of freedom allowed by usually benevolent, absent "rulers" such as the American and Canadian governments. So as predicted by our model, theocracy died but rose again when, relative to the group's goals and norms, the bad state was very unlikely, whereas it died for good when the bad state was very likely.

Islamic theocracies

The history of Islam (Lapidus, 1988; Berkey, 2003) offers a mixed picture that includes a variant of the conservative type of theocracy – the Caliphate, a number of revolutionary theocracies, and a whole range of secular regimes beholden to the religion. These differences criss-cross the sectarian differences within Islam: among the revolutionary regimes the Iranians are Shi'ite, the Taleban of Afghanistan and the Mahdi of the Sudan in the 1880's are Sunni, the Assassins of the 12th century were a splinter group from mainline Shi'a (the Ismaili Nizari); likewise, in past centuries there were both Sunni and Shi'a Caliphates ruling over different parts of the Muslim world; and the "secular" regimes born of jihad range from Saudi Arabia to Palestine's Hamas.

The key to understanding the peculiar institution of the Caliphate is the Koranic Law, or shari'a. Unlike any other worldly ruler, the Caliph is supposed to be there to protect and promote the umma, the universal Muslim community, and as far as domestic policies are concerned, this protection boils down to the enforcing of the Law, whose administration is properly entrusted to a religious class – the ulemas. To gain

perspective, it is useful to contrast the Muslim Caliphate with a superficially similar political institution: the Byzantine empire (Runciman, 1977). In the tradition of the first Christian Roman emperor Constantine, as theorized by church apologists, the Byzantine monarch always styled himself as the protector of the Christian empire, or the vicarious representative of God on earth, and was so anointed and upheld by the church. True to the linguistic roots of the word, they called the empire a theocracy, and this label, confusingly, is still sometimes used by modern historians. But law-making, law-enforcement, and the court system were completely secular and based on the tradition of Roman law, as were the officials running the legal machinery. Consequently, the final fall of Constantinople to the Ottomans did not involve the end of the Orthodox church, at least not in Greece.

In the Muslim world the institution of the Caliphate soon became entangled with the issue of the proper line of succession to the Prophet – a constant source of sectarian dispute and schism. But even when power fell into the hands of foreign invaders like the Ottomans, who could lay no claims to legitimate succession, they styled themselves as protectors of the faith, so that the collapse of the empire in 1918 marked the end of an era – as Osama Bin Laden reminded the world after 9/11. Only with the greatest difficulty could the Ottomans take a few sections of the law out of shari'a and into civil law.

When the institutional protector of the faith fails or wanes, the fall-back option is jihad, or the holy war. While this was often used against infidels at the frontiers of the umma or as a weapon of anti-colonial struggle (Dale, 1988), time and again it has been called on against lapsed or corrupt Muslim groups or rulers, and here enters the revolutionary theocracy. Jihad has been used in this way since the Middle Ages, for example by the Assassins (Lewis, 1967), and then by charismatic, prophetic figures like the Mahdi of Sudan (Lewy, 1974, ch. 8) and those of several parts of sub-Saharan West Africa in the 19th century. The Saudis, allied with the rigorist Wahabi sect, built up their Arabian kingdom through jihad from the 18th to the early 20th century; they did not build a full-fledged theocracy because, in the absence of a Mahdi or prophet, the traditional organization of Sunni Islam, unlike that of other sects, lacks the hierarchical structure required to fully replace the secular ruler. This disability of the Sunnis has rapidly been overcome in the 20th century as the intrusion of Western rule and the rise to power of secular, nationalist regimes in the Muslim world sparked the rise and spread of fundamentalist Islamic revolutionary organizations patterned after Western political parties, from Egypt to Afghanistan, from Iraq to Somalia, from Algeria to Palestine, from Lebanon to Sudan.

