

THE RISE AND DEMISE OF THEOCRACY: THEORY AND SOME EVIDENCE

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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 one in which the “bad” (high-cost) state is disastrously bad but the probability of its occurrence is not very high. Quantitative evidence for the rise of ancient Israelite theocracy and the current surge of Islamic theocratic fundamentalism provides surprisingly strong support for this prediction. Lastly, supportive evidence is suggested by two rare instances of peaceful demise of a theocracy.

1. Introduction

Theocracy literally means government by God. Since, however, God is not known to have ruled worldly government directly, the word in its strict sense is usually understood to mean government by a clergy, or a self-appointed group who claim to speak and act on God's behalf. Though broader definitions are possible¹, this will be our definition in this paper: a political arrangement by which the main functions of secular government are discharged by a priesthood who double as secular officials.

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), 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, a wide range of Islamic regimes throughout history, the Buddhist regimes of traditional Tibet, Bhutan and Mongolia.

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 regime².

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

¹ Many of the contributions in Ferrero and Wintrobe (2009) explore broader definitions, both in theory and historical evidence.

² As the list just given also suggests, only some religions, not all, seem to be given to theocratic experiments; these include the main branches of Islam, Judaism, several varieties of Protestantism, and Buddhism. The Catholic contribution is exceptional and that of Orthodox Christianity entirely absent. Other non-European religions do not feature at all. This differential propensity to theocracy is discussed in Ferrero (2009).

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-

The 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. This is particularly relevant since by definition a theocracy relies on a religious monopoly, and monopoly religion tends to be more corrupt than competitive religion, other things equal³. 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.

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 assumption,

³ Of course the secular government too, here as always, can be corrupt. In the framework of this paper, corruption in the theocracy must be understood as a system-specific problem over and above the level of corruption that would normally be expected in a secular government.

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 specific, non-salvageable 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, because dismissal of the former, unlike the latter, entails the loss of the religious asset which is useless elsewhere. Thus taking a clerical career prior to the access to political office is like posting a bond. From this point of view, somewhat paradoxically, the proper question to ask is not why theocracies exist 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 shares in fact this feature, either because of the accidents of empire or colonization or the incidents of revolution. 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 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 basic choice setting and characterizes the full-information contract, or theocracy, and the hidden-information contract, or secular government, in an entirely standard principal-agent model. Section 3 innovates by modeling the church's choice of contract as a function of environmental parameters and resorts to numerical calculation to establish the main theoretical result of the paper. Section 4 looks to history for evidence and finds quantitative support for the model's predictions on the rise of theocracy in ancient Israel and in modern Islamic fundamentalism, and qualitative support in two rather exotic examples of its demise. Section 5 concludes.

2. The model

2.1. The economic environment

Suppose that the church's gross benefits from political 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. Of course, in each particular case, these benefits will consist of different things, depending on how the church wants society to be ordered, and therefore, ultimately, on the church's theology. But there is no need for the model to specify a particular theology.

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 government*, 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. 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 maximizer⁴. 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:

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

The cost of effort function $c(e, \theta)$ has the following specifications:

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

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 $\text{Prob}(\theta_H) = P$. 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 .

⁴ Assuming risk aversion would complicate the algebra but add no new insight. An interior solution is adequately ensured by effort-aversion.

2.2. 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:

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

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 constraint⁵. 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:

$$b'(e_H^*) = c_e(e_H^*, \theta_H) \quad (4a)$$

$$b'(e_L^*) = c_e(e_L^*, \theta_L) \quad (4b)$$

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

2.3. 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 θ_L when it is in fact θ_H , thereby lowering the church's net benefits; therefore the full-information contract described above is unfeasible.

⁵ Wages in each state would be determinate if we wrote the problem subject to two separate participation constraints, specifying that the agent's utility in each state be no lower than his reservation utility plus K , as in problem (5) below. Here the constraints would both bind at the optimum. Otherwise, optimal effort levels would not be affected. Such a formulation would fit an interpretation of the state of nature as, in effect, a type of agent.

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:

$$\begin{aligned}
& \max_{w_H, w_L, e_H, e_L} P(b(e_H) - w_H) + (1 - P)(b(e_L) - w_L) \\
& \text{s.t.} \quad \text{(i)} \quad w_L - c(e_L, \theta_L) \geq U^\circ \\
& \quad \quad \text{(ii)} \quad w_H - c(e_H, \theta_H) \geq U^\circ \\
& \quad \quad \text{(iii)} \quad w_H - c(e_H, \theta_H) \geq w_L - c(e_L, \theta_H) \\
& \quad \quad \text{(iv)} \quad w_L - c(e_L, \theta_L) \geq w_H - c(e_H, \theta_L)
\end{aligned} \tag{5}$$

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 θ_H obtains, the agent's utility if he reports the truth is no lower than if he claims that state θ_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 θ_H at its full-information level e^*_H , whereas in state θ_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 θ 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 θ_L), the other is a transfer to the ruler (a surplus wage for the same, efficient effort level in state θ_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 θ 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 θ_H when it occurs by allowing him a surplus, whereas reporting θ_L earns him no surplus. (Recall that were it not for this incentive, he would be tempted to report θ_L when θ_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 θ_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 θ_L when θ_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 θ_H is high, the church will be driven to lower e_L even more, thereby losing benefits from state θ_L (whose probability is low anyway), in order to reduce its losses from the rents paid out in state θ_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 θ_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 θ_H occurs by giving him the same utility as in state θ_L (constraint iii): hence the tangency point

occurs with a θ_H indifference curve which is above reservation utility and passes through the (w, e) pair that obtains in state θ_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 θ_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 θ_L does depend on the probabilities (equation (6b)). Keeping this in mind, we can proceed to consider the choice of regimes.

