Sacrifice and Stigma: Reducing Free-riding in Cults, Communes, and Other Collectives

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This paper presents an economic analysis of religious behavior that accounts for the continuing success of groups with strange requirements and seemingly inefficient prohibitions. The analysis does not presuppose any special motives for religious activity. Rather, religion is modeled as a club good that displays positive returns to "participatory crowding." The analysis demonstrates that efficient religions with perfectly rational members may benefit from stigma, self-sacrifice, and bizarre behavioral restrictions. The model also addresses sacrifice in nonreligious "social clubs": fraternities, communes, political parties, work groups, and families.

Despite its obvious social, political, and economic importance,[1] religion is a subject largely neglected by economists.[2] Economists may avoid studying religious behavior because much of it seems based on

[1] The continuing significance of religion in America can be gauged in various ways. Religious contributions account for nearly half of all philanthropic giving in America. Of American adults, 90 percent claim to have a religion, more than 60 percent are formal members of a church or synagogue, and 40 percent actually attend religious services in a typical week. National church attendance rates have proved essentially stable since they were first surveyed in 1939, and church membership has risen from less than 12 percent of the population at the time of the American Revolution to 62 percent today (Finke and Stark 1986).

[2] Adam Smith ([1776] 1965, pp. 740–66) is the most notable exception. Iannaccone and Hull (1991) review contemporary forays into the economics of religion.

subjective belief, forced indoctrination, and outright irrationality. The personal sacrifices that lie at the heart of most religions are especially problematic. Although some of these sacrifices generate obvious benefits, many others seem aimed at destroying valuable resources. Perhaps for this reason, the entire subject has been ceded to disciplines less committed to rational choice.

Nevertheless, economic theory has much to say about religious behavior, particularly those aspects that appear least rational. This paper presents an economic analysis of religion that accounts for the continuing success of groups with bizarre behavioral requirements and seemingly inefficient prohibitions. The analysis does not presuppose any special motives for religious activity, such as Azzi and Ehrenberg's (1975) "afterlife consumption motive," but rather assumes merely that religious activities provide utility in proportion to the scarce resources devoted to them. Religion is modeled as a club good that displays positive returns to "participatory crowding." This approach yields insights relevant to both religious and secular institutions: churches, communes, fraternities, political parties, business firms, and possibly even families.

I shall argue that the collective character of religious activity leads to free-rider problems that are not easily overcome by explicit monitoring. The free-rider problems can, however, be mitigated by seemingly unproductive costs. These costs screen out people whose participation would otherwise be low, while at the same time increasing participation among those who do join. As a consequence, the utility of group members can increase when apparently unproductive sacrifices are required. Efficient religions with perfectly rational members may thus embrace stigma, self-sacrifice, and bizarre behavioral standards.

I. Religion as a Market Phenomenon

Religion in modern, pluralistic societies is very much a market phenomenon. It is an industry that is easy to enter, highly competitive, and virtually devoid of intellectual property rights. More than a thousand faiths currently compete for Americans' attention (Melton 1984–85). Religion is thus an object of choice: demanders *choose* what religion (if any) they will accept and how extensively they will participate in it. Nor are these choices immutable: people can and often do change religions or levels of participation over time.[3] In this environ-

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[3] Over 90 percent of cult converts drop out within a few years (Robbins 1988), and 40 percent of Protestants change denomination at least once in their life. Defection is lower among Jews and Catholics (Roof and McKinney 1987, p. 165), but there remains considerable "internal" mobility across different branches of Judaism and among Catholic parishes with very different styles of worship.

ment, a particular religious "firm" can flourish only if it provides a "commodity" at least as attractive as its competitors'.

How then does one account for religious practices that appear to defy the logic of the marketplace? And how is it that these practices are most common in small sects and cults, the very groups in which membership and participation are most often expressions of personal choice, switching is most prevalent, and competition and entry are most pronounced? Krishnas shave their heads, wear robes, and chant in public; Jehovah's Witnesses refuse transfusions; Mormons abstain from caffeine and tobacco; Seventh-Day Adventists eat no meat; Moonies submit to arranged marriages; Orthodox Jews wear side curls and yarmulkes, conduct no business on the sabbath, and observe numerous dietary restrictions; and monks take vows of celibacy, poverty, and silence. These practices demand explanation, not merely because they deviate from "normal" behavior, but because they appear completely counterproductive. Pleasures are sacrificed, opportunities are forgone, and social stigma is risked or even invited. The problem is epitomized by the burnt offering, a religious rite designed specifically to destroy valuable resources. How can burnt offerings and their analogues survive in religious markets when self-interest and competitive pressures bar them from most other markets?

Indeed, the question is not merely one of survival, for religious groups demanding sacrifices appear *more* successful than those that do not. The explosive growth of the Krishnas, Moonies, and other Eastern cults is well documented (Stark and Bainbridge 1985). Within mainline Protestantism, denominations that make strict demands on the behavior of their members, such as the Southern Baptist church and fundamentalist-evangelical sects, are currently growing much faster than liberal denominations, such as the Episcopalian, Congregational, and Presbyterian churches, whose demands are minimal (Roof and McKinney 1987). A similar pattern has surfaced within American Judaism, with Orthodox groups gaining followers at the expense of the more liberal (Reform) groups. The Mormon church has distinctive behavioral requirements and makes heavy demands on members' time and money, yet is the fastest-growing religion of the modern era (Stark 1984). Kanter's (1972) classic study of nineteenth-century utopian communities found that successful communes demanded much greater sacrifices of time, energy, and money than unsuccessful communes did.

I shall argue that the explanation for these phenomena lies in the collective nature of most religious activity. The next section develops this argument both verbally and mathematically. It is followed by an extended application that illustrates and tests the model's explanatory power.

