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Competition and Civic Engagement in the Religious Marketplace

By Lynne Pepall, Dan Richards*, John Straub* and Michael DeBartolo**

ABSTRACT

We develop a model of spatial competition to explain the high level of spending on social services that distinguishes American churches or faith-based organizations (FBOs). The model predicts that such spending, measured on a per member basis, rises as the equilibrium structure of the religious marketplace becomes more competitive. A simple test of the model using measures of a religious Herfindahl Index constructed by county and by year for panel data covering the years 1994 and 2000 confirms our analysis. As local FBO monopoly power grows, FBO spending on civic activities declines.

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1. Introduction

Faith-based organizations in the United States are distinguished by their diversity, both in their varied religious beliefs and practices, and in the nature and extent of their civic engagement. By civic engagement, we refer to the fact that most American churches and synagogues offer more than regular worship and religious education services to their members. They also offer programs and experiences that serve to strengthen their members' bonds of faith. Often these include ways for members to engage in their community, or beyond, and provide valued social services and real goods including health-care, education, food, housing, and financial assistance. Indeed, Johnson, Tompkins, and Webb [2002] estimate that faith-based organizations in the United States provide community and social services to over 70 million Americans annually. Similarly, Ronsvalle and Ronsvalle [2000] estimate that roughly half of charitable contributions and volunteering in the United States comes from religious organizations. These estimates are supported by Putnam [2000] who concludes that more than one half of social capital in the US, as measured by volunteering, philanthropy or civic participation, is affiliated with faith-based organizations.

This paper regards the heterogeneity in both spiritual doctrine and the extent of civic engagement as key outcomes that any analysis of religiosity in the United States must examine and explain. To be sure, there are features of the American environment that facilitate religious pluralism. One is the constitutional prohibition against a government-sanctioned religious monopoly, which as a result, helps to make entry into this sector easier. The second is the relatively open US immigration policy admitting a great number of groups of different denominations and cultural backgrounds. However, these factors are necessary but not sufficient to explain how the evolutionary process in America has led to both the diversity and civic-minded character of faith-based organizations. In addition, there must be something about the competitive process that drives the evolution of faith-based organizations to attract adherents to their mission and become civically engaged.

In this paper we investigate the idea that competition among faith-based organizations is a key to understanding their civic engagement. This idea is related to religious market theory. In fact it was Adam Smith who wrote early on about the inefficiencies associated with regulated or monopolized religious activity and the benefits of religious pluralism. This idea has been recently revived and explored in the seminal work of Iannaccone [1998]. Religious market theory can be broadly interpreted to mean that religious freedom and diversity fosters “greater denominational competition”. This in turn leads to more dynamic and innovative religious institutions and ultimately more religious participation among members of the society. Alternatively, the more regulated or monopolized is religious activity then the less dynamic and the less accountable the regulated religious activity becomes, and the less religious participation there is.

The recent or renewed interest in religious market theory has spawned a growing interest among economists about how religiosity affects economic outcomes. Barro and McCleary’s (2003) pioneering work investigates how religiosity, as measured through individuals’ religious participation and beliefs, affects economic growth in a panel of countries. Relatedly, Gruber (2005) finds strong evidence in the US that a higher density of an individual’s religion in an area leads to higher religious participation and better outcomes with respect to education, income and marital status. Dehejia (2005) *et al* similarly find that religious participation helps to insure consumption streams. Barro and McCleary (2004, 2005) also consider the effect of state religion on religiosity and examine the factors determining the likelihood of establishing a state religion.

In contrast to the foregoing papers, which explore the effect of religion on individual decisions and the role of religious practice in explaining economic outcomes, we focus instead on faith-based organizations, themselves, and their incentives to attract individual members. That is, we investigate the nature of competition in the religious marketplace—both what factors influence that competition and the implications that competition has for the role of faith-based organizations in American society. Our research thus complements and informs a theme of religious market theory; namely, whether and

how religious pluralism promotes greater religious participation and civic engagement as a result of fostering a more dynamic religious sector.