3. Choosing between regimes

3.1. The problem

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))⁶, 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

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

If this condition holds, theocracy is superior to secular government. It will be noticed that although the outcome in state θ_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 comparison thus revolves around the “bad” state and its probability. The first bracketed expression on the LHS is the net benefit difference between regimes in state θ_L and is positive because e^*_L is efficient whereas \hat{e}_L is not; 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

⁶ Since in the solution to problem (3) wages are indeterminate within the constraint of expected utility, we substitute into expected benefits the wages that exactly equalize utilities across states. This would be not a neutral option but a requirement if wages were determined, as in the variant formulation of note 5 above.

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 its 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 the parameters P and θ_L (given θ_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 θ_H and an efficiency loss at θ_L , and the two vary inversely with each other: reducing the transfer involves increasing the efficiency loss and viceversa.

To set forth the simultaneous optimization problem, we define $\theta_H = 1$ as the upper bound of θ_L and zero as its lower bound. We thus have a 1×1 compact constraint set. We treat the LHS of (7), ignoring K , as an objective function⁷ and proceed to maximize it with respect to e^*_L , \hat{e}_L , P and θ_L , subject to nonnegativity constraints on P and θ_L and assuming $(e^*_L, \hat{e}_L) > 0$. The combination of parameters that solves this problem is where the comparative advantage of theocracy is at its best. The Kuhn-Tucker conditions for this problem can be written:

$$b'(e^*_L) = c_e(e^*_L, \theta_L) \quad (4b)$$

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

$$\begin{aligned} & -[b(e^*_L) - c(e^*_L, \theta_L)] + [b(\hat{e}_L) - c(\hat{e}_L, \theta_L)] + [c(\hat{e}_L, \theta_L) - c(\hat{e}_L, \theta_H)] = \\ & = -[b(e^*_L) - c(e^*_L, \theta_L)] + [b(\hat{e}_L) - c(\hat{e}_L, \theta_H)] \begin{cases} \leq 0 \\ = 0 \text{ if } P > 0 \end{cases} \quad (8a) \end{aligned}$$

$$-(1-P)c_\theta(e^*_L, \theta_L) + c_\theta(\hat{e}_L, \theta_L) \begin{cases} \leq 0 \\ = 0 \text{ if } \theta_L > 0 \end{cases} \quad (8b)$$

The first two equations are identical with the relevant first-order conditions of the previous two problems, which make sure that all contracts are optimal at all parameter values; this is as one would expect since our objective function is itself a

⁷ Even though this objective function is not concave, it is continuously differentiable with respect to all variables; hence any solution within the compact set that satisfies the Kuhn-Tucker conditions will be a global maximum.

maximum-value function of e^*_L and \hat{e}_L , incorporating all binding constraints of problems (3) and (5). The last two equations define the values (P, θ_L) that maximize the comparative advantage of theocracy. In the first line of (8a), the first bracket 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 θ_L plus the surplus wage paid out at θ_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 with equality, P is such that these losses to the two regimes exactly balance out. Analogously, equation (8b), when holding with equality, says that the theocracy's gain in cost reduction from an increase of θ_L when state θ_L occurs, i.e. $(1-P)$ times c_θ (first term), exactly balances the secular regime's similar gain in *all* states, because here the cost reduction affects also the surplus wage at θ_H (second term).

One result implied by the above conditions is that P must be strictly positive at the optimal solution: given that $e^*_L > \hat{e}_L$ and $c_{e\theta} < 0$ (see (2)), condition (8b) could never be satisfied with $P = 0$. It follows that (8a) holds with strict equality. On the other hand, a corner solution cannot be ruled out for θ_L , and the KT conditions give no hint about what kind of value P might take on at the theocratic optimum⁸. To gain some insight into the location of the optimum in the $P - \theta_L$ space we must then resort to specific functions and numerical calculation, to which we now turn.

3.2. A numerical solution

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

$$b(e) = e^\alpha \quad \text{with } 0 < \alpha \leq 1 \quad (9)$$

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

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

⁸ It is easy to rule out solutions on the upper borders of the parameters space. Inspection of conditions (4b) through (8b) shows that $P = 1$, with any θ_L , yields corner solutions to problems (3) and (5), i.e. $e^*_L = \hat{e}_L = 0$, while for $\theta_L = \theta_H = 1$ (6b) collapses into (4b) and this violates (8b). In effect, in either case the choice problem itself vanishes.

The latter satisfies all of the requirements for the cost function (2) above. The benefit function (9) allows us to study the effects of α -concavity⁹, i.e. to see how the solution changes as α decreases from 1 (that is, as returns to effort become more concave). With these functions, the overall benefit difference between regimes (the LHS of (7), ignoring K) becomes:

$$(1-P) \left[\left(e_L^{*\alpha} - \frac{1}{2} \frac{e_L^{*2}}{(1+\theta_L)} \right) - \left(\hat{e}_L^\alpha - \frac{1}{2} \frac{\hat{e}_L^2}{(1+\theta_L)} \right) \right] + P \left(\frac{1}{2} \frac{\hat{e}_L^2}{(1+\theta_L)} - \frac{1}{2} \frac{\hat{e}_L^2}{2} \right) \quad (11)$$

Maximizing (11) with respect to e_L^* , \hat{e}_L , P , θ_L yields, after slight manipulation, the following counterparts to the Kuhn-Tucker conditions (4b) through (8b) above:

$$\alpha e_L^{*\alpha-1} - \frac{e_L^*}{1+\theta_L} = 0 \quad (4b')$$

$$\text{or } e_L^* = [\alpha(1+\theta_L)]^{1/(2-\alpha)} \quad (4b'')$$

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

$$\text{or } \hat{e}_L = \left[\frac{2\alpha(1-P)(1+\theta_L)}{2-P(1+\theta_L)} \right]^{1/(2-\alpha)} \quad (6b'')$$

$$-\left(e_L^{*\alpha} - \frac{1}{2} \frac{e_L^{*2}}{(1+\theta_L)} \right) + \left(\hat{e}_L^\alpha - \frac{1}{2} \frac{\hat{e}_L^2}{2} \right) \begin{cases} \leq 0 \\ = 0 \text{ if } P > 0 \end{cases} \quad (8a')$$

$$(1-P)e_L^{*2} - \hat{e}_L^2 \begin{cases} \leq 0 \\ = 0 \text{ if } \theta_L > 0 \end{cases} \quad (8b')$$