II. A Theory of Sacrifice and Stigma

A. Overview

A verbal summary of the basic argument clarifies the analysis that follows. The model begins with the assumption that a person's religious satisfaction depends on both his or her own inputs and those of others. So, for example, the pleasure and edification I derive from Sunday services depends not just on my own inputs but also on the inputs of others: how many others attend, how warmly they greet me, how well they sing, how enthusiastically they read and pray, how deep their commitment, and so forth. As this example suggests, the collective side of religion is most evident at congregation activities: sermons, scripture studies, testimony meetings, liturgies, worship services, hymn singing, communion, and the like. But it extends also to the more subjective and intimate experiences, such as feelings of a divine presence, speaking in tongues, miraculous healings, prophetic utterances, and ecstatic trances, all of which seem to be more sustainable and satisfying when experienced collectively.[4]

Two related problems stem from this situation. The first is that people with low levels of participation are tempted to free-ride off those with higher levels since, given the choice, people are better off in a group whose average level of participation is greater than their own. The second is that even in a homogeneous group, opportunistic behavior leads to an inefficient equilibrium with suboptimal participation, since individuals maximize personal welfare by ignoring the external benefits of their participation. Although it is theoretically possible for religious groups to overcome both problems through appropriate financing, such schemes are rarely practical. To internalize their externalities, groups could charge substantial membership dues and then use these funds to subsidize individual participation. But this works only if individual inputs can be accurately observed and appropriately rewarded. In reality, the aspects of religious participation that confer external benefits (commitment, effort, enthusiasm, etc.) are intrinsically difficult to monitor. The willingness to pay money is a poor proxy for these qualities since the former is strongly correlated with income but the latter are not (Roof and McKinney 1987). Most readily observable religious practices, such as the frequency of attendance, are also poor proxies (Stark and Bainbridge 1985, p. 10). Indeed, churches that attempt to subsidize the observable aspects of participation, such as church attendance, probably end

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[4] As one reviewer noted, religious organizations often value a large and growing membership in its own right. World conversion is a stated goal of many cults, sects, and mainline denominations. It goes without saying that this goal must be pursued through collective action.

up with congregations of lower than average commitment. (Knowing this, the Salvation Army often requires street people to listen to a sermon *before* gaining access to the free meal.) Hence, few churches take attendance, sell their services, charge for membership, or compensate any but a few full-time workers. Explicit accounts of free-riding in even the smallest groups abound (Lofland 1977; Hine 1983).

There remains, however, a kind of "second-best" solution to the externality problem. Instead of subsidizing participation, churches can prohibit or penalize alternative activities that compete for members' resources.[5] In heterogeneous populations, such prohibitions can serve a screening function, discouraging the less committed members (with relatively low levels of participation) more readily than the highly committed members. Moreover, the prohibitions can raise average levels of group participation and utility even in homogeneous populations. By increasing the price of alternative activities, the prohibitions induce substitution toward religious activities (as long as the two sets of activities are sufficiently close substitutes) and increase equilibrium utility (as long as the initial expenditure on the alternative activities is sufficiently low).

It might seem that a group unable to monitor members' participation in its own activities will have an even harder time restricting their involvement in other activities, but this need not be so. It is, for example, much easier to observe and penalize *mere involvement* in competing groups than it is to observe the *level* of involvement in those groups.[6] Alternatively, it may be possible to demand of members some salient, stigmatizing behavior that inhibits participation or reduces productivity in alternative contexts: shaved heads, pink robes, or an isolated location does the job quite effectively. Restrictions on smoking, drinking, eating, sex, and other potentially private activities are harder to enforce, and it is possible that guilt, habit, and other self-enforcement mechanisms help keep members in line. On the other hand, deception is itself a costly activity. A secret sexual liaison is not at all the same as an open relationship, drinking in private from a hidden bottle is a poor substitute for social drinking

[5] The situation under consideration is not a true second-best situation but nevertheless is analogous. With the original externality viewed as a distortion, the ideal solution is to remove the distortion by means of suitable subsidies to group participation. A countervailing distortion (i.e., a tax) on alternative activities provides the standard, second-best solution. In my model, however, the proposed "tax" is a sacrifice that destroys resources rather than merely redirects them.

[6] If levels of involvement were easy to measure, a group would generally prefer monetary fines to prohibitions, since the former generate income whereas the latter merely restrict opportunities. But since we have assumed that the group cannot effectively monitor and subsidize levels of involvement in its own activities, we can reasonably assume that the group has even more difficulty monitoring and taxing levels of involvement in other groups.

at bars and parties, and maintaining a smoking habit that can never be satisfied in public may be more trouble than it is worth. Restrictive religions can, and often do, raise the costs of deception by limiting the size of individual congregations, holding meetings in members' homes, and demanding that members routinely socialize with each other.

Deviant norms thus mitigate the externality problems faced by religious groups. Distinctive diet, dress, grooming, and social customs constrain and often stigmatize members, making participation in alternative activities more costly. Potential members are forced to choose: participate fully or not at all. Paradoxically, those who remain find their welfare increased. It follows that perfectly rational people can be drawn to decidedly unconventional groups. This conclusion sharply contrasts with the view, prevalent among psychiatrists, clinical psychologists, and the media, that conversion to deviant religious sects and cults is inherently pathological, with the consequence psychological abnormality or coercive "brainwashing" (Robbins 1988, pp. 72–89).

