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Understanding the Development of Fundamentalism*

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ABSTRACT

We use economic theory to examine the intensity of fundamentalist sects. Leaders work to enhance their followers' observance level. We model three stylized situations under which fundamentalist groups function, examining the intensity of observance in each. We find that, under reasonable conditions, rivalry among fundamentalists makes them more extreme.

Keywords: Fundamentalism, rent-seeking, religion.
JEL Classifications: Z12 *(religion);* D71 *(Social Choice; Clubs; Committees);* D72 *(Economic Models of Political Processes: Rent-Seeking, etc.);* D74 *(Conflict; Conflict Resolution)*

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1. Introduction

The landscape is filled with religious groups who in popular and political perception are fundamentalist. These groups exist in the spectrum of all religions – Christian Evangelicals, Jewish Haredi, Hari Krishnas, various Hindu sects, Islamists, Buddhist radicals, and so on. There is rising contemporary interest in fundamentalism and the behavior it engenders.

Fundamentalism is a complex phenomenon and the focus of a large literature (for example, Eisenstadt, 1999, and Marty and Appleby, 1991-1995). One of main characteristics of fundamentalism is reference to a holy text that is considered infallible and inaccessible to critical interpretation. Fundamentalists do not only express their faith in their holy text, but also in their own capacity to understand its contents and apply it to themselves, and to others.

The theory we present is about the behavior of fundamentalist sects. The term fundamentalist first arose in the context of American Christian groups, who in the early 1900s developed a doctrine of the fundamentals of the Christian religion. Currently, as pointed out by Iannaccone (1997), it is generally applied to religious groups who follow a strict canon and reject more open religious guidelines. The term sectarianism defines a sect as a group whose attributes differ from those of more lenient mainstream groups (Iannaccone, 1997). In this paper we use the terms interchangeably, and mean to convey both fundamentalist religious intensity and the sect as a group of adherents who follow a religious doctrine that is usually set down or interpreted by a leader (or a group of leaders).

We provide a stereotypical description of fundamentalism as conveying religious intensity and examine the adherence of followers to a sect in which a leader works to enhance the level of observance of his followers. Our model is very simple,

reducing the existing subtleties of religious creeds to a single variable. We depict three highly stylized situations. In one, the leader of the sect is in a monopoly position, with no clear religious outside options, or rivalrous sects. In the second, adherents to the sect have an outside option, such as assimilation into the mainstream. However, this outside option is not a near substitute for the sect's rules and regulations. The third scenario is where there are rivalrous sects, at least some of which are near substitutes for the adherents' current group.

The theory we develop in this paper is part of an economic approach to the study of sectarian religion, much of which has been pioneered by Iannaccone (for example, 1992, 1997), with explicit modeling of fundamentalism and conflict recently added by Arce and Sandler (2003). The issue of religious extremism in an economic framework goes back as far as David Hume and Adam Smith (see the discussions in Feigenbaum and Levy (1992) and Iannaccone (1997)). Hume, worrying about the negative externalities that competition among religious sects would lead to, argued for state-supported religion that would promote indolence among clergy. Lacking that, leaders would pander to people's fears and superstitions to attract followers and promote hostility towards other sects. Smith, on the other hand, argues that under constant costs and full information, religious competition will induce moderation on the part of clergy.

Berman's (2000) paper offers a compelling analysis of Jewish Ultra-Orthodox fundamentalism – a more stringent and more time intensive form of Judaism. He appeals to the economic theory of clubs, under which groups of people with shared consumption create excludable but non-rival 'club goods'. Thus Ultra-Orthodox Jews devote their time to full-time religious study instead of working. Israeli Ultra-

Orthodox men study full-time until age 40, on average. Berman shows that fathers of families in poverty choose the study over work.

Our approach is different. Rather than suggesting an alternative explanation our goal is to try and understand why the leaders – many of them are those that sit and devote themselves fully to learning – decide to increase the level of observance, namely increasing the strictness of the laws.[1]

In all religions there exist laws and regulations to which followers must adhere. These laws and regulations may be interpreted in many different ways (for example, it is said "There are 70 faces to the Torah," Numbers *Rabbah* 13:15). There are those who devote their full time to sitting and studying the laws and regulations and thus are able to provide explanations on how to interpret the laws. This student/teacher of the law is called the Rabbi in Judaism, the Priest or Minister in Christianity, and the Mufti, the Mullah, the Qadi and the Shi'a clerics – the Ayatollah – in Islam, or, more generally, clergy. Of course, there are various hierarchies of clergy with many different levels and circles of authority.

The point is that these clergy – the leaders – are seen to have the ability to understand the laws and the capability to interpret and pass it on to their followers. They devote their time to learning, understanding, interpreting and administering the laws. In the Berman (2000) paper, some of these individuals are the ones who devote all their time to study. But even if they devote all their time to study, it doesn't mean that they have the capability to pass on and explain the rules and regulations to the followers.

Some individuals cannot afford to devote all of their time to study, and some individuals do not possess the capability to understand the religious laws, or even have the desire to comprehend them. These believers – the followers – turn to the

religious authority for guidance. Since the followers believe in the religion and do not fully understand the laws themselves, they take as given the word of the religious authority.