Applying the result from the general model of the previous section, we know that $P > 0$ and (8a') holds with equality at the optimum. Therefore, equation (8a') implicitly defines a function $\bar{P}(\theta_L)$, which is the locus of all (P, θ_L) pairs that satisfy the equation. Unfortunately, even with our simple benefit and cost functions, it proved impossible to solve for \bar{P} analytically and plug it into (8b') to find whether the latter holds with or without equality. We can, however, solve the system numerically. So, ignoring condition (8b'), we take equations (4b''), (6b''), and (8a') and solve them for e_L^* , \hat{e}_L , and \bar{P} for given values of α and of θ_L . Then we plug these numbers into the LHS of (8b') and look at the resulting values. The results of this exercise are shown in Table 1.

⁹ I am indebted to Fabio Privileggi for this suggestion.

(Table 1 about here)

As expected, both e^*_L and \hat{e}_L (columns 3 and 4) fall with θ_L for any α and fall with α for any θ_L . For each α , column 5 yields a slowly increasing, weakly convex $\bar{P}(\theta_L)$ curve (further calculations, not reported here, show that the curve remains almost flat as θ_L rises well above $1/2$ until it starts picking up and ends at $P=1$ for $\theta_L=1$). As α falls, this curve shifts upward but very slightly. Finally, the last column shows that for all $\alpha < 1$, expression (8b') always turns out negative, but its value monotonically increases (ie it converges toward zero) as θ_L falls to zero. Only for $\alpha=1$ does (8b') equal zero at about $\theta_L = 1/4$, $\bar{P} = 0.62$. We conclude that condition (8b') holds with strict inequality within the constraint set whenever benefits are strictly concave, yielding a corner solution at $\theta_L=0$ and \bar{P} close to $2/3$ (the latter value exactly holds with $\alpha = 1/2$). On the other hand, with constant returns to effort we find an interior solution¹⁰, with θ_L strictly positive but still low. Figure 2 depicts the solution, with some indifference curves, for the decreasing returns case. In the remainder of this paper we will always concentrate the discussion on the decreasing returns case, which embodies the most general assumption about technology.

(Figure 2 about here)

Although such an exercise cannot lay claim to generality, 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 and benefit functions that behave differently in some respects, 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 degrees of concavity of benefits the $\bar{P}(\theta_L)$ curve starts high, well above the midpoint of the probability range, and then remains almost flat as θ_L rises until it starts picking up near the end. This implies that for the greatest part of the range of θ_L values, the optimal probability \bar{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

¹⁰ In this case, equation (8b') implicitly defines a function $P^*(\theta_L)$, which is the locus of all (P, θ_L) pairs that satisfy the equation. Taking equations (4b''), (6b''), and (8b') and solving them numerically for e^*_L , \hat{e}_L , and P^* for given values of θ_L , we find a steeply increasing, strictly concave $P^*(\theta_L)$ curve that starts at $P^*=0$ for $\theta_L=0$, rises to 0,64 for $\theta_L = 1/4$, and to 0,88 for $\theta_L = 1/2$. The theocratic optimum obtains at the crossing of the two curves $\bar{P}(\theta_L)$ and $P^*(\theta_L)$, where $P=0.62$ to 0.64 and $\theta_L=0.25$ (allowing for rounding).

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. These joint findings are 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 θ_L and θ_H), the greater the inefficiency of the secular regime. It can be demonstrated (see the Appendix) that a change in θ_L has always a larger impact on \hat{e}_L than on e^*_L . Therefore for any given level of P , a fall in θ_L monotonically widens the effort gap between regimes and hence the output loss in the secular regime, so that this loss is maximized at $\theta_L = 0$.

4. Some 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 next question then is, what could 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.

Testing this theory necessarily faces a somewhat asymmetric task. If one believes the model, granted the reality of a deadly threat as a necessary condition, a decision to establish a theocracy should rely on the computation of the probabilities of different states – a demanding requirement in itself. We were able to find two cases in which the data for such a computation are available to us and, in principle, were also available to the relevant decision makers: ancient Israel and the modern Islamist revival. By contrast, a long-lasting theocracy makes the relevant counterfactual of secular government unobservable and thereby makes the probability estimate impossible. If so, established theocracies will tend to linger on and eventually face demise only when the burden of their disabilities (the parameter K of our model) becomes impossible further to bear in the face of new exogenous challenges. We could find only two, admittedly exotic, illustrations of this process: Oman and Bhutan.

4.1. The rise of theocracy: Quantitative evidence

4.1.1. Ancient Israelite theocracy

The biblical sources (1 and 2 Kings and 2 Chronicles) emphasize the royalty’s recurring lapses from the religion of Yahweh and into the allowance, even fostering of heathen cults since the beginning of the monarchy. After the model Jewish king, David, his successor king Solomon, though credited with building the Temple, strayed from God’s path as he grew old, took many foreign wives and permitted the worship of their gods, causing God’s anger and His threat to divide the kingdom after Solomon’s death (1 Kings 11, 1-13).

With Solomon’s death the epoch of the divided monarchy indeed began. The kingdom of Israel in the north (ca. 930 – 722 BCE) was ruled by 17 kings (excluding two very short-lived usurpers) until its destruction at the hands of the Assyrians; of these kings, only one (King Jehu) can be safely counted as a committed Yahwist. So this was a dismal record from the Yahwists’ point of view. Our main interest, however, focuses on the southern kingdom of Judah (ca. 930 – 587/6 BCE), which included Jerusalem and was destroyed by the Babylonians, because this was the heartland of the Hebrew territory where, shortly after 539 BCE, the exiles would return from Babylon to

reclaim their homeland and rebuild the temple under Persian protection. From the return to the Roman conquest (63 BCE) the Jewish state was a theocracy where there was no secular authority above or beside the High Priest and Yahweh was at last the Only One. Initially, the high priesthood ruled directly; after the Maccabean revolution – a theocratic revolution against heathen foreign rule – the Hasmonean kings took for themselves the office of High Priest for the first time in Jewish history. The Babylonian exiles included a committed Yahwist minority who carried with them the early draft of the Torah and the memory of past history of their people (Lane Fox, 1992). When they led the return to Jerusalem and had to decide whether to go back to kingship or opt for theocracy, they presumably looked back to the record of the kingdom of Judah and, in effect, computed the probability of a good state based on historical evidence.