B.   The Formal Model

The formal analysis begins with a homogeneous population and so defers the issue of screening to a later section. The model is related to the general, variable utilization rate club described by Cornes and Sandler (1986). However, in my model the club good is in a sense "anticongestible." Each member's participation confers benefits rather than costs on the other members, so that there are positive returns to "participatory crowding."[7] The central problem is therefore to ensure a sufficiently high level of participation among group members. Maintaining optimal group size—a standard club-theoretic problem—is of secondary concern.

Setup

Consider a "religious club" of $N + 1$ identical individuals. For simplicity, assume that purchased resources are fixed (an assumption that simplifies the analysis but does not alter the basic results). Each club member, i, seeks to maximize the utility received from a vector of private ("secular") commodities, S^i, own club ("religious") participation, R^i, and the "quality" of the club, Q^i, which is a function of the number and average participation of the other club members (the

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[7] For other work on clubs that display positive returns to crowding, see DeSerpa (1977) and Faith and Happel (1989).

model is easily extended to the case in which R is a vector and Q^i is any linearly homogeneous function of other members' R's):

$$U^i = U(S^i, R^i, Q^i), \tag{1}$$

where U is twice continuously differentiable, strictly quasi-concave, and strictly increasing in all its arguments. The members' commodity production functions have the form

$$j^i = a_j f_j(x^i_j, t^i_j) \quad \text{for } j = S, R, \tag{2}$$

where x_j and t_j denote inputs of goods and time, respectively, and a_j is a productivity (or taste) parameter that depends on ability and experience. Assume that the commodity production functions are twice continuously differentiable, strictly increasing, and linearly homogeneous in goods and time. The members' full income budget constraints take the form

$$\sum_{j=s,r} (p_j x^i_j + w t^i_j) \le I. \tag{3}$$

Given the form of the commodity production functions (2), the budget constraints can be rewritten

$$\pi_s S^i + \pi_r R^i \le I, \tag{4}$$

where the commodity shadow prices, π_j, are homogeneous of degree one in (p_j, w) and homogeneous of degree minus one in a_j. By assumption, group quality has the form

$$Q^i = F(\overline{R}^i, N), \tag{5}$$

where

$$\overline{R}^i = \sum_{k \ne i} \frac{R^k}{N}. \tag{6}$$

Assume that F is twice continuously differentiable, strictly concave in both arguments, and strictly increasing in its second argument. For simplicity, assume that there exists a unique optimal group size, N^*, that maximizes U independent of S, R, and $\overline{R}$ and that the club always maintains this size.

Equilibria and Efficiency

Maximizing the objective function (1) subject to the constraints (2)–(6) yields standard club-theoretic efficiency conditions.[8] The condi-

[8] See Cornes and Sandler (1986, p. 177) for a discussion of efficiency in the general, variable utilization rate club.

tion of central interest (analogous to the standard "visitation or toll" condition) is that the marginal costs and benefits of club participation must be equalized:

$$\frac{\pi_r}{\pi_s} = \mathrm{MRS}_{rs} + \mathrm{MRS}_{qs}. \tag{7}$$

Let U^o denote the utility that each member will receive when the club is operating at a symmetric, Pareto-optimal equilibrium.

Since the MRS_{qs} reflects benefits that are external to the individual, a Pareto-optimal club must subsidize participation in order to "internalize" the external benefits of participation. Otherwise, participation will be characterized by suboptimal "easy riding" and equilibria will be inefficient. Consider, for example, the consequences of unsubsidized, quantity-taking Nash behavior. When each individual takes the participation of others as given (behavior that seems likely for the moderately large groups that constitute most church congregations), commodity levels, S and R, will no longer satisfy (7) but instead

$$\frac{\pi_r}{\pi_s} = \mathrm{MRS}_{rs}. \tag{8}$$

Hence, individually maximizing Nash behavior is not Pareto optimal and Nash equilibrium utility, U^e, will always be less than the Pareto-optimal utility, U^o. It is within this context that prohibitions and penalties come into play. Lacking the ability to subsidize religious participation, R, the group may instead increase the cost of some alternative commodity, S_j. The following subsection demonstrates that this strategy can indeed increase the group members' equilibrium levels of utility.

Utility-enhancing Prohibitions

To analyze the impact of prohibitions, let V denote a typical club member's indirect utility function, conditioned on the group's quality, Q:

$$V(I, \pi_s, \pi_r, Q) = \max_{R, S} \{U(S, R, Q) \mid \pi_s S + \pi_r R \leq I\}. \tag{9}$$

Standard duality results yield Marshallian demand functions: $j(I, \pi_s, \pi_r, Q) = -(\partial V/\partial \pi_j)/(\partial V/\partial I)$ for $j = s, r$.[9] In a symmetric equilibrium,

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[9] The corresponding expenditure function $c(U, \pi_s, \pi_r, Q)$ and Hicksian demand functions are defined analogously. All these functions can be rewritten in terms of their standard counterparts, where Q enters like any other good, but the expressions become more complex (cf. Deaton and Muellbauer 1980, p. 110).

each member's own participation equals the average of all other members'. Hence, a symmetric Nash equilibrium satisfies the condition

$$F[R(I, \pi_s, \pi_r, Q^e), N^*] = Q^e. \tag{10}$$

The equilibrium will be stable if $(\partial F/\partial \overline{R})(\partial R/\partial Q)$ is less than unity. (The stability proof is constructed along the lines of Cornes and Sandler [1984].)

To see how prohibiting (or, more generally, increasing the cost of) a nonclub commodity, S_j, affects club participation, differentiate equation (10) with respect to π_j:

$$\frac{dQ^e}{d\pi_j} = \frac{\dfrac{\partial F}{\partial \overline{R}}\dfrac{\partial R}{\partial \pi_j}}{1 - \dfrac{\partial F}{\partial \overline{R}}\dfrac{\partial R}{\partial Q}}. \tag{11}$$

Note that the price increase's direct effect on participation levels (which depends on the degree of substitutability between R and S_j) is magnified by the degree of complementarity between R and Q. Hence, the effect of the price increase will be positive and large if R is a close substitute for S_j and Q is a close complement of R.