As the laws get stricter and more complicated the need for someone to explain them and provide guidance increases. Clergy, by expanding on and explaining the laws in an elaborate manner, and by setting high levels of observance, create a linkage between themselves and their followers such that the followers need the intense guidance of the clergy. Thus, by increasing the observance level that the congregation has to follow, the clergy of that congregation increases the community's dependence on him. On the other hand, as the level of observance increases, there may well be those who decide to leave the congregation (decreasing the rent of the leader), who cease following the laws or even stop seeking alternatives. It is costly to monitor members' observance and impose punishment/branding of those who do not adequately observe. Therefore the "Priest" will determine optimally the level of observance that will maximize his expected payoff from such observance.

For example, under the Ayatollahs Iran has become stricter and has imposed limitations through religious law on their people. These limitations have been accepted by many even though they are stricter and harder to follow. However, this places limits on the population and makes people more dependant on the leaders.

Berman (2000) concentrates his study on those fully devoted to studying and learning the laws. We have taken a different path by looking at the determination of the observance level imposed by leaders and their followers' reactions. Below we see how competition between leaders can create a race to the top whereby the observance of groups' increases, and creates a stronger linkage between the remaining followers and their leaders.

If one believes in a religion and that he must follow its laws and regulations, even though he is not sure exactly what the laws and regulations are, then the stricter are the laws the higher is the probability that he is behaving properly and the lower probability of him failing to do the correct thing (Iannaccone, 1997). It is the ignorance of the followers and their desire to do what is right in their religion that drives their belief that increasing the level of observance will increase the probability of fulfilling religious law. The most severe position results in the greatest certainty that Go-d's will is being performed. However, it must be emphasized that as the level of restrictions increase, there will be those who will leave the congregation – leaders face a trade-off and will choose the observance level as to maximize rent.

We next set out our model, first for an isolated community, second for a sect located in a world with an outside option, and then for rivalry among sects. Section 3 offers concluding comments.

2. The model

Religious leaders drive fundamentalism by using religion to control behavior and thus obtain rents from followers or adherents. The level of observance determined by the leader provides guidelines for followers. As a result of asymmetric information between leaders and followers, the leaders are assumed to possess more knowledge regarding the laws and rules that should be obeyed, while the followers are assumed to be less informed. This asymmetry may be a result of a belief that the leaders are chosen to lead and thus have better insight into and understanding of the religion's laws and guidelines.[2] Also, leading is a "full time job" and leaders specialize by investing all of their time in an effort to understand the laws and rules that adherents should obey. This specialization gives leaders an advantage in better understanding

what should be done than the common follower. Adherents are aware of this division of tasks and leave all decisions to the religious leaders.

The level of observance, *k*, determines how strictly the laws are kept. For example, religious practice may require that men pray several times daily and that women should cover their heads. The level of observance determined by the leaders could allow followers to "skip" a prayer under certain conditions or women to cover only their hair, or their hair and face. Leaders may determine the extent to which followers can adopt modern changes such as the use of computers or television. All in all, leaders have the power given to them by their followers to determine the level of observance.

Fundamentalism is a heterodox deviation with respect to the traditional orthodox norm. The fundamentalist use of tradition is selective. They often re-invent the traditions they maintain they defend. We introduce the variable *k*, the level of observance, corresponding to a reinterpretation of the religious tradition, not to the orthodox norm. It is different from the observance required inside orthodox religious practice.

We make a crucial assumption about the behavior of the followers. Followers are "true believers". That is, they are not continuously weighing the costs and benefits of belief. Rather, as discussed in detail in the introduction, they are believers, and are looking for guidance in how to best implement their belief.[3] This does not mean, however, that they ignore the costs of such beliefs. We assume that there exists a population of adherents each with different preferences regarding the level of observance and the costs they are willing to pay for this level. Therefore, at different observance levels we will see a different number of followers.

We consider the level of observance in *three* highly stylized situations. First, we consider a closed economy where there is only one leader who determines the level of observance. Second, we consider a situation where there is an open economy and followers see alternatives. Followers may decide to leave their leader to join a "different" world, for example, adopting modern or worldly values as opposed to traditional observance. Finally, we consider an open economy where there is more than one leader that a believer can follow and thus rivalry among leaders will influence the outcome.

At the core of our argument is a rent-maximizing fundamentalist leader who acts strategically to maximize his rents by setting the rules his adherents must follow. Rent may be the power that the leader derives from followers obeying him. Other conceptualizations of rent are also possible. The simplest and crudest formulation is that the rent is simply the leader's income, in dollars. Another is that leaders are interested in increasing the religious observances of their adherents; in this context the leaders' desire greater allegiance to the rules they set. Increasing demands on followers will reduce the number of adherents. This is a tradeoff that the leader must account for, and act strategically to do so.

2.1 An isolated sect

In this situation we assume that a sect is isolated from the rest of the world. This could be an isolated sect within a country, or an entire country in which all communications via television or internet are under the leader's control. An alternative scenario yielding the same results is where there are several leaders in a community, but each sect trusts only its own leader. For simplicity of argument we will discuss the scenario in which each sect has its own leader who determines the

level of observance that his followers should keep, all the while knowing that the members of the sect have no or little knowledge of what is going on in the other sects.

Observance is costly for the follower. The follower has to invest more time and effort as his level of observance increases, while at the same time he may well be more satisfied that he is following the laws set by the leader. On average we assume that as the level of observance increases, the number of adherents decreases, as the cost has increased. Even in the monopoly case, not all agents belong to the sect.