(Table 2 about here)

Table 2, taken from Shanks (1999, p. 137) for the names and dates, lists the kings of united Israel and of Judah up to the Babylonian conquest. The assessment of religious record, good (G) or bad (B), in the second column is based on direct inspection of the biblical sources cited in the third column. In particular, for the divided monarchy period, the source is the two books of Kings, written or edited by the so-called Deuteronomist author probably during the Babylonian exile¹¹.

If we simply count the number of kings, restricting attention to the kingdom of Judah yields $P = G/(G+B) = 8/20 = 0.4$, while including the united kingdom yields $P = 9/23 = 0.39$. But such a count equates kings whose length of tenure varies enormously, from a few months to 55 years. It stands to reason that the Yahwist exiles were reacting to a documentary record, as well as an oral tradition, focused on the time the people of Israel had spent under either type of rule. If we then compute the probability of a good state in terms of years of good and bad rule, using the last column of Table 2, we get:

$$P = 226/344 = 0.66 \text{ for the kingdom of Judah}$$

$$P = 266/443 = 0.60 \text{ for the total record.}$$

This finding almost exactly matches the model's prediction. If we believe it, then the returning Jewish exiles did indeed the right thing.

¹¹ An alternative source that covers the same period, 2 Chronicles, is considered much later and less reliable. It largely overlaps with the Kings' record but differs from it in places. If we used this source, we would have two bad kings according to Kings (Abijah and Manasseh) who were not so bad or changed their wicked ways, and two good kings according to Kings (Jehoash and Amaziah) who turned wicked at some point. The former kings total 57 years, the latter total 52 years, hence accounting for this evaluation would not materially change the P values given in the text.

4.1.2. The rise of Islamic theocratic fundamentalism

It is well known that while Islamic fundamentalism has ancient roots in the religion, its growth is a relatively modern phenomenon, which picked up speed in the second half of the twentieth century and rose to dramatic proportions by the turn of the millennium. Its proponents' stated goal is the establishment, or re-establishment, of a theocracy in its Muslim version: a society ruled by Islamic law or *sharia* and where the state, like the caliphate of old, is the guardian of the law. Where a traditional form of such society still exists it must be preserved at all costs, where it has waned or strayed from the rightful path it must be brought back, by revolutionary means if need be. Thus, 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). If our model is a good predictor of Islamic theocracy, a typical Islamist – whose outlook is typically international, as Muslim identity takes priority over national loyalties – would look to the cross-section of countries in which Muslims are a majority and classify them as good or bad from his point of view, thus in effect computing the probability for a good state to occur at a given point in time.

Table 3 lists the 48 countries¹² in which Muslims were a majority of the population around 2007 and looks at the situation in the early years of the 20th century, then around 1970 when almost all countries had achieved independence (the few laggards would catch up some years later), and then again around 2000, say on the eve of 9/11.

(Table 3 about here)

In the 1900s nearly all countries were either directly ruled or indirectly controlled by a European power or by the Ottoman empire. While the overall situation raised deep concerns from a nationalist and/or social point of view, from the strictly religious point of view it was relatively good. The Ottoman empire was the last heir to the caliphate, and European colonial powers did not usually meddle into local self-government and let subject peoples follow Islamic law if they so chose, while imperial law and order allowed the peaceful spread of Islam in certain countries of West Africa

¹² The territories may have had other names in colonial times and their borders may not exactly match today's borders. The list includes the West Bank and Gaza due to its relevance but excludes Muslim-majority territories that are not independent or whose status is contested at the present time, such as Kosovo, Chechnya, and Kashmir.

(Lapidus, 1988). Therefore there was no apparent reason to fear a deadly threat to the survival of the religion – understood as the rule of *sharia*.

By 1970 the situation had dramatically changed. The Ottoman empire was gone, the winds of Westernization, secularization, and materialism were sweeping through the Muslim world, some of the Ottomans' successor states, beginning with Turkey, had embarked upon modernizing and secularizing programs, and so had other territories fallen under Soviet or otherwise communist or socialist rule. Islam was now indeed facing a terminal threat to its existence. Then, to decide whether adopting a revolutionary theocratic platform was a wise course, one had to compute the likelihood that such a threat would materialize.

By 2000 the situation was hardly any better. The terminal threat was more real than ever, and while from the Islamic standpoint some states had improved, others had deteriorated. The only sensible guide to action could again be to compute the probability of a good state.

To implement the calculation we need to figure out whether the change from 1900 to 1970, and then again from 1970 to 2000, was a change for better or for worse in Islamist eyes. The evaluations of these changes are listed in the fifth and last columns of Table 3 respectively. The assumptions underlying these evaluations are the following:

1. As said, European rule was generally good and Ottoman rule of course even better. Hence, if upon independence the situation did not remarkably change for the worse, whether the state constitution was formally secular or formally religious, the evaluation of the change is SAME. If instead the country fell under communist, socialist, or strongly secularist regimes, the evaluation is DOWN.

2. Post-communist countries after 1991 all adopted secular constitutions; however religious freedom allowed Muslims to reorganize their traditional ways if they so chose, in contrast with the severe repression suffered under communism. So the change was for the better (UP).

3. A secular state established right after independence might be excused from an Islamic point of view, but if 40 years later this remains unchanged (like in Central and West Africa) and no steps have been made toward Islamization, it is very bad (DOWN). This is assessed by looking at the constitution. Nigeria, by contrast, did make progress (UP).