To determine the effect on equilibrium utility, differentiate $U^e = V(I, \pi_s, \pi_r, Q^e)$ with respect to π_j:

$$\frac{dU^e}{d\pi_j} = \frac{\partial V}{\partial \pi_j} - \frac{\partial V}{\partial Q^e}\frac{dQ^e}{d\pi_j}. \tag{12}$$

The right-hand side's first term is always negative since it measures the reduced real income that accompanies any standard price increase (cf. Roy's identity). The second term, however, measures a nonstandard substitution effect that may well be positive. Increasing the price of S_j increases club participation whenever R and S_j are gross substitutes. This in turn raises utility by moving R and Q closer to their optimal levels. These gains from higher participation can more than offset the loss in real income. Substituting equations (10) and (11) into (12) and expressing the result in elasticity terms yield the conditions under which an uncompensated price increase will *increase* utility:

$$\frac{d\log(U^e)}{d\log(\pi_j)} = \left(-k_j + k_q\frac{\epsilon_{Fr}\epsilon_{r\pi_j}}{1 - \epsilon_{Fr}\epsilon_{rq}}\right)\epsilon_{VI}, \tag{13}$$

where ϵ_{ij} denotes the elasticity of i with respect to j, k_j denotes the expenditure share of commodity j, and k_q denotes the shadow expenditure share of Q, based on its shadow price $\pi_q = (\partial V/\partial Q)/(\partial V/\partial I)$. We have proved the following proposition.

PROPOSITION 1. Let (S^e, R^e, Q^e) define a stable, symmetric Nash equilibrium among the members of a religious club. Then increasing the cost of a nonclub commodity S_j will increase club members' utility if the cross-price elasticity $\epsilon_{r\pi_j}$ is sufficiently large relative to the commodity's expenditure share. Specifically, utility will be increased as long as

$$\frac{\epsilon_{r\pi_j}}{k_j} > \frac{1 - \epsilon_{Fr}\epsilon_{rq}}{k_q \epsilon_{Fr}}. \tag{14}$$

Proposition 1 identifies both the kind of clubs that are most likely to employ prohibitions and the particular commodities that are most likely to be prohibited. The right-hand side of the inequality (which depends only on the club's internal characteristics) shows that prohibitions are most likely to enhance utility when the value of Q (proxied by k_q) is high and the complementarity between Q and R is strong. The left-hand side of the inequality shows that the nonclub activities most likely to be penalized or prohibited are those that are close substitutes for club participation (relative to their expenditure share).

A Numerical Example

To see proposition 1 in action, consider the case in which club production is Cobb-Douglas, utility is constant elasticity of substitution, and there is only one nonclub good; that is, $U(S, R, Q) = (S^\beta + K^\beta)^{1/\beta}$, where $K \equiv R^\alpha Q^{1-\alpha}$. For simplicity, assume that $Q(\bar{R}, N^*) = \bar{R}$. It is then possible to derive closed-form solutions for a unique and stable equilibrium $\{Q^e = R^e, R^e, S^e\}$ as a function of I, π_s, and π_r. For $j = s, r$,

$$j^e = \frac{(\delta_j)^{-\rho}(\pi_j)^{\rho-1}}{(\pi_s/\delta_s)^\rho + (\pi_r/\delta_r)^\rho} I, \tag{15}$$

where $\rho = \beta/(\beta - 1)$, $\delta_x = 1$, and $\delta_y = \alpha^{1/\beta}$. In contrast, the Pareto-optimal levels of S and R have the form $j^o = I(\pi_j)^{\rho-1}/[(\pi_s)^\rho + (\pi_r)^\rho]$. Hence, R^e is suboptimal, and equilibrium utility is strictly less than the theoretically obtainable, Pareto-optimal utility. Moreover, substituting (15) back into the utility function and differentiating with respect to π_s prove that $dU^e/d\pi_s > 0$ if and only if $\beta > \alpha$ and $\pi_s/\pi_r > (1/\alpha)[(1 - \beta)/(\beta - \alpha)]^{\beta/(\beta-1)}$. (The problem is fully worked in an appendix available from the author.) This result recapitulates proposition 1, since higher values of β correspond to greater substitutability between S and R and higher values of π_s correspond to lower values of $\pi_s S^e$. Figure 1 shows how changes in the price of S affect equilibrium and optimal utility when $\beta = 0.8$ and $\alpha = 0.3$. In the figure,
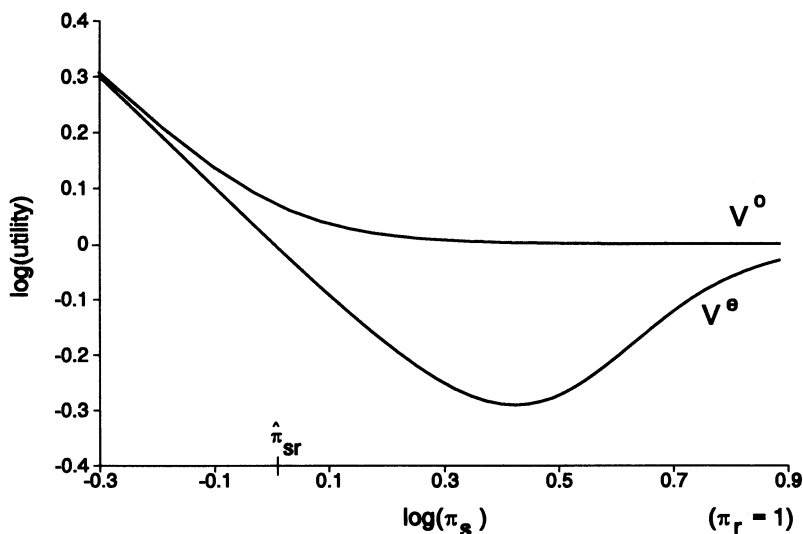
FIG. 1.—Equilibrium and optimum utility

raising the price of S increases equilibrium utility whenever π_s/π_r exceeds about 2.6 and prohibiting its consumption altogether raises utility whenever π_s/π_r exceeds about 1.0. (Figure 2 plots the corresponding changes in the demand for S and R.)