How does this picture fit with our model? In pre-modern and early modern Islamic societies (except perhaps at their fringes), despite the ups and downs of successive regimes, a terminal threat to the very survival of the religion was never felt to be a serious possibility – hence the half-way theocracy of the Caliphate (or the Saudi regime) in which a secular ruler is wedded to a religious class in charge of the law. This changed in the 20th century with the arrival of Western imperialism and the score of Westernized, "apostate" regimes that arose in its wake. Now abolition of shari'a law and suppression of the very heart of the religion became a real, impending threat. Where the "heathen" ruler was obviously too bad and too strong to be challenged, theocracy was hopeless and the Muslims turned into a locally powerful pressure group and bought protection from the non-Islamic state, as in the former Soviet republics of Central Asia and the Muslim enclaves in the Balkans. But in Western and Southern Asia, the heartland of Islam, the roots and traditions were thought to be strong enough that the "bad state" was not overwhelmingly likely to materialize – a theocratic revolution was, and still is, perceived to have real chances of success. So, the rise of revolutionary Islamic theocracy is simply part of a general tendency toward radicalization as a reaction to perceived failure that has characterized Islamist politics in the past several decades (Ferrero, 2005).

## 8. Some extensions to nonreligious groups

This paper has focused on the make-or-buy choice facing a powerful religious organization in its dealings with the government. But there is nothing specifically religious in such a choice problem, so with suitable interpretation our framework can be extended to other groups as well. While a full analysis of this extension is beyond the scope of this paper, we will now sketch out two examples to show the power of the principal-agent approach to political regimes: organized labor and the military.

### Socialism
The history of the last 150 years has witnessed a wide variety of strategies and outcomes of labor politics, which all fall within the classic dilemma between revolution and reform (Ferrero, 2004b). Consider a labor party (a socialist party) which is powerful enough to contemplate the takeover of the government as a real possibility. Like our church, the party has two options: run the government in-house, by entrusting it to a party official, or contract it out to an outsider. Under the first option, the socialist party retains full information but incurs a potential loss from either administrative

inefficiency or official corruption (or both). Under the second option, the party incurs a partial loss of information and control but enjoys the advantages of superior skills and keeps its hands free to pick the best agent. Thus in this interpretation, socialist revolution, or a communist regime, corresponds to theocracy and pro-labor reform, or social-democracy, corresponds to secular government. Socialist parties made different choices in different countries at different times. What can explain the diversity?

If our model has merit, the answer must lie in the combination of parameters that yields the maximum comparative advantage of theocracy (here, of revolution): a bad state which is disastrously bad but not very likely to occur. Therefore, socialist revolution was the preferred option when the class struggle was so extreme that defeat would mean that the labor organization and all its achievements would be wiped out: the threat was indeed a terminal one; however, labor was strong enough that such a total defeat was relatively unlikely. On the other hand, when the terminal threat was real and also likely (a low P) because labor was weak, then a safer course was to "duck and cover" and try to buy protection by compromising and making alliances. By contrast, when the bad state was not so disastrously bad ($\theta_L$ relatively high) – labor did not face the prospect of political extinction even in the worst circumstances – and anyway labor was strong enough to hope for better outcomes, then the result was social-democracy and reform. The fact that the realization of the random variable $\theta$ was bounded from below could be due to the existence of "fair" rules of the game, such as franchise extension, party competition and democracy, that reassured the socialist party[3].

An interesting follow-up to our interpretation of socialist revolution as a principal-agent problem arises in the mature stage of communist regimes. As is well known, despite many attempts at reform and experiments with "market socialism", and against the advice of countless pundits and a whole section of the Western economics profession, communist regimes never turned "secular" and never entrusted the key positions of government to non-party officials, even when it was obviously beneficial to efficiency to do so. As a long-time expert witness on the matter, Mao Zedong, famously said, between "red" and "expert", "red" must always take priority. Most communist regimes went on unreformed to the brink of the Great Collapse of 1989-91. The handful of regimes that survived the collapse have reformed everything in the economy but never secularized. How can we account for this glaring inability, or unwillingness, of the communists to contract government out?

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[3] An interesting observation is that in many, though not all, cases the guardian of the rules turned out to be a constitutional monarchy, where, as in northern Europe, the royalty was not unduly slanted toward the propertied classes.