Therefore around 1970, by assumption 1, SAME as under colonial rule (fifth column) is taken to be good. Hence $P(1970) = \text{SAME}/(\text{SAME} + \text{DOWN})$.

For 2000, the evaluation of change (last column) is relative to the previous step (fifth column). UP (whether from SAME or from DOWN) is of course good, but so is SAME from SAME. DOWN is of course bad, but so is SAME from DOWN. Hence

$P(2000) = (UP + \text{SAME from SAME}) / (UP + \text{SAME from SAME} + \text{DOWN} + \text{SAME from DOWN})$.

The countries so counted vary enormously by Muslim population size, from the few hundred thousands of the Maldives to the over 200 millions of Indonesia. Though in principle Muslims can flee a bad ruler and seek shelter in a better regime, a principled Islamist would likely consider how many fellow Muslims are under either type of regime. Therefore, we recalculated the probabilities weighted by population. The total Muslim population of each country is taken as of 2007 and projected back on the respective country or territory at the two previous dates, under the not unreasonable first approximation that the countries' *shares* in total Muslim population (of the 48 countries here selected) have not materially changed in a century. The total Muslim population of the 48 countries in 2007 rounds up to 1159 millions.

This exercise yields the following results. Counting the number of countries:

$$P(1970) = 30/48 = 0.62$$

$$P(2000) = (18+13)/48 = 0.65.$$

Counting relative Muslim populations (in millions):

$$P(1970) = (758.2)/(1159) = 0.65$$

$$P(2000) = (838.8)/(1159) = 0.72.$$

Whichever way we look at it, at both dates we are remarkably close to the predicted P value of 0.66. Furthermore, there is a slight improvement in P from 1970 to 2000, suggesting that Islamist action pays and encouraging further action.

4.2. The demise of theocracy: Two illustrations

One is hard pressed to find historical evidence of peaceful, voluntary demise of a theocracy; nearly all the instances of theocracy listed in the introduction were terminated by outside force or pressure. Here follow two rare illustrations¹³.

One example is provided by the negotiated transition from theocracy to absolute monarchy in inner Oman in the 1950's, described in Eickelman (1985). Oman is unique among Muslim countries in that it is the only one whose population is predominantly Ibadi. In contrast with Sunni Islam, Ibadi Islam is founded on the principle that the imam, the spiritual and temporal leader of the Muslim community, should be the most qualified of the available candidates and chosen by consultation and consensus of the ulamas and notables, without regard to descent or lineage. Since the 8th century there

¹³ I am indebted to Donald Wittman for bringing these two cases to my attention.

has usually been an elected Ibadi imam in the country, but also periods when the ruling Sultan claimed temporal authority alone. This is the case with the current dynasty, the Al Bu Said, whose members have ruled the country since 1744 without ever claiming the title of imam.

The imamate was resurrected in 1913 in the interior of Oman by a coalition of tribal leaders, in part as a reaction to the Al Bu Said's perceived compromise with British interests. After bitter fighting, an agreement prompted by British mediation granted autonomy to the region under imamate control and left the sultanate in control of the rest of the country. Even though imamate government was supposedly based on the principles of the ideal Islamic state, in effect it was controlled by an oligarchy of tribal elite families. Nonetheless, its popular legitimacy rested on compliance with its claim to rule exclusively by the laws and traditions of the early Islamic community, which in practice severely restricted the scope of government activities. For example, even in times of major crisis, there was no legitimate way to raise government revenues above the prescribed rates and scope of Koranic taxes or to use the revenues of pious endowments (*waqfs*).

From the beginning of his reign in 1932, Sultan Said bin Taymur set about developing amicable relations with the imam, diminishing British influence, and drawing upon the same source of popular legitimacy as the imamate – rule by Islamic law – and upon the same elite, especially the *qadis* – all this with a view to facilitate Oman's reunification. A principal reason for the Sultan's pursuit of reunification was his interest in securing revenues from oil exploration – an opportunity that loomed increasingly large after the war. Here the Sultan's interests clashed with the imam's, who wanted to keep foreigners out of the country at all costs, but the Sultan was keenly aware of his lack of effective control over part of the country. To make progress without disrupting a delicate political balance, the Sultan had to wait for the imam's death in 1954. At this point, a minority faction elected a new imam with strong support from the Saudis, who were trying to take advantage of the succession crisis to extend their influence inside Oman. A majority of the tribal oligarchy first stood aside and finally supported Oman's unification under Sultan Said, who could then take over the interior with minimal resistance in 1955.

This peaceful shift from theocracy to monarchy was made possible by the Sultan's commitment to keep things essentially unchanged in inner Oman, except for the nature of rule at the top: Islamic justice would continue just as under the imamate, and the interests and status of the tribal notables would be guaranteed. At the same time, these notables were by now increasingly aware that the potential rents from the oil economy were upsetting the traditional power alignments in the region, but also that

following the Saudi lead on these matters might compromise the country's distinctiveness as an Ibadi society. So they welcomed Sultan Said in the expectation that he knew how to negotiate with foreign interests and oil companies in a way that would both safeguard the Islamic nature of inner Oman's society and channel some of the benefits and rents from oil concessions to the local oligarchy and their tribesmen, thereby enhancing their role as tribal leaders. These expectations were soon to be disappointed by the Sultan's increasing aloofness and lack of concern for the interior's development, which fuelled and armed uprising in 1957 that was put down only with British military assistance. Nevertheless, it was the theocracy's hopeless inability to face up to the challenges of modernity and the international economy that spelled its doom.