C. Stigma and Sacrifice as Screening Devices

The preceding analysis explains the ongoing costs that many religions demand of their members: dietary restrictions, sabbath laws, distinctive clothing, celibacy, geographic isolation, and the like. But it does not account for one-time costs, such as painful initiations or the requirement that one irrevocably surrender all worldly possessions on entering an order. To account for these practices, we must consider the consequences of population heterogeneity.

Heterogeneity is problematic because people with low levels of participation have an incentive to free-ride off groups with high average levels of participation. Less committed members threaten to swamp groups that would otherwise have high levels of participation. As before, however, costly behaviors can salvage the situation. The costs discourage the less committed members and so indirectly screen out free-riders.

To see one example of how the screening process works, return to the numerical example above. Assume that all people have the same utility function, $U(S, R, Q) = [S^\beta + (R^\alpha Q^{1-\alpha})^\beta]^{1/\beta}$, but let some be
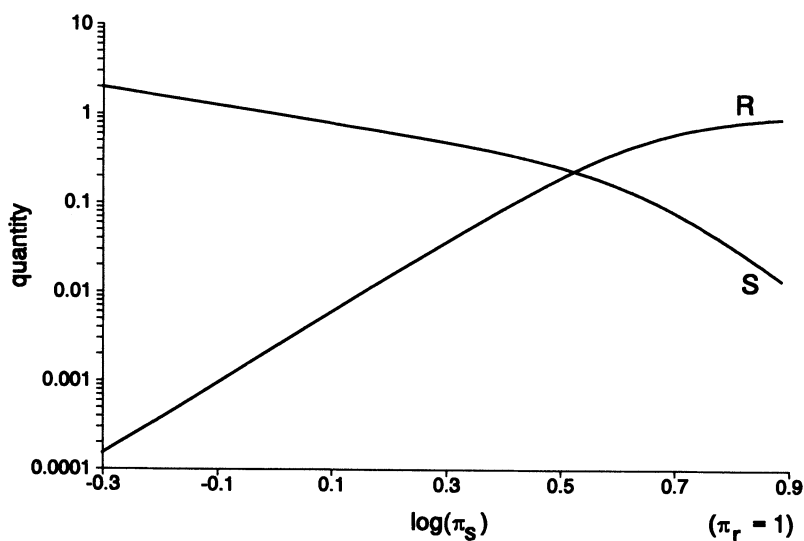
FIG. 2.—Commodity demand

more efficient producers of secular commodities, S, and so face lower relative shadow prices π_s/π_r. Specifically, let there be two types of people differing only with respect to their "secular" productivity parameter a_s (eq. [2]). We have seen that increasing π_s can raise the utility of a group whose π_s/π_r's already exceed the threshold value $\hat{\pi}_{sr}$. But this same price increase will reduce the utility of people with π_s/π_r's less than $\hat{\pi}_{sr}$ (fig. 1). Rather than join a group that prohibits or penalizes secular activities S, people of the latter type will prefer to form their own less demanding group. Hence, the prohibitions that raise participation and utility in a homogeneous group of highly committed (high π_s) people also keep the group from being swamped with less committed (low π_s) people.

  This example is a special case of economic signaling. More general analyses of signaling and the requirements for the existence of signaling equilibria are found in Spence (1974), Camerer (1988), and Frank (1988). In each of these accounts, as in my own, signaling explains apparent inefficiency: time and money "wasted" to acquire a college degree; "irrational" attachments to honesty, loyalty, or vindictiveness; or the giving of "inefficient" presents rather than cash.[10] The signal-

  [10] The need for inefficiency explains why religious groups require members to sacrifice pleasures and opportunities rather than merely contribute money or time. A signaling equilibrium can be sustained only if resources are truly lost and not simply transferred. Otherwise, less committed people will signal merely to obtain a share of other members' contributed resources. The proof of this assertion follows Camerer's (1988) explanation for inefficient gift giving.

ing explanation for group initiations and entry costs is formally stated in the following proposition and proved in an appendix available on request.

PROPOSITION 2. Let the population consist of two types of people, 1 and 2, such that the following conditions hold: in a religious group of any given quality Q, (a) type 1 people always participate less than type 2 people ($R^1(Q, \ldots) < R^2(Q, \ldots)$), and (b) type 1 people value group quality less than type 2 people ($\pi_q^1 < \pi_q^2$). Then, as long as people of type 1 constitute a sufficiently large fraction of the population, there will exist a signaling equilibrium in which type 2 people end up in groups that require their members to sacrifice a valued resource or opportunity and type 1 people end up in groups that require no such sacrifice.

III. Application: Understanding "Church" and "Sect"

In this section, I illustrate the model's explanatory power and test its predictive validity using data on different religious groups. The discussion extends my previous treatment of religious groups (Iannaccone 1988) both theoretically and empirically. In the interest of brevity, the discussion is structured as a series of informal observations and predictions; the arguments needed to establish these as formal consequences of the model are noted but not detailed.