The utility of a representative adherent is a function of the level of observance k, $u(k)$. From this we derive a demand function for observance, as $D(k)$.[4] Demand $D(.)$ and utility $u(.)$ are also functions of other exogenous parameters such as the level of observance in alternative sects and the level of information the follower has regarding the other sects. In order to obtain our basic results we assume that these exogenous parameters are fixed and concentrate only on demand as a function of the level of observance. Later in the paper we will define in more detail what these exogenous variables represent and analyze the effect of a change in their values on rents.

Assume that the leader faces a cost of implementing observance at the appropriate level; for example, it is costly to monitor members' observance and impose punishment/branding of those who do not adequately observe. The cost to the leader of an observance level k is defined as $C(k)$. One could argue that in some situations there are no costs to the leader, then we can set $C(k)$ to zero. Denote by $R(k)$ the total revenue or gross rent when the level of observance is set at k, $R(k) = k\,D(k)$. The leader will determine the level of observance k such that he maximizes his net rent from observance (net rent = gross rent minus costs). The problem facing the leader is to determine k,

$$Max\ k\,D(k) - C(k) = R(k) - C(k)$$

$$s.t. \qquad k > \underline{k}. \tag{1}$$

$\underline{k}$ is important to our analysis. It is the minimum level of observance required by the religion. $\underline{k}$ defines believer status. It may be as universal as "do not murder" or as radical as "hate Americans." The problem set out in (1) is the simple determination of the rent-maximizing price (observance level) of a monopoly. The optimal level of observance k^* set by the leader will satisfy

$$k^* \ \ such \ \ that \ \ \ MC\left(k^*\right) = MR\left(k^*\right), \tag{2}$$

where MC is the leader's marginal cost of observance at observance level k^* and MR is the leader's marginal revenue of observance at level k^*.

If the leader sets the observance level such that there are minimal obligations on the followers, there is no doubt that this observance level is kept by all the followers. His "profits/rent" would be equal in figure 1 to

$$Rent\ (\underline{k}) = B + C + D + E + F. \tag{3}$$

If the leader sets the observance level to maximize his net rents then he will receive

$$Rent\ (k^*) = A + B + E + F. \tag{4}$$

Under the assumption that $\underline{k} < k^*$, the net profit/rent from increasing the observance level from $\underline{k}$ to k^* equals

$$\Delta \text{Rent} = \textit{Rent}\,(k^*) - R\,(\underline{k}) = A - C - D > 0. \qquad (5)$$

Thus, given that the optimal level of observance is higher than the minimum required by the religion ($\underline{k} < k^*$), the leader can increase the observance level and thus increase the rent he receives from his followers by ΔRent.

In the case where the optimal level is lower than the minimum level required by the religion ($\underline{k} > k^*$), the leader will set the level of observance to the minimum and his net rent will be as stated in (3).

Moderation is often part of religious doctrine, in the sense that becoming "too strict" on certain issues *may* actually go against doctrine. However, increasing the observance level from $\underline{k}$ to k^* *may not* be contrary to the religion. In many cases it is seen as taking better steps towards keeping a certain level of observance; for simplicity we think of this as increasing *k*. Keeping to the minimum level is also fine according to the religion.

Raising the level of observance may be acceptable and praiseworthy, or at least not frowned upon by the religion. However, it may well be that the leader is taking advantage of the religion and interprets it negatively so as to increase the level of observance, and follower's costs. Those who drop out must go somewhere. If they are true believers they will exist outside the sects and observe at least at $\underline{k}$ and less than k^*. Our next step is to explicitly account for their choice.

2.2. Observance and an outside option

In this section we assume that there is an outside option available for followers. Adherents can leave the sect, not to follow a different leader of the same religion but to follow a different life style. For example, as traditional societies open up to modernization, followers learn more about alternate life styles and may decide to leave their sect and adopt a "new" life style. The problem facing the fundamentalist leader is to keep his sect together without losing the followers to the alternative (perhaps modern) life style.

There is still only one leader. The threat to the leader is losing members of the sect to the outside option. Even though in the outside option temptation arises from different sources (and are often non-religious in nature) there are still overlapping observances between the two. For example, there is one deity, do not steal, or other similar rules. We assume that the utility function of the follower is a function of the outside option's observance level (at least in the way the follower sees it) and the observance level set by the leader. As the two levels are more compatible the probability that an individual will move to the outside option increases and as the two are less compatible the probability of leaving the community decreases.[5] For example, if the only law that exists is that there is one deity, the believers/followers can move among monotheistic faiths without a problem. However, if the laws set by the leader say that, for example, you have to pray in the way one religion says and not in the way of the others, then it will be more difficult to move from one to the other. Moreover, if it is also said that an observer who doesn't pray properly will suffer dire consequences, then it will be even harder for the follower to leave the leader and move to the new alternative religion or life style. On the other hand, if the follower

has better information and observes the way of life of those living in the outside option, he may see that their living standard is higher and this will encourage him to move to the new life. Thus, we have a parameter in the utility function that indicates the level of information or *exposure* the follower has regarding the standard of living in the outside option.