Our second example of negotiated transition from theocracy to absolute monarchy occurred in the Himalayan state of Bhutan in 1907 (Rose, 1977; Worden, 1993; Ardussi, 2005). A country divided into many warring principalities until the early 17th century, Bhutan first achieved unification under the leadership of Ngawang Namgyal, a prominent Tibetan lama of the Drukpa sect of Buddhism who, escaping persecution in his native Tibet, first came to Bhutan in 1616 and stayed to become the first Shabdung (a title meaning "At Whose Feet One Submits") until his death in 1652. He ensured the final triumph of the Drukpa sect over its sectarian competitors, defeated several invasions by Tibetan forces, and established a theocratic government that was to last, at least formally, for nearly three centuries. The theocracy was set up as a dual system of government, with a high lama (the Je Khempo) entrusted with the supervision of the whole religious establishment and another lama (the Druk Desi) in charge of the civil administration, while the Shabdung retained ultimate authority in all religious and secular matters. As with the Dalai Lama of Tibet, succession to Shabdung office was decided through reincarnation – a practice that involved long and often conflict-ridden periods of regency while the newfound Shabdung was still a child. Traditionally the Je Khempo served as regent. Originally, the Druk Desi was appointed by a council of high lamas for a term of office of three years. Many of the chief officials in the Druk Desi administration, such as the provincial governors, were also originally monks.

However, the monastic establishment's control over the system turned out to be weak and ineffectual, the more so with the passing of time. First, the Shabdung was virtually deprived of any effective authority, essentially because the officials who held control during the regency would not release it when the Shabdung came of age. Second, there was constant rivalry between the Shabdung and the Druk Desi or, more typically in the later period, between the lay and religious officials upon whom they depended for support. Third, the administration was increasingly secularized: by the 19th

century the Druk Desi was usually a layman and was selected and assisted by a council of high officials who were themselves mostly lay people – including, and especially, the provincial governors. Fourth, in the 19th century few of the Druk Desis lasted the full term of three years – an indication of factional strife and de facto decentralization of political authority.

The two processes of secularization and decentralization reinforced each other. “The highly organized and reasonably well-disciplined monastic system was the only centralizing force in Bhutan. Once its capacity to control the political process had diminished, political decentralization was inevitable. The Druk Desi became little more than the pawn of the political faction, usually headed by [a provincial governor], that had contrived his election to office” (Rose 1977, p. 31). Finally, toward the end of the 19th century, the Wangchuck family succeeded in making the governorship of the important Tongsa province their private monopoly. At this point, it was clear that the head of the theocracy had lost control and the lower rungs of its hierarchy were pursuing their private agenda. The façade of the Shabdung system was still being retained, however, as the source of legitimation for both religious and secular officials – that is, as long as Bhutan was secluded from the outside world and the (by now nominal) theocracy did not yet prove hopelessly inadequate in dealing with a changing environment.

The breaking point came when great powers politics intruded into Bhutan’s seclusion. By the turn of the 20th century the British stepped up their pressure on the Tibetans (supported by the Chinese) for both the “opening” of Tibet and a recognition of British rule south of the Himalayas – an area that included Bhutan. Resistance to this pressure could result in the eventual loss of Bhutan’s independence to the British. While a faction of Bhutanese politics sided with the Tibetans and the Chinese, the Tongsa governor, Ugyen Wangchuck, and his allies took on the role of mediator between the British and the Tibetans and were instrumental in the negotiation of the Anglo-Tibetan agreement of 1905. As a result, the anti-British officials were discredited and removed from office and Ugyen Wangchuck found himself in de facto control of the whole of Bhutan, such as no one had been for a long time. As the corrupted theocracy had proven a serious hindrance to the need for effective unified action at a critical juncture, Ugyen decided that the time was ripe for dispensing with the Shabdung system altogether and institutionalizing his family’s political pre-eminence as a hereditary monarchy. The British, who were concerned with political stability on their northern frontier, supported the shift. So, in December 1907, an assembly of the most important civil and monastic officials acclaimed Ugyen as the first king of the Wangchuck dynasty. The office of Je Khempo was retained as the head of the monastic establishment, whereas the titles and

positions of Shabdung and Druk Desi were abolished. The provincial governorships were also abolished and the kings rapidly moved to concentrate full powers, and full authority over civil appointments, in their own hands. As in Oman, also in Bhutan the theocracy's hopeless incompetence at the minimal tasks of modern government proved fatal.

5. 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, despite its likely ineffectiveness and/or corruption. 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.

The most obvious interpretation of a disastrously bad state is an imminent danger of suppression of the religion. On reflection, it is not at all surprising that such a terminal threat is conducive to the rise of theocracy; on the other hand, such a threat has occurred many times in history. What is surprising, and counterintuitive, is the theoretical finding that theocracy is at its best when this threat, while real enough, is not too likely – something arising from the incentive problems of contracting out in the presence of hidden information. A proper test of this prediction, therefore, should be a choice situation in which an organized religion is able to compute the probability of realization of the bad state – a demanding requirement – and finds it close to the predicted value of one third. Two situations in which such a proper dataset could be constructed are ancient Israel, where the exiles could look back to the time series of good and bad kings from Saul to the Babylonian destruction, and the modern Muslim world, which offers a cross-section of good and bad regimes at various dates in the twentieth century. In both cases our calculations found probability values that are strikingly close to the predicted one.

As to the demise of theocracy, testing is hampered by the paucity of historical examples of peaceful transition to secular government. Moreover, if a theocracy has been in place for a long time, the required observations of the alternative option of

secular government are likely to be lacking and the probabilities cannot be computed. So the theocracy would tend to linger on until its drawbacks in terms of ineffectiveness and corruption become overwhelming. We managed to dig out two, admittedly exotic cases – Oman and Bhutan – which seem to neatly support this expectation.

Even if a two-plus-two empirical test falls far short of proving any theory, it is encouraging enough as a start to warrant 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 θ_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:

$$\begin{aligned} & \max_{w_H, w_L, e_H, e_L} P(b(e_H) - w_H) + (1 - P)(b(e_L) - w_L) \\ \text{s.t.} \quad & \text{(i)} \quad w_L - c(e_L, \theta_L) \geq U^\circ \\ & \text{(iii)} \quad w_H - c(e_H, \theta_H) \geq w_L - c(e_L, \theta_H) \end{aligned} \tag{A1}$$

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:

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

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

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

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

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

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

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.