1. By characterizing numerous religious demands as functionally equivalent solutions to free-rider problems, the proposed model of sacrifice and stigma provides a formal classification scheme for religious groups. The model implicitly groups religions according to the extent to which they (directly or indirectly) limit the opportunities of their members. If the model is correct, religious groups that demand similar *levels* of sacrifice and stigma should display fundamental behavioral similarities independent of their differences in history, theology, and organization.

Such similarities are, in fact, observed. Grouping religions according to the stringency of their demands reproduces a typology known in the sociology of religion as "church and sect." Within that typology, groups whose deviant norms place members at odds with the prevailing culture are called "sects" or "cults." Nonsectarian groups, whose norms generally mirror those of the prevailing culture, are called "churches."[11] Although the church-sect distinction has

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[11] Among sociologists, the church-sect distinction dates back to Max Weber. Surprisingly, it dates back even farther within economics: Adam Smith contrasted "established churches" and "small sects" at some length in the *Wealth of Nations* ([1776] 1965, pp. 740–66).

TABLE 1

DENOMINATIONAL CHARACTERISTICS: NORTHERN CALIFORNIA DATA, 1963

	Most Church-like	Church-like	Sect-like	Sects	T*
Size of congregation	939	787	335	173	−35.2
	(618)	(673)	(186)	(121)	
Household income	10,140	9,435	8,399	6,944	−12.8
($/year)	(4,070)	(4,070)	(3,034)	(3,155)	
Respondent education	14.5	13.9	12.3	12.5	−9.0
(years)	(2.58)	(2.78)	(2.99)	(3.17)	
Sunday attendance	33.8	38.4	44.2	49.1	17.9
(services/year)	(19.2)	(17.1)	(13.5)	(9.23)	
Evening attendance	34.5	44.9	69.0	96.8	16.6
(meetings/year)	(39.9)	(39.1)	(52.9)	(49.5)	
Church contributions	244	288	369	497	12.4
($/year)	(211)	(239)	(285)	(292)	
Church contributions	2.64	3.36	4.64	8.43	11.3
(percentage of yearly income)	(2.44)	(2.89)	(3.83)	(7.61)	
Church friends	1.32	1.51	1.80	3.15	16.1
(number out of five closest friends)	(1.50)	(1.62)	(1.71)	(1.60)	
Nonchurch meetings	48.6	41.1	30.6	29.0	−5.6
(number of nonchurch meetings/year)	(50.4)	(46.5)	(45.0)	(44.7)	
Nonchurch memberships	3.59	3.07	2.13	1.72	−13.0
(number of other organization memberships)	(2.63)	(2.48)	(2.18)	(1.83)	
Belief orthodoxy[†]	−.419	.061	.560	.647	37.4
	(.729)	(.645)	(.318)	(.253)	
Religious experience[†]	−.286	.003	.547	.731	26.6
	(.718)	(.744)	(.591)	(.480)	
Number of respondents	963	882	194	248	

SOURCE.—Northern California Church Member Study, 1963. A description of the study methodology and copy of the survey questionnaire are found in Glock and Stark (1966).

NOTE.—Entries are means. Standard deviations are in parentheses. Denominational groups: Most churchlike: members of Congregational, Methodist, Episcopalian, and Disciples of Christ churches; churchlike: Presbyterians, American Lutherans, and American Baptists; sectlike: Missouri Lutherans and Southern Baptists; sects: members of Assemblies of God, Church of God, Church of Christ, Nazarene, Seventh-Day Adventist, Gospel Lighthouse, and Foursquare Gospel churches.

* T-value for two-tailed test comparing means for most churchlike and sect members.

† Belief orthodoxy variable is the average of the standardized responses to 10 belief items (Cronbach's α for scale reliability is 0.90). Religious experience variable is a similarly defined three-item scale (α = 0.76).

heretofore lacked a theoretical foundation, its empirical appeal has never been in doubt. Surveys of religious groups, particularly Protestant Christian ones, find that the groups naturally fall along a single dimension (Stark and Glock 1968; Stark and Bainbridge 1985; Roof and McKinney 1987). Consider, for example, the summary statistics in table 1 (obtained from a 1963 survey of approximately 3,000 church members in the San Francisco Bay area). Compared with members of other Protestant denominations, sect members are

TABLE 2

DENOMINATIONAL CHARACTERISTICS: NATIONAL DATA, 1984–87

	Most Church-like	Church-like	Sect-like	Sects	T
Household income	38.9	31.7	30.8	27.4	6.8
($1,000/year)	(18.4)	(17.4)	(17.6)	(17.2)	
Respondent education	14.0	12.6	12.0	11.1	10.3
(years)	(3.00)	(2.82)	(2.59)	(3.10)	
Sunday attendance	21.6	23.0	26.7	33.2	5.6
(services/year)	(22.2)	(22.3)	(22.9)	(23.3)	
Weekday attendance	3.1	7.8	14.5	37.9	10.8
(percentage attending weekday meetings)	(17.3)	(26.8)	(35.2)	(48.6)	
Church contributions	663	551	725	738	.4
($/year)	(1,072)	(914)	(1,068)	(1,004)	
Church contributions	1.63	1.98	2.24	3.11	2.3
(percentage of yearly income)	(2.46)	(4.35)	(3.21)	(4.42)	
Prays	7.42	7.89	9.27	11.59	4.9
(times/week)	(7.90)	(8.01)	(8.24)	(8.66)	
Strength of affiliation	25.1	28.8	36.2	49.4	4.2
(100 = strong, 0 = weak)	(64.0)	(66.5)	(65.0)	(63.2)	
Belief in afterlife	83.2	85.9	91.5	86.9	1.0
(100 = strong, 0 = weak)	(37.5)	(34.8)	(28.0)	(33.9)	
Beliefs about Bible	5.6	29.3	54.0	65.7	6.9
(100 = strong, 0 = weak)	(65.3)	(65.0)	(57.5)	(59.2)	
Number of respondents	260	695	353	234	