Define the level of observance the leader sets by *k*, the level of observance in the outside option by *v*, the level of information the follower has by *in* and the demand function for observance by *D(.)*. Demand is a function of all these parameters, *D(k, k-v, in)*. The demand function is assumed to satisfy the same restrictions as above; as *k* increases the leader will lose followers $\frac{\partial D(k, k-v, in)}{\partial k} < 0$, for the sensitivity of the demand function to changes in *k*, is smaller. If *v* is close to *k* it is easier for the adherent to move away from the leader because the transitions costs are lower. When the level of observance is high and differs substantially from the outside option, less adherents will leave relative to the amount that would leave if the outside option was closer, $\frac{\partial^2 D(k, k-v, in)}{\partial k \partial (k-v)} < 0$. Finally, as the level of positive information regarding the outside option increases, for every level of *k* and *v*, more followers will leave the sect, $\frac{\partial D(k, k-v, in)}{\partial in} < 0$.

The enforcement cost to the leader for an observance level of *k* is defined as *C(k)*. The leader will determine the level of observance *k* such that he maximizes his rent from observance and the problem is identical to that in (1). Denote the optimal level of observance set by the leader as *k***. *k*** is a function of both the level of observance in the outside option *v* and the level of information *in*, *k*** *(v, in)*. As the

level of observance in the outside option increases, k^{**} will increase, $\frac{\partial k^{**}}{\partial v} > 0$. The reason for this is that, while increasing the observance level decreases the number of followers, as the outside option's observance level increases it becomes easier for the followers to leave their leader and adopt the outside option. In order to decrease the number of those leaving, the leader will increase the sect's observance level.

As the level of information increases, we see two contradictory effects on k^{**}, $\frac{\partial k^{**}}{\partial in} \begin{matrix} > \\ < \end{matrix} 0$. On the one hand, the leader wants to increase the level of observance in order to distinguish his teaching from the outside option and by that decrease the number of those wishing to leave; On the other hand, increasing the required level of observance increases followers' desire to leave. Which of these two effects is stronger is not clear.

Introducing transactions costs such as real traveling or migration costs helps resolve the ambiguity. Social tension is another type of cost. People may not talk to you if you leave the sect. Other members of your family may be affected. The leader could take action against the follower leaving the sect, in the form of excommunication, threats to the follower's life and other direct actions against him. Adding costs of moving from the sect to the outside option, we find,

Increasing the level of information the followers have regarding outside options will, (1) increase the level of observance set by the leader if followers face high transaction costs, and (2) decrease the level of observance set by the leader if transaction costs are low.

For example, if we consider a closed country where information about the outside world is tightly controlled, increasing information regarding the standard of living in other countries can increase the level of observance set by the leader, as the cost of moving is very high. However, within the modern world moving costs are low, and greater information will decrease the level of observance set by the leader in order to maintain the maximum possible rent by decreasing the number of those leaving the sect.

2.3 Rivalry among Sects

Now let us consider the case where communication and transportation costs have decreased and the members of the sect now know what is happening in other communities around the country (or in other sects around the city or around the world). This case corresponds to a situation where there is an open media, widespread use of the internet and the availability of worldwide news broadcasting. Thus, information flows at low cost from one sect to another. Additionally, the members of the sect can visit other sects and learn about their observance levels. We assumed above that leaders have greater knowledge regarding the laws of the religion than sect members and sect members only trust their own leader. When information flows more easily among sects, the amount of available information regarding the level of observance in other sects' increases, and the leader has to reconsider where he set the level of observance. Still, information is not perfect and followers do not know whether to fully trust leaders other than their own. The members of the various sects are assumed to possess less knowledge than any leader regarding the laws of observance. In our rivalrous or competing sects model we have sects that are near

substitutes. If the sects are not near substitutes our story switches to the outside options model.[6]

Followers believe that as the observance level increases there is a higher probability that observance fulfills religious laws. Thus, if a follower has to choose among otherwise apparently homogeneous sects, but with different levels of observance, the follower is more likely to choose the sect with the higher observance level. The reason for this is that there is a higher probability that this observance level stands up to the restrictions set by the religion.

The utility of a representative adherent, *u*, is a function of the level of observance, *k*, as above. Each sect *i* is assumed to have $R(k_i)$ adherents and one leader who determines the necessary level of observance. To simplify, we normalize the gross rents such that a gross rent of $R(k_i)$ $(= k_i D(k_i))$ represents *R* adherents, i.e., each adherent generates one unit of gross rent for the leader. Assume two sects. The total rent facing both leaders equals' *2R.* Notice, also, that the net rent presented in the isolated sect case above is also a function of the level of observance. The members of the sect do not know the laws of observance so they will choose to follow their leader according to the level of observance he sets. If leader 1 sets observance at level k_1 and leader 2 sets observance at level k_2 then with probability $\Pr_1(k_1, k_2)$ the members of both sects will follow leader 1 and with probability $\Pr_2(k_1, k_2) = 1 - \Pr_1(k_1, k_2)$ the members of the sects will follow leader 2. These probabilities can also be interpreted as the proportion of the members of the sects that follow each leader.