A possible line of answer emphasizes public ownership of the key industries, which for good reasons became inseparably intertwined with the functioning of communist regimes (Ferrero, 2001, 2004a). If a non-party official plays foul and starts privatizing firms on market principles, the threat to communist party power is really deadly – even though such an event was perceived (perhaps wrongly) as unlikely. This contrasts with the so-called "spontaneous privatization" in the Soviet Union and elsewhere, which was serving the interests of the key groups that controlled the state-owned enterprises, as well as the carefully controlled, piecemeal, selective privatization now being carried out by Chinese party officials.

So in the labor case, unlike the religion case, the takeover of state power put in place a particular institution that made the expected cost of any reversal to "secular" government prohibitively high for the ruling party.


### Military dictatorships

When the military has sufficient power in a country to contemplate government takeover, and is not restrained by other considerations, it too faces the choice between exercising government directly and contracting it out to civilians. Here military dictatorship corresponds to theocracy and civilian government to secular government.

Unlike the communists, the generals seem to face no difficulty in contracting out to civilian rule: such handovers are fairly common. The reason is simple: unlike communist regimes, military regimes do not build any special institution, such as state ownership, to which their fortunes become tied up. A powerful, general proxy for the objective that military regimes maximize is the size of the defense budget (Wintrobe, 1998). This objective is not a regime-specific institution and therefore it poses no constraints on transition between regimes.

Unlike theocracies, military dictatorships are not long-lasting regimes: they seem to wear out with time and hand power over to civilian regimes. The revolving Latin American dictatorships of he 20th century are a case in point. This observation is easy to accommodate within our make-or-buy framework. The military resort to direct rule in polarized societies where hostility to them is very strong, threatening their annihilation, yet they are strong enough that such threat is unlikely to materialize. But by exercising direct rule and overt repression, the military soften the threat itself so that the necessity to continue direct rule loses force and the inefficiencies of repressive government become prominent, making it wise and profitable to hand power over to civilians. In turn, civilian government makes room for a rekindling of popular feelings against the military who are in fact keeping control of things behind the wings, and the cycle goes on. Only a settled, developed democracy where the military are firmly under

political control but at the same time are guaranteed a place under the sun can break the Latin American cycle.


### 9. Conclusion

This paper has addressed theocracy as a regime in which a clergy conducts political government directly in preference to an alternative arrangement where it negotiates a division of labor and rents with a secular ruler. Modeling these two alternatives as a full-information and a hidden-information contract, respectively, of principal-agent theory allows us to ask for which combination of environmental parameters the comparative advantage of theocracy over secular government is greatest. We find that this advantage is greatest when the bad state of the world, if it occurs, is disastrously bad, but the probability of its occurrence is low though not negligible. In such an environment, therefore, theocracies are most likely to arise and persist. A look at the historical evidence suggests that this theoretical result helps to account for the broad traits of a range of observed theocracies, from ancient Israel through the Anabaptists to contemporary Islamist radicalism. Finally, we have suggested the possibility for our model to be applied to completely different groups that also face a make-or-buy choice with respect to the government, such as socialist parties and military elites. Both the testing on historical theocracies and the extension to nonreligious groups clearly deserve substantial further research.

**Appendix**

**Derivation of the optimal contract with hidden information**

Recall problem (5). First, we can ignore constraint (ii) because when constraints (i) and (iii) are satisfied it will be satisfied as well, as follows:

$$w_H - c(e_H, \theta_H) \geq w_L - c(e_L, \theta_H) > w_L - c(e_L, \theta_L) \geq U^\circ$$

The first inequality is due to constraint (iii) while the last is due to constraint (i). The strict inequality in the middle is due to our assumption (equation (2)) that $c_\theta < 0$ for all e. It follows that constraint (ii) will hold with strict inequality, i.e. the agent will earn a surplus in state $\theta_H$.