SOURCE.—National Opinion Research Center's General Social Surveys, 1984–87. Sample includes only married, nonblack respondents.
NOTE.—See notes to table 1.

poorer and less educated, contribute more money and attend more services, hold stronger and more particularistic beliefs, and belong to smaller congregations. The differences are strong, striking, and statistically significant. Table 2, which reports on comparable data from the National Opinion Research Center's 1984–87 General Social Surveys, shows that these patterns are found nationwide and are as strong today as they were 25 years ago. The regressions in table 3 show that group type continues to exert strong influence on religious behavior (attendance, contributions, and frequency of prayer) even after one controls for age, income, education, sex, marital status, and location. Indeed, the explanatory power of group type generally outweighs all other variables put together.

2. Levels of participation and levels of "sacrifice" demanded by religious groups will be correlated. Within the model, unconventional norms of conduct are maintained precisely because they increase members' levels of participation. (The proof follows immediately

TABLE 3

DETERMINANTS OF RELIGIOUS PARTICIPATION, ORDINARY LEAST SQUARES REGRESSIONS

	ATTENDANCE	CONTRIBUTION	PRAYER
Denomination:			
CHURCHLIKE	1.792	17.785	.375
	(.99)	(.20)	(1.00)
SECTLIKE	10.136	350.913	1.504
	(5.13)	(3.67)	(3.68)
SECT	27.222	725.691	3.041
	(12.91)	(7.18)	(6.90)
Controls:			
AGE	.247	11.488	.054
	(6.12)	(5.91)	(6.52)
SEX	−7.574	25.554	−2.205
	(−6.30)	(.44)	(−8.82)
EDUCATION	2.176	94.779	.230
	(9.15)	(8.11)	(4.63)
INCOME	−.074	8.895	−.028
	(−2.41)	(6.04)	(−4.37)
MARRIED	−6.618	−18.341	−.045
	(3.41)	(−.19)	(−.11)
MARSAME	18.777	470.364	1.759
	(13.04)	(6.74)	(5.92)
EAST	4.572	−72.176	−.021
	(2.64)	(−.87)	(−.06)
SOUTH	7.501	−8.489	.445
	(4.24)	(−.10)	(1.20)
Intercept	−22.960	−1,954.730	.483
R^2	.209	.227	.161
Number of observations	2,284	1,162	1,515

SOURCE.—National Opinion Research Center, General Social Surveys, 1986–90.

NOTE.—t-ratios are shown in parentheses. Sample: white Protestants, currently married or never married. Variable definitions: AGE: age of respondent; ATTENDANCE (mean = 28.7): average number of religious services that respondent attends each year including both weekend and weekday services; CONTRIBUTION (mean = $574): household's contribution in 1990 dollars; EDUCATION: respondent's years of schooling; INCOME: household's 1990 real income (in thousands); married: coded one if respondent currently is married; MARSAME: coded one if respondent has spouse of same religion; MOST CHURCHLIKE, CHURCHLIKE, SECTLIKE, and SECT: denominational dummy variables (MOST CHURCHLIKE is the omitted category); PRAYER (mean = 6.1): respondent's frequency of prayer per week; SEX: coded one if respondent is male; SOUTH, WEST, and EAST: regional dummy variables for southern, western, and eastern/midwestern states, respectively (WEST is the omitted category).

from eq. [12], which shows that a cost-increasing practice can raise group utility only if it increases group participation.) It is no coincidence that the typical Moonie is a "true believer" or that Pentecostals attend church much more often than Episcopalians. Indeed, tables 1 and 2 show that the pattern holds across the board: in relation to their more mainstream counterparts, sect members attend more religious services, contribute more money (in both percentage and absolute terms), and choose more of their closest friends from within the congregation. The regressions in table 3 show that these differences persist even after one controls for background variables.

3. Sectarian groups (which, by definition, prohibit a broad range of secular commodities) are more likely to attract members from among people with low wages and limited secular productivity than from among people with high wages and high secular productivity. The cost of sect membership is substantially lower, and hence the odds of joining substantially higher, for people with limited secular opportunities.[12]

Nearly all available data on sects, cults, and communes support this prediction. Case studies document the lower-class origins of most sects (Argyle and Beit-Hallahmi 1975, p. 164), and even across mainline denominations there is a strong negative correlation between members' median income and the denomination's degree of sectarianism. The pattern is evident also in tables 1 and 2: sect members are the poorest and least educated, and members of the nonsectarian denominations are the richest and most educated.[13]

The prediction that sects tend to attract individuals with limited secular opportunities has two corollaries: (i) classes of people with relatively low earnings (such as minorities, women, and the young) are more likely than others to choose sect and cult membership over mainline church membership; and (ii) a general decline in secular opportunities, such as the decline that occurs during recessions, will make sectarian groups more attractive relative to nonsectarian groups. Empirical evidence tends to support both of these predictions (Sales 1972; Argyle and Beit-Hallahmi 1975).