To simplify, we assume as above that as the observance level increases, fewer individuals keep all the rules and thus the gross rent of the leader decreases.[7] We assume that the cost of observance of a level *k* is equal to *k, i.e., C(k) = k.* Thus the

problem facing the two leaders is to maximize their expected rent; that is, for all $i \neq j \;\; and \;\; i, j = 1,2$,

$$\begin{aligned} & Max \;\; \Pr_i \left(k_i, k_j\right) 2R\left(k_i, k_j\right) - \; k_i \\ & s.t. \\ & \qquad k_i > \underline{k} \\ & \qquad k_j > \underline{k}. \end{aligned} \tag{6}$$

Each leader solves the above problem by determining the optimal level of observance in the Nash equilibrium. The first order conditions are given by,[8]

$$\frac{\partial \Pr_i \left(k_i, k_j\right)}{\partial k_i} 2R\left(k_i, k_j\right) + 2\frac{\partial R\left(k_i, k_j\right)}{\partial k_i} \Pr_i \left(k_i, k_j\right) - 1 = 0 \quad \forall \; i \neq j \;\; and \;\; i, j = 1,2. \tag{7}$$

Thus,

$$\eta_{i,\Pr} + \eta_{i,R} = \frac{1}{2}\frac{k_i}{R \Pr_i} \quad \forall \; i \neq j \;\; and \;\; i, j = 1,2, \tag{8}$$

where $\eta_{i,\Pr}$ is the elasticity of the probability with respect to the level of observance $\left(\eta_{i,\Pr} = \frac{\partial \Pr_i \left(k_i, k_j\right)}{\partial k_i}\frac{k_i}{\Pr_i \left(k_i, k_j\right)} > 0\right)$ and $\eta_{i,R}$ is the elasticity of the total gross rent with respect to the level of observance $\left(\eta_{i,R} = \frac{\partial R\left(k_i, k_j\right)}{\partial k_i}\frac{k_i}{R\left(k_i, k_j\right)} < 0\right)$. Note that the comparison is to the monopoly situation above. It is clear therefore that in

equilibrium it will hold in absolute terms, and the elasticity of the probability will be greater than that of the gross rent, $\eta_{i,\Pr} > \left|\eta_{i,R}\right|$.

This general problem can be seen as a rent-seeking contest between two groups competing for a gross rent of 2*R* with a contest success function Pr_i (see Nitzan, 1994). In order to analyze this equilibrium we choose to use the Tullock (1980) contest success function (see also Hirshleifer (1989) and Hillman and Riley (1989)). The contest-success function determines that leader *i*'s probability of obtaining the gross rent in competing against leader *j* is given by,

$$\Pr_i(k_i,k_j)=\frac{k_i}{k_i+k_j} \quad \forall \ i \neq j \ \ and \quad i,j=1,2. \tag{9}$$

Notice that as leader number 1's observance level increases, his probability of receiving the gross rent increases, and as the level of leader number 2's observance increases the probability that leader number 1 wins the rent decreases, $\frac{\partial \Pr_i(k_i,k_j)}{\partial k_i} > 0 \ \ and \ \frac{\partial \Pr_i(k_i,k_j)}{\partial k_j} < 0 \quad \forall \ i \neq j \ \ and \quad i,j=1,2$. Moreover, as stated above, as the level of observance increases the total (gross) rent (hereafter "rent") decreases (the price to the followers increases and less follower will wish to live by the rules as set by the leaders), $\frac{\partial R\left(k_i,k_j\right)}{\partial k_i}<0$. For simplicity and in order to obtain closed solutions we assume that the total gross rent facing both leaders is given by $2R\left(k_i,k_j\right)=2R-k_i-k_j$.[9]

Assuming $k_i > \underline{k} \ \ and \ k_j > \underline{k}$ leader *i*'s problem becomes,

$$Max \quad \left\{ \frac{k_i}{k_i + k_j} \left(2R - \left(k_i + k_j \right) \right) - k_i \right\} \quad i \neq j \text{ and } i, j = 1,2. \qquad (10)$$

The first order conditions are given by,

$$\frac{\partial \left\{ \frac{k_i}{k_i + k_j} \left(2R - \left(k_i + k_j \right) \right) - k_i \right\}}{\partial k_j} = \frac{2k_j}{\left(k_i + k_j \right)^2} \quad R - 2 = 0, \quad \forall \; i \neq j \text{ and } i, j = 1,2.$$

This yields,

$$\frac{k_j}{\left(k_i + k_j \right)^2} R - 1 = 0 \quad \forall \; i \neq j \text{ and } i, j = 1,2. \qquad (11)$$

Second order conditions are satisfied, $\left(-\frac{k_j}{\left(k_i + k_j \right)^3} R < 0 \quad \forall \; i \neq j \text{ and } i, j = 1,2 \right)$.

Solving (11) for both leaders we obtain that the optimal level of observance in a Nash equilibrium is given by

$$k_1 = k_2 = \frac{R}{4}. \qquad (12)$$

In a Nash equilibrium, both leaders will set the same level of observance. Moreover, as the basic number of followers in each sect increases the level of the observance also increases, $\frac{\partial k_1}{\partial R} > 0$.

Earlier we saw that the size of the sect and the size of the gross rent are positively related. Therefore, we can take the derivative of k with respect to R, as the change in k as a result of the increase in the size of the population. As the size of the sect increases, the gross rent increases and the leaders have more to gain from competition. Increasing the observance level increases the leader's probability of obtaining a larger proportion of the gross rent. Thus, in equilibrium, they will increase the observance level as a result of an increase in the size of the sect.