Secondly, we will proceed to solve the problem ignoring constraint (iv) and later show that any solution to problem (5) that ignores constraint (iv) will also satisfy it. Therefore by dropping constraints (ii) and (iv) problem (5) reduces to the following:

$$\max_{w_H, w_L, e_H, e_L} P(b(e_H) - w_H) + (1 - P)(b(e_L) - w_L)$$

$$\text{s.t.} \quad (\text{i}) \quad w_L - c(e_L, \theta_L) \geq U^\circ \tag{A1}$$

$$(\text{iii}) \quad w_H - c(e_H, \theta_H) \geq w_L - c(e_L, \theta_H)$$

Letting $(\lambda, \mu) \geq 0$ be the multipliers on constraints (i) and (iii) respectively, and assuming $(w_L, w_H) > 0$, the Kuhn-Tucker conditions for this problem can be written:

$$-P + \mu = 0 \tag{A2.1}$$

$$-(1 - P) + \lambda - \mu = 0 \tag{A2.2}$$

$$Pb'(e_H) - \mu c_e(e_H, \theta_H) \begin{cases} \leq 0 \\ = 0 \quad \text{if } e_H > 0 \end{cases} \tag{A2.3}$$

$$(1 - P)b'(e_L) - \lambda c_e(e_L, \theta_L) + \mu c_e(e_L, \theta_H) \begin{cases} \leq 0 \\ = 0 \quad \text{if } e_L > 0 \end{cases} \tag{A2.4}$$

$$w_L - c(e_L, \theta_L) - U^\circ \begin{cases} \geq 0 \\ = 0 \quad \text{if } \lambda > 0 \end{cases} \tag{A2.5}$$

$$w_H - c(e_H, \theta_H) - w_L + c(e_L, \theta_H) \begin{cases} \geq 0 \\ = 0 \quad \text{if } \mu > 0 \end{cases} \tag{A2.6}$$

Conditions (A2.1) and (A2.2) together imply that $\mu = P > 0$ and $\lambda = 1$. Hence, both conditions (A2.5) and (A2.6) hold with equality, i.e. both constraints (i) and (iii) must bind at an optimal solution.

Because of our assumptions that $b'(0) > 0$ and that $c_e = 0$ for $e = 0$ (equ. (2)), conditions (A2.3) and (A2.4) cannot hold at $e = 0$. Hence, both $e_L$ and $e_H$ are strictly positive at an optimal solution, which implies that both (A2.3) and (A2.4) hold with equality. Then, substituting $\mu = P$ and $\lambda = 1$ into these conditions yields equations (6a) and (6b) in the text, which characterize the optimal values of $e_H$ and $e_L$. Then, $w_L$ and $w_H$ are determined by constraints (i) and (iii), which hold with equality at the solution.

We now show that constraint (iv) is also satisfied at the optimal solution. The binding constraint (iii) yields

$$w_H - w_L = c(e_H, \theta_H) - c(e_L, \theta_H)$$

Since in the solution $e_H > e_L$, the assumption that $c_{e\theta} < 0$ (equ. (2)) implies

$$c(e_H, \theta_H) - c(e_L, \theta_H) < c(e_H, \theta_L) - c(e_L, \theta_L)$$

These two together yield constraint (iv) as a strict inequality.

The second-order conditions for this problem are cumbersome but straightforward and will not be reported.

Finally, implicit differentiation of equation (6b) in the text yields:

$$\frac{d\hat{e}_L}{dP} = \frac{[b'(\hat{e}_L) - c_e(\hat{e}_L, \theta_L)] - [c_e(\hat{e}_L, \theta_H) - c_e(\hat{e}_L, \theta_L)]}{(1-P)[b''(\hat{e}_L) - c_{ee}(\hat{e}_L, \theta_L)] + P[c_{ee}(\hat{e}_L, \theta_H) - c_{ee}(\hat{e}_L, \theta_L)]} \tag{A3}$$

Since the denominator is required to be negative by the second-order conditions, this derivative is negative.