4. "Conversion," "apostasy," and other abrupt shifts in behavior will be more common among sectarian groups than among mainstream churches. Sectarian groups impose corner solutions on their members, requiring them to sacrifice the consumption of various secular commodities as a condition for membership. Consider a sect

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[12] This is not to say that all people with limited secular opportunities are drawn to sectarian groups or that rich people never join sects. Experience, upbringing, and other determinants of a person's "religious human capital" clearly play an important role in determining a person's choice of religion (Iannaccone 1990). It may also be true that cults and sects offer a "product" that appeals to the tastes of some people more than others. Unfortunately, this notion gets us no farther than most other taste-based explanations of human behavior. Repeated studies find that most cult converts have perfectly normal personality traits and psychological profiles (Stark and Bainbridge 1985).

[13] Building on the numerical example described in Sec. IIB and analyzed in an appendix available on request, one can easily formalize this result. Assume that there is only one secular commodity, S, and one religious commodity, R. Assume also that religious commodity production is more time intensive than secular commodity production. The latter assumption is consistent with both casual observation and the fact that most R commodities are socially produced. A decrease in secular productivity or wage rates then increases π_s/π_r, the shadow price of S relative to R. The assertion then follows from the fact that $dU^e/d\pi_s$ is positive whenever π_s/π_r is sufficiently high (fig. 1).

member's response to a decrease in the shadow price of one or more prohibited commodities due, perhaps, to an increase in secular productivity; a similar argument applies to changes in income and preferences. The member cannot take advantage of the price decrease as long as she remains a member. Hence, if the price decrease becomes sufficiently large, then she will find it advantageous to leave the group in order to consume a substantial amount of the commodity. There is thus a point at which a small, continuous price change leads to a large, discontinuous consumption shift (accompanied by exit from or entry into the sect). In contrast, members of nonsectarian "churches" do not face consumption constraints and so will respond continuously to small price changes.

The discontinuous shifts associated with sect entry and exit are illustrated by figures 1 and 2, associated with the numerical example analyzed in Section II*B*. There we observe that once the relative price of secular commodities π_s/π_r rises above a critical level, approximately equal to 1.0, the individual finds it to his advantage to join a group that prohibits S. This results in a discontinuous shift from consumption levels $S = 1.0$ to $S = 0$ and $R = 0$ to $R = 1$.

Empirical evidence suggests that conversion experiences are indeed characteristic of sects (Argyle and Beit-Hallahmi 1975, pp. 60–62).[14] Similarly, a sect's hold on new converts is extremely tenuous (Levine 1984). Defections are frequent and often no less abrupt than entry. In contrast, mainstream denominational mobility is a relatively tame phenomenon, more akin to switching brands than adopting an altogether different product (Roof and McKinney 1987).

5. The congregations of sectarian groups will tend to be smaller than those of more churchlike groups. The analysis in Section II assumed a fixed optimal group size, N^*, merely for convenience. Consider now a more realistic model in which optimal group size is related to levels of sacrifice and stigma. Since these practices arise as a consequence of monitoring difficulties, it is natural to ask what happens when they in turn are difficult to monitor (though, by assumption, less difficult to monitor than direct inputs to the group). Assume that monitoring costs increase with group size. Larger groups therefore face higher monitoring costs and so have more difficulty enforcing distinctive behavioral requirements. It follows that gains

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[14] Radical changes in behavior need not reflect radical changes in values, attitudes, and beliefs. The proposition concerns only the former. For evidence that the ideological conversion of cult members is more gradual than their behavioral conversion, see Bromley and Shupe (1979).

from sacrifice and stigma must be traded off against economies of size.[15]

Table 1 strongly confirms this prediction. The more sectlike the denomination, the smaller its average congregation size. The most sectarian congregations average one-fifth the size of their most churchlike counterparts.

IV. Conclusions

Apparently unproductive costs, such as dietary restrictions, painful initiations, and grooming requirements, can overcome free-rider problems associated with collective action. The costs can screen out people whose participation otherwise would be marginal, while at the same time increasing participation among those who remain. The indirect gains from screening and increased participation can more than offset the direct costs of the behavioral restrictions, so that net group utility increases. The costs are not ideal solutions: instead of subsidizing group participation, they tax alternative activities; instead of simply excluding the uncommitted, they penalize all entrants. But when the ideal is impossible, the next-best must suffice. Groups of perfectly rational people may thus embrace stigma, self-sacrifice, and bizarre behavioral standards.

The model in this paper provides an integrated explanation for numerous aspects of religion, and its predictions fit much of what is known about religious groups. But if the underlying argument is correct, it should not apply only to religious groups. Secular groups should also find it advantageous to place alternative sources of satisfaction out of reach if they produce collective products and have difficulty monitoring inputs. In point of fact, we do observe sacrifice in many nonreligious collectives: fraternities employ embarrassing initiations; secular communes separate members from family, friends, and society; and primitive tribes employ painful and disfiguring rights of passage. Sacrifice is not even exclusive to consumption groups. Similar practices arise, albeit less frequently, in groups designed to produce salable goods or affect social-political outcomes.

[15] To derive this result formally, it suffices to assume that in order to prohibit a commodity S_j, the group incurs a monitoring cost per member, $C_j(N)$, that is increasing in N. The result then follows immediately since the first-order condition for N sets the marginal benefits of increased group size (via the Q function in eq. [5]) against the marginal costs of increased monitoring (via the C_j function). Groups that do not prohibit S_j avoid these monitoring costs and so exploit membership economies to their fullest.

Boot camp is notoriously demeaning. Political party membership is usually exclusive: one cannot register as both Republican and Democrat. Moonlighting restrictions remove potential sources of income and presumably function to keep workers from diverting their hard-to-monitor energies to other jobs. The typical marriage agreement is even more exclusive: is it too aimed at free-riding? Would partners wish to limit each other's options were not most marital goods produced collectively and were it not difficult to assess the other's ongoing contributions to the production process? These are subjects for future research.

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