The notion that rivalry increases the level of observance is supported by the role of the leader as the head of the sect, providing guidelines for followers. Thus the leader can proclaim that the "level" has to be very high. Some people will be afraid to leave their leader and rely on someone else, as they are not sure that the new leader keeps the same standard. For example, if the only standard is a basic rule that any leader would require, then it is likely that this is possible with any leader, and adherents would be able to follow almost any leader. However, if the observance level is very high, each follower will be afraid that the other leader would not measure up to this standard. So, as a leader sets the level higher he will have a higher proportion of the gross rent or a higher probability that fewer will leave him. Mathematically, as R increases the observance level is raised in order to slow the exodus brought on by rising costs.

Increasing the number of sects

Over time, transportation and information costs decrease and thus the number of leaders competing for adherents' increases. We now observe what happens to the

level of observance when the number of sects increases. Assume that there are *m* sects, each has one leader. We assume all sects are of the same size, *R*.

Assuming $k_i > \underline{k} \ \forall \ i = 1,2,...,m$ leader *i*'s problem becomes,

$$Max \left\{ \frac{k_i}{\sum_{j=1}^{m} k_j} \left(m\ R - \sum_{j=1}^{m} k_j \right) - k_i \right\} \ \forall i = 1,2,...,m. \qquad (13)$$

The first order condition is given by

$$\frac{\sum_{j \neq i}^{m} k_j}{\left(\sum_{j=1}^{m} k_j \right)^2} m\ R - 2 = 0 \quad \forall i = 1,2,...,m. \qquad (14)$$

The second order condition is satisfied, $-\frac{\sum_{j \neq i}^{m} k_j}{\left(\sum_{j=1}^{m} k_j \right)^3} m\ R < 0 \quad \forall i = 1,2,...,m.$

Solving (14) for all the sects we obtain that in equilibrium the level of observance is given by,

$$k_i^* = \frac{m-1}{2m} R \quad \forall \ i = 1, 2, ..., m. \qquad (15)$$

Once again we obtain a symmetric equilibrium under which all leaders will set their level of observance at the same level.

Over time, followers are exposed to yet more sects.[10] The question that we now pose is what happens to the level of observance when the number of sects that each follower is exposed to increases,

$$\frac{\partial k_i^*}{\partial m} = \frac{1}{2m^2} > 0 \text{ and } \frac{\partial^2 k_i^*}{\partial m^2} = -\frac{1}{m^3} < 0 . \qquad (16)$$

We therefore conclude that

As the number of sects that each follower is exposed to increases, the level of observance set by each leader will increase. The increase in observance is with decreasing marginal increase.

The reason for this result is similar to that obtained above. As the number of sects increase the leader has more to gain as well as more to lose, thus increasing the level of observance will be the way the leader tries to hold on to his gross rent.

In general, what is happening is that as each follower is exposed to other sects the observance level in his sect increases. As the demand functions facing each separate sect are decreasing in the level of observance, aggregate demand will also be decreasing in the level of observance (see figure 2). Thus, as the level of observance increases the number of individuals following the leader decreases.

3. Conclusion

This paper aims at describing the behavior of fundamentalist sects. We have developed a model based on rent appropriation by the fundamentalist leader. Our theory builds on recent work on religious "markets" and a specific, "club"- oriented theory of religious extremism that seems to out-perform more traditional explanations (including socio-economic explanations that emphasize poverty, persecution, and other forms of "deprivation" and "frustration" or psychological explanations that emphasize the pathological needs or personalities of leaders and followers). We emphasize the distinct motivations of leaders and members.

At the core of our analysis is rent, which we think of as the power that the leader derives from followers listening to him. Other interpretations are, of course, possible. In our simple stylized modeling, people join sects because leaders help them implement their religious beliefs. Our results are set with reference to a variable "*k*" which represents the level of observance.

We model the case of a monopolist fundamentalist leader, the case of a fundamentalist sect faced with an outside option and the case of rivalrous competition among sects. In the monopoly case, the leader may pick an optimal level of observance that is higher than the minimum level, increasing his rents while imposing a cost upon followers. In the outside option situation sects try to maintain an 'optimal tension' with the surrounding society. Furthermore, as exposure to the outside world increases, the level of observance rises (if switching costs are high) or falls (if switching costs are low). We argue if there is rivalry among sects, as the size of the sect increases, the level of observance rises (and as the number of sects increases, observance rises). In order to hold on to rents the leaders increase the level of required observance so that it is harder for adherents to move from one sect to

another. This decreases the total rents for the leader, but at least he receives more than if he does not do this. On the other hand, it increases the leader's power over (remaining) followers. We thus obtain a situation where we have sects with very high observance levels, but not all of the members will be happy.

In the story we tell, rivalry leads to a race to the top in observance level, not to the bottom. In this we come down on Hume's side of his debate with Smith over the result of competition among clergy. Hume argued that the desire to hold on to members would radicalize clergy. We picture a similar situation in which leaders desire rents. Smith, on the other hand, argued that increased competition would moderate clergy's responses and lead to mutual toleration, as they fear losing members to other sects. Iannaccone (1997) and the compelling discussion of competing fanatics in Feigenbaum and Levy (1992) point out that Smith's argument rests on several assumptions. Foremost, a condition for Smith's view that competition would generate lower observance, i.e., lower radicalism, tame religion, and attain toleration, is information and education. With information, people would not need leaders to guide them. Critical to our analysis is that people are believers who look to leaders to tell them how to best implement their belief. This is not Smith's world.