Comparative statics

Implicit differentiation of equation (6b) in the text yields:

$$\frac{d\hat{e}_L}{dP} = \frac{[b'(\hat{e}_L) - c_e(\hat{e}_L, \theta_L)] - [c_e(\hat{e}_L, \theta_H) - c_e(\hat{e}_L, \theta_L)]}{(1-P)[b''(\hat{e}_L) - c_{ee}(\hat{e}_L, \theta_L)] + P[c_{ee}(\hat{e}_L, \theta_H) - c_{ee}(\hat{e}_L, \theta_L)]} < 0 \quad (\text{A3})$$

Implicit differentiation of equations (4b) and (6b) in the text, respectively, yields:

$$\frac{de_L^*}{d\theta_L} = \frac{c_{e\theta}(e_L^*, \theta_L)}{b''(e_L^*) - c_{ee}(e_L^*, \theta_L)} > 0 \quad (\text{A4})$$

$$\frac{d\hat{e}_L}{d\theta_L} = \frac{c_{e\theta}(\hat{e}_L, \theta_L)}{(1-P)[b''(\hat{e}_L) - c_{ee}(\hat{e}_L, \theta_L)] + P[c_{ee}(\hat{e}_L, \theta_H) - c_{ee}(\hat{e}_L, \theta_L)]} > 0 \quad (\text{A5})$$

The signs of these derivatives are established using the second-order conditions for problems (3) and (5) (not reported), which require all their denominators to be negative. In particular, (A4) and (A5) measure the change in effort in each model as θ_L changes, fulfilling the respective FOCs throughout. Assuming (neutrally) all third-order partials equal to zero yields $c_{e\theta}(e_L^*, \theta_L) = c_{e\theta}(\hat{e}_L, \theta_L)$, $b''(e_L^*) = b''(\hat{e}_L)$, $c_{ee}(e_L^*, \theta_L) = c_{ee}(\hat{e}_L, \theta_L)$. It immediately follows that $d\hat{e}_L/d\theta_L > de_L^*/d\theta_L > 0$.

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Table 1. Numerical solution of system (4b') – (8b')

parameters		e^*_L	\hat{e}_L	\bar{P}	LHS of (8b')
$\alpha = 1$	$\theta_L = 0$	1	0.59	0.58	0.072
	$\theta_L = 1/4$	1.25	0.77	0.62	$\approx \mathbf{0}$
	$\theta_L = 1/2$	1.5	1	0.66	-0.25
$\alpha = 2/3$	$\theta_L = 0$	0.74	0.46	0.63	-0.009
	$\theta_L = 1/4$	0.87	0.57	0.66	-0.067
	$\theta_L = 1/2$	1	0.7	0.71	-0.2
$\alpha = 1/2$	$\theta_L = 0$	0.63	0.4	0.66	-0.025
	$\theta_L = 1/4$	0.73	0.49	0.69	-0.075
	$\theta_L = 1/2$	0.82	0.59	0.72	-0.160
$\alpha = 2/5$	$\theta_L = 0$	0.56	0.37	0.66	-0.032
	$\theta_L = 1/4$	0.65	0.44	0.70	-0.067
	$\theta_L = 1/2$	0.73	0.52	0.74	-0.132

Table 2. Israel's kings and their religious record

King	record	source	years of reign	no. years	
United Monarchy					
Saul	B	1 Samuel	1030?-1009	21	
David	G	2 Samuel	1009-969	40	
Solomon	B	1 Kings 2 ff.	969-931	38	
Kingdom of Judah					
Rehoboam	B	1 Kings 14: 22-24	930-913	17	19
Abijam (Abijah)	B	1 Kings 15: 3-4	913-911	2	
Asa	G	1 Kings 15: 11-14	911-870	41	65
Jehoshaphat	G	1 Kings 22: 43, 46	870-846	24	
Jehoram	B	2 Kings 8: 18	846-841	5	11
Ahaziah	B	2 Kings 8: 27	841		
Athaliah	B	2 Kings 11	841-835	6	
Jehoash	G	2 Kings 12: 2-7	835-801	34	100
Amaziah	G	2 Kings 14: 3-4, 6	801-783	18	
Azariah (Uzziah) ^a	G	2 Kings 15: 3-4	783-732	48	
Jotham	G	2 Kings 15: 34-35	750-735		
Ahaz	B	2 Kings 16: 2-4	735-727	8	
Hezekiah	G	2 Kings 18: 3-7	727-697	30	30
Manasseh	B	2 Kings 21: 2-9, 16	697-642	55	57
Amon	B	2 Kings 21: 20-22	642-640	2	
Josiah	G	2 Kings 22: 2; 23: 1-25	640-609	31	31
Jehoahaz	B	2 Kings 23: 32	609	3 m.	23
Jehoiakim	B	2 Kings 23: 37	609-598	11	
Jehoiachin	B	2 Kings 24: 9	598-597	3 m.	
Zedekiah	B	2 Kings 24: 19	597-586	11	

^a Azariah was quarantined on account of leprosy and replaced by his son Jotham as regent, who was succeeded in turn by Jotham's son Ahaz while Azariah was still alive (Shanks 1999, pp. 163, 167). The double-counting of years is eliminated in the last column.