### Effects of parameter changes

We begin with the two expected benefit functions separately. For $EB_N$, substituting constraints (i) and (iii) into the objective function (5) at the optimal solution yields:

$$EB_N = P\big[[b(e_H^*) - c(e_H^*, \theta_H)] - [c(\hat{e}_L, \theta_L) - c(\hat{e}_L, \theta_H)]\big] + \\ + (1-P)[b(\hat{e}_L) - c(\hat{e}_L, \theta_L)] - U^{\circ} \tag{A4}$$

whose partial derivatives with respect to P and $\theta_L$ are, respectively:

$$\left[b\left(e_H^*\right) - c\left(e_H^*, \theta_H\right)\right] - \left[b(\hat{e}_L) - c(\hat{e}_L, \theta_L)\right] - \left[c(\hat{e}_L, \theta_L) - c(\hat{e}_L, \theta_H)\right] \qquad \text{(A5)}$$

$$-c_\theta(\hat{e}_L, \theta_L) > 0 \qquad \text{(A6)}$$

Where (A5) is equal to zero $EB_N$ reaches a minimum with respect to P, since, given the sign of (A3):

$$\frac{\partial^2 EB_N}{\partial P^2} = -\left[b'(\hat{e}_L) - c_e(\hat{e}_L, \theta_H)\right]\frac{d\hat{e}_L}{dP} > 0 \qquad \text{(A7)}$$

$EB_O$ is given by substitution of the constraint into the objective function (3) at the optimal solution:

$$EB_O = P\left[b\left(e_H^*\right) - c\left(e_H^*, \theta_H\right)\right] + (1 - P)\left[b\left(e_L^*\right) - c\left(e_L^*, \theta_L\right)\right] - U^\circ - K \qquad \text{(A8)}$$

whose partial derivatives with respect to P and $\theta_L$ are, respectively:

$$\left[b\left(e_H^*\right) - c\left(e_H^*, \theta_H\right)\right] - \left[b\left(e_L^*\right) - c\left(e_L^*, \theta_L\right)\right] \qquad \text{(A9)}$$

which is a positive constant, and

$$-(1 - P)c_\theta\left(e_L^*, \theta_L\right) > 0 \qquad \text{(A10)}$$

**Maximizing benefits difference between regimes**

Since $EB_O - EB_N$, equation (7) in the text, is simply (A8) – (A4), its first derivatives are the difference of the first derivatives of the latter expressions. Therefore, the first-order conditions for a maximum of (7), i.e. equations (8a) and (8b) in the text, are the differences (A9) – (A5) and (A10) – (A6), respectively, set equal to zero.

The second-order conditions for the maximization problem (7) are:

$$\frac{\partial^2\left(EB_O - EB_N\right)}{\partial P^2} = \left[b'(\hat{e}_L) - c_e(\hat{e}_L, \theta_H)\right]\frac{d\hat{e}_L}{dP} < 0 \qquad \text{(A11.1)}$$

$$\frac{\partial^2\left(EB_O - EB_N\right)}{\partial\theta_L^2} = c_{\theta\theta}\left(\hat{e}_L,\theta_L\right) - \left(1-P\right)c_{\theta\theta}\left(e_L^*,\theta_L\right) + c_{\theta e}\left(\hat{e}_L,\theta_L\right)\frac{d\hat{e}_L}{d\theta_L} -$$

$$-\left(1-P\right)c_{\theta e}\left(e_L^*,\theta_L\right)\frac{de_L^*}{d\theta_L} < 0 \qquad\text{(A11.2)}$$

$$\frac{\partial^2\left(EB_O - EB_N\right)}{\partial P^2}\frac{\partial^2\left(EB_O - EB_N\right)}{\partial\theta_L^2} - \left(\frac{\partial^2\left(EB_O - EB_N\right)}{\partial\theta_L\partial P}\right)^2 > 0 \qquad\text{(A11.3)}$$

where $\quad \dfrac{\partial^2\left(EB_O - EB_N\right)}{\partial\theta_L\partial P} = c_{\theta e}\left(\hat{e}_L,\theta_L\right)\dfrac{d\hat{e}_L}{dP} + c_\theta\left(e_L^*,\theta_L\right) \qquad\text{(A11.4)}$

Note that (A11.4) can have any sign, depending on whether a change in $\theta_L$ has a greater effect on total or on marginal effort cost. The derivatives $d\hat{e}_L/d\theta_L$ and $de_L^*/d\theta_L$ in (A11.2), not reported here, can be calculated by implicit differentiation of equations (6b) and (4b) in the text, respectively: they measure change in effort in each model as $\theta_L$ changes, fulfilling the respective FOCs throughout. Using the second-order conditions for problem (5) (not reported), it can be shown that they are both positive and, assuming (neutrally) all third-order partials equal to zero, that $d\hat{e}_L/d\theta_L > de_L^*/d\theta_L > 0$.