Our model is one of religious extremism and it should be pointed out that almost all groups described as fundamentalist are non-violent. Never-the-less, by interpreting religious terrorism as a higher level of observance, k, we can gain some insights on this extreme deviation from orthodox religious beliefs.[11] It may be that to maximize rents the leader substantially increases k, with terrorism a possible reflection of this increase in k. However, this is dependent on the sensitivity of a change in demand to a change in the observance level. Perhaps increasing k slightly

will give the leader the desired results and thus decrease the need to significantly raise *k*.

This paper provides an economic framework for understanding a group whose motives are not covered by usual arguments regarding voice, signaling, and bargaining. Our results, though based on summarizing the subtleties of fundamentalist religious belief in one variable, matches our intuitive understanding about how many religious sects behave.

Endnotes

1. We distinguish between belief and observance, and do not address where beliefs come from. We offer a story of how beliefs are translated into action, that is, observance, and why we observe extremes forms observance increasing.

2. The leader also may have inherited the job, may have been awarded leadership in recognition of wealth or status, or may have achieved leadership through political maneuvering.

3. Our theory complements Iannaccone's (1997) theory of fundamentalism and sectarianism. Iannaccone argues that "sectarian costs mitigate free-rider problems that otherwise lead to low levels of member commitment and participation." In our paper we talk about a public good that is given to the followers, which is the belief that they benefit from following the ways of "Go-d" and their religion. However, there is no real public good as described in club theory. Those who follow the religion do it because of their belief in Go-d. Thus the free rider problem seen in Iannaccone (1997) and Berman (2000) does not occur.

4. The aggregate demand function is generated from a heterogeneous population.

5. This idea can be found in other places, including Iannaccone (1997) who discusses the optimal distance between the sect and the society, and Arce and Sandler (2003) who draw out its implications for the sect in terms cohesiveness, failure to compromise, and desire for majority status.

6. The main difference between this type of rivalry and monopolistic competition is that by increasing the level of *k* the leader makes it more difficult to leave the sect and thus increases his probability of holding on to future rent. Therefore, rivalry will result in an increase in *k* (the opportunity cost of staying) while simple monopolistic competition will result in price decreases.

7. We assume that the starting point for the competition is the maximum of the "isolated sect" case; i.e. the maximum of (1) and the maximum is at a point where $\frac{\partial R}{\partial k} < 0$.

8. Second order conditions are assumed to hold.

9. Note that, $D(k) = (R/k) - 1$, thus, $R(k) = kD(k) = R - k$.

10. Of course, if there are few rents to collect there is a predisposition towards a natural monopoly.

11. There is a small but rapidly growing literature on the economics of terrorism; for example, Lee and Sandler (1989), Lapan and Sandler (1993), Enders and Sandler (2002), and Sandler and Enders (2004). Kuran's (1989) work on the theory of unanticipated major revolution has some implications.

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Figure 1. The leader's monopoly