Table 3. Muslim Majority Countries (as of 2007) through the Twentieth Century

Country with M majority	% M ^a	1900's	around 1970	change	around 2000	change
Afghanistan	99	independent	independent	same	Taleban	up
Albania	70	Ottoman	communist	down	secular	up
Algeria	99	French	secular socialist	down	secular socialist	same
Azerbaijan	93	Russian	Soviet	down	secular	up
Bahrain	93-81	British control	traditional Islamic	same	traditional Islamic	same
Bangladesh	88	British	with Pakistan	same	mild sharia ^b	same
Brunei	64-67	British	British until 1984	same	alcohol ban since 1990s	up
Burkina Faso	52-50	French Upper Volta	secular	same	secular	down
Chad	54	French	secular, failed	same	secular, failed	down
Comoros	99-98	French	traditional Isl., failed	same	traditional Isl., failed	same
Djibouti	99-94	French	secular, mild sharia	same	secular, mild sharia	same
Egypt	90	British	secular anti-Isl.	down	secular anti-Isl.	same
Eritrea	50-60	Italian	annexed to Ethiopia until 1993	down	secular	same
Gambia	95-90	British	secular	same	secular	down
Guinea	85	French	secular	same	secular	down
Indonesia	88-86	Dutch	secular, Suharto	same	secular, mild sharia in Aceh since 2001	same
Iran	98	independent	Pahlavi	down	Islamic	up
Iraq	97	Ottoman	Baath secular	down	Saddam	same
Jordan	95	Ottoman	secular, mild sharia	same	secular, mild sharia	same
Kazakhstan	47-57	Russian	Soviet	down	secular	up
Kuwait	85	British	traditional Isl.	same	women suffrage 2005	down
Kyrgyzstan	80-75	Russian	Soviet	down	secular	up
Lebanon	55-60	Ottoman	ethnic balance	same	ethnic balance	same

Libya	97	Ottoman	traditional Isl.	same	Qadhafi since 1969, Islamic	up
Malaysia	60	British	religious freedom, ethnic Malay must be Muslim	same	sharia for family and apostasy, by state	up
Maldives	99	British	traditional Isl.	same	traditional Isl.	same
Mali	90	French	secular	same	secular	down
Mauritania	99	French	traditional Isl.	same	traditional Isl.	same
Morocco	99	French/ Spanish	traditional Isl.	same	liberal family law 2003	down
Niger	90	French	secular	same	secular	down
Nigeria	50	British	secular, failed	same	sharia in 12 states since 1999	up
Oman	99- 93	British control	traditional Isl.	same	traditional Isl.	same
Pakistan	97	British	British legacy	same	increased Isl. since 1979	up
Qatar	95- 76	British control	traditional Isl.	same	traditional Isl.	same
Saudi Arabia ^c	100	(mostly) independent	traditional Isl.	same	traditional Isl.	same
Senegal	94	French	secular	same	secular	down
Sierra Leone	60	British	secular	same	secular, failed	down
Somalia	99	half Italian, half British	secular socialist	down	failed	up
Sudan	65- 70	British	civil wars and coups	same	sharia imposed in north states since 1991	up
Syria	88- 90	Ottoman	Baath secular	down	Baath secular, alawi clique	same
Tajikistan	95- 97	Russian	Soviet	down	secular	up
Tunisia	99- 98	French	secularizing, tolerant	down	secularizing, tolerant	same
Turkey	99	Ottoman	strongly secular	down	strongly secular	same
Turkmenistan	89	Russian	Soviet	down	secular	up
United Arab Emirates	76	British control (Trucial St.)	traditional Isl.	same	traditional Isl.	same
Uzbekistan	89- 88	Russian	Soviet	down	secular	up

West Bank and Gaza	84	Ottoman	Israeli control	down	Islamic revival	up
Yemen	99	half Ottoman, half British	half traditional Isl., half secular socialist	down	unified since 1990, sharia	up

Notes. ^aIn case of different estimates, the first figure is from “Islam by country”, section “By largest population”; the second is from “List of Muslim majority countries” and forms the basis for inclusion in this table. For single figures the two sources coincide.

^b “Mild sharia” means that Islamic law is applied only in family matters and only to Muslims.

^c Percentage is 100 because only Muslims can be Saudi citizens, guest workers are not citizens.

Sources. The list of countries is taken from “List of Muslim majority countries”, dropping Kosovo and adding West Bank and Gaza. The information in columns 4 and 6 is mostly from the individual country entries accessible from “Islam by country” and personal elaboration by the author. Countries labelled “secular” in 1970 are again so labelled in 2000 based on their formal constitution, as specified in “List of Muslim majority countries”, column “Religion and state”: our label “secular” includes either “secular” or “none” in the latter’s table. Data on Muslim populations in 2007 used in the text, as well as the first or only figures for Muslim percentages in the second column of Table 3, are from “Islam by country” and are in turn taken from the US State Department’s International Religious Freedom Report, the CIA World Factbook, and Adherents.com. The Muslim population percentages in “List of Muslim majority countries”, which are used as second figures in the second column of Table 3 whenever relevant, are drawn for a variety of individual government sources as well as the American sources just cited. Their uniformity and dating is therefore more problematical, hence the preference given here to “Islam by country” for demographics as well as political information.

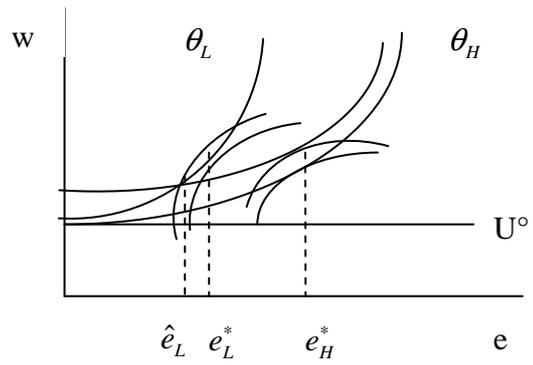


Figure 1
The optimal contracts under full versus hidden information

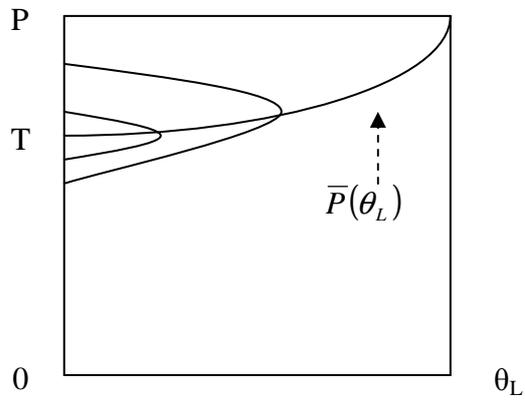


Figure 2
Theocracy as a corner solution