The first-order conditions for problem (7) implicitly define two functions $P(\theta_L)$: one, $\overline{P}(\theta_L)$, is the locus of all $(P, \theta_L)$ pairs at which (8a) holds; the other, $P^*(\theta_L)$, is the locus of all $(P, \theta_L)$ pairs at which (8b) holds. By implicit differentiation we can calculate the slopes of these functions as follows:

$$\frac{d\overline{P}}{d\theta_L} = -\frac{c_{\theta e}\left(\hat{e}_L,\theta_L\right)\dfrac{d\hat{e}_L}{dP} + c_\theta\left(e_L^*,\theta_L\right)}{\left[b'\left(\hat{e}_L\right) - c_e\left(\hat{e}_L,\theta_H\right)\right]\dfrac{d\hat{e}_L}{dP}} \qquad\text{(A12)}$$

$$\frac{dP^*}{d\theta_L} = -\frac{c_{\theta\theta}\left(\hat{e}_L,\theta_L\right) - \left(1-P\right)c_{\theta\theta}\left(e_L^*,\theta_L\right) + c_{\theta e}\left(\hat{e}_L,\theta_L\right)\dfrac{d\hat{e}_L}{d\theta_L} - \left(1-P\right)c_{\theta e}\left(e_L^*,\theta_L\right)\dfrac{de_L^*}{d\theta_L}}{c_{\theta e}\left(\hat{e}_L,\theta_L\right)\dfrac{d\hat{e}_L}{dP} + c_\theta\left(e_L^*,\theta_L\right)}$$

(A13)

The denominator of (A12) is (A11.1) and the numerator of (A13) is (A11.2). Therefore the sign of these derivatives is the same as the sign of (A11.4), which is the numerator of (A12) and the denominator of (A13): $d\overline{P}/d\theta_L$ and $dP^*/d\theta_L$ will thus have the same sign. Since (A11.4) cannot be signed without further restrictions, (A12) and (A13) can either be both positive or both negative.

Taking the difference (A12) – (A13) and cross-multiplying one finds the second-order condition (A11.3). For the latter to hold, it can be readily checked that when (A11.4) >0, i.e. (A12) and (A13) are both positive, it must be $dP^*/d\theta_L > d\overline{P}/d\theta_L$, whereas when (A11.4) <0, i.e. (A12) and (A13) are both negative, it must be $dP^*/d\theta_L < d\overline{P}/d\theta_L$. Thus in the neighborhood of the optimum $P^*(\theta_L)$ must always be steeper than $\overline{P}(\theta_L)$.

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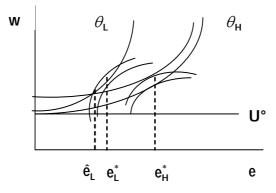Wintrobe, R., 1998, The Political Economy of Dictatorship, Cambridge: Cambridge University Press.
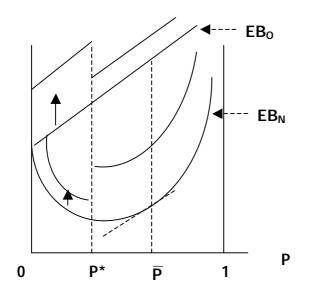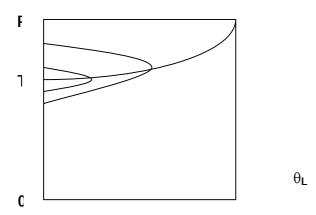
**Figure 1**



**Figure 2**

P

θ_L

O

**Figure 3**
**Decreasing returns to political effort**
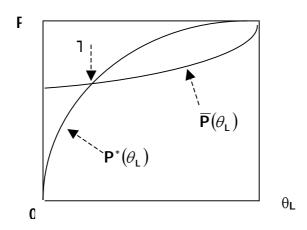
F

θ_L

O

$$\overline{P}(\theta_L)$$

$$P^*(\theta_L)$$

**Figure 4**
**Constant returns to political effort**