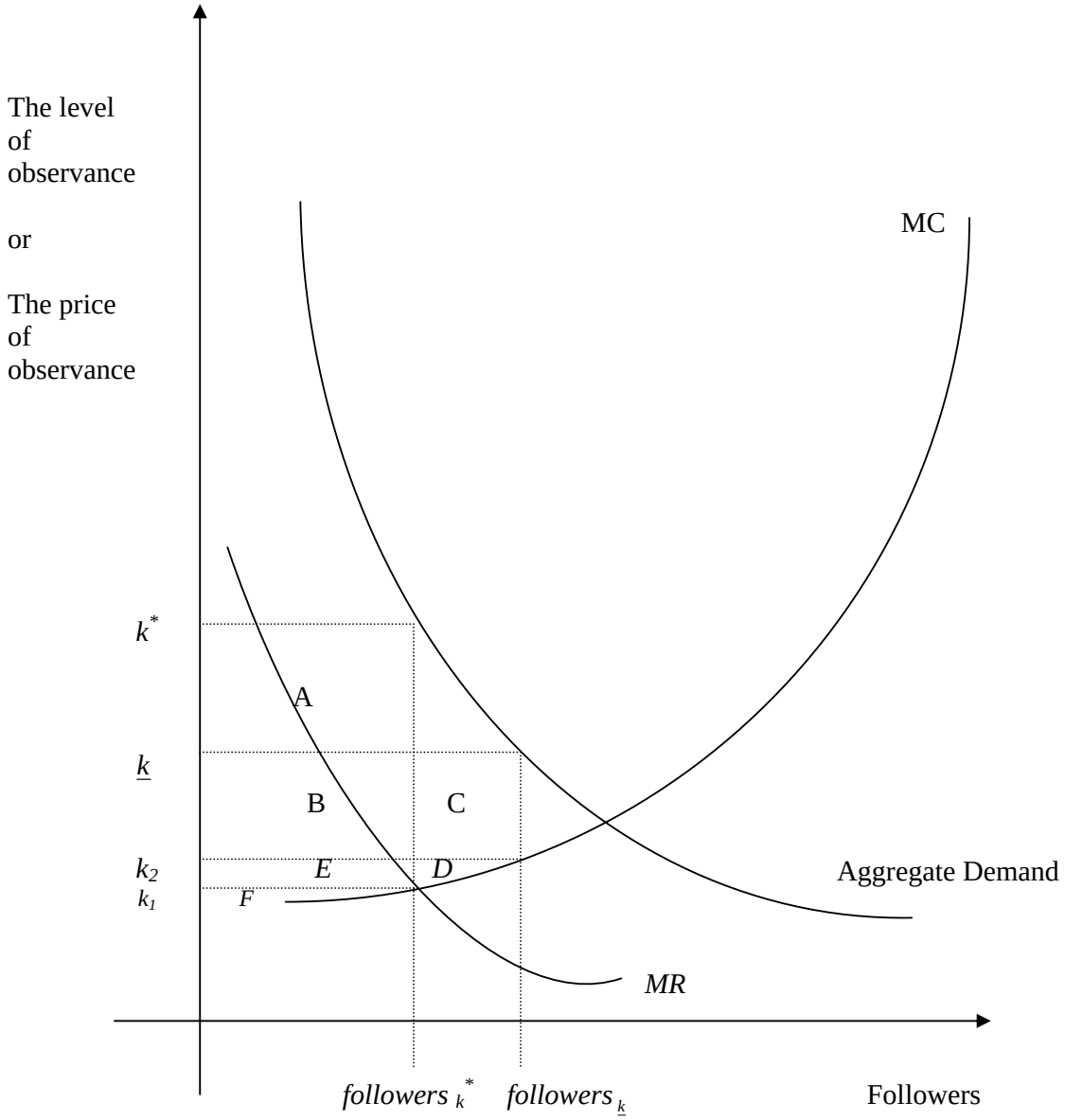
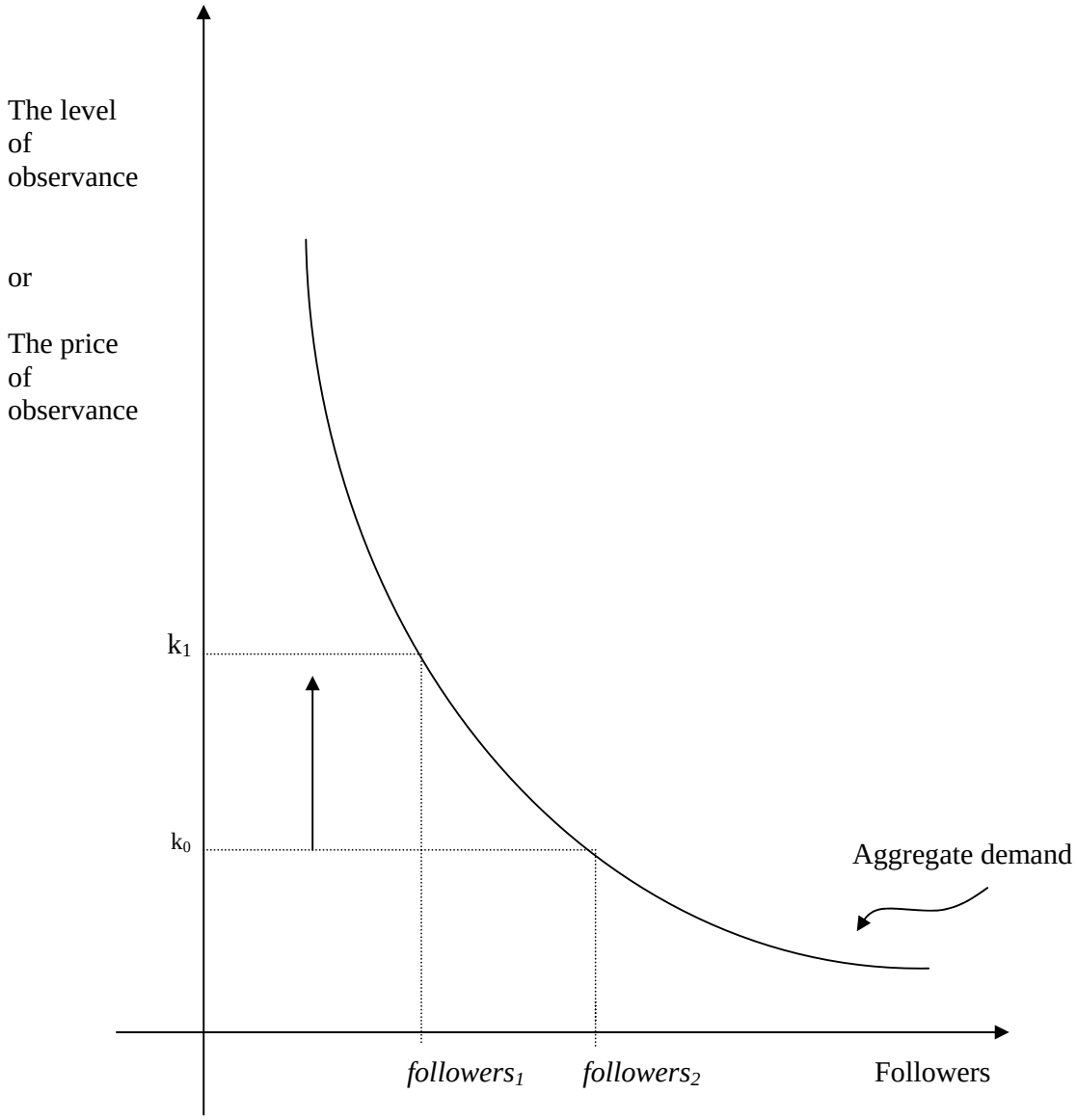
Figure 2. Rivalry between leaders