Our starting point is that faith-based organizations (FBOs) compete for potential adherents by providing ways for their members to deepen their spiritual relationship. While an FBO may well be unwilling (or unable) to alter its basic spiritual message, it can nevertheless compete for individuals and households by instead offering new and different ways to deepen and enrich the spiritual experience through participation in the community. For example, organizing soup kitchens or hospital visits, or educational services or other forms of civic engagement, can give substance to an FBO's spiritual message and make it attractive to potential followers. Making visible the mission of a faith-based organization through the ways that its members can participate in the community can play an important role in attracting new adherents. This suggests that denominational competition for adherents may be a force that leads FBOs to focus attention and resources on the more visible measures of its mission. Greater competition among FBOs for members will then lead them to expend more effort on building visible social capital. In turn, this leads to increased civic engagement of its members, which is a distinctive feature of US churches.

In Section 2 we develop a formal economic model of how denominational competition influences faith-based organizations to build visible social capital. We adopt a spatial approach to modeling the diversity of religious preferences among the population in a community. Montgomery (2003) and Barro and McCleary (2005) also develop a spatial model of religious markets to investigate the relationship between religious pluralism and participation. However, our approach to modeling denominational competition in a spatial context is different in certain key respects.¹ First, we model the contributions, or donations of members to their faith-based organizations and we allow for faith-based organizations to compete for adherents by offering other services to complement their religious services. Competition among FBOs in our model can account for both the religious diversity and the extensive civic

¹ Our approach differs from Montgomery's (2003) in that donations and expenditures, or more generally financial constraints play no role in his model. Barro and McCleary (2005) model the religious spectrum as a line rather than a circle, which means certain religions in their model, near the endpoints, have captive consumers. Barro and McCleary (2005) also model FBOs as price-setting organizations.

engagement that characterize churches in American society. In section 3 we offer some preliminary empirical analysis that supports some key predictions of the model.

2. A Spatial Model of Religious Plurality

We adopt a spatial approach to modeling the religious preferences among the population in a community. The religious preferences of the individuals or households who are potential adherents to a faith-based organization are distributed uniformly around the circle with density or population P_0 . The location x_k of household k on the circle is a complete description of the attributes of religiosity that household k prefers. The circumference of the circle is normalized to one. Each household consumes one unit of religious service per period and is willing to give up or donate resources D to a faith-based organization that can provide the religious service that the household prefers. The magnitude of D is a measure of the strength of the household's desire to belong to a faith-based organization.

Faith based organizations (FBOs) are located at points on the circle. The "location" of an FBO, denoted by f_i , on the circle describes the basic spiritual message and service of the faith-based organization. In locating at a specific point on the circle f_i , incurs a sunk cost K . The variable resource cost of supplying one unit of the basic service c_i is assumed to be the same across all FBOs, and without loss of generality the unit cost is normalized to zero.

The goal of a faith-based organization is to attract adherents and provide religious services to them. There is no regulation on the entry of FBOs into the community. That is, there are no barriers to entry such as those imposed by state regulated faith-based organizations in other countries, nor do FBOs receive any state subsidies. Each FBO located on the circle must therefore in an equilibrium outcome at least break even. The revenue of an FBO is generated by donations received from adherents.

Only the individual or household that is located at the same point on the circle as an FBO has preferences that match exactly the spiritual message of an organization. As in the spatial model adopted by Montgomery (2003) and Barro and McCleary (2005) we assume that individuals "travel" at some disutility or cost to an FBO located on the circle. The household's loss in utility when it does not receive from an FBO its most preferred version of religious services means that the household is willing to give

less than D to the FBO. Specifically, we assume that the willingness of a household located at x_k to donate to an FBO located at f_i on the circle is defined by:

$$V_{ki}(x_k, f_i) = D - t|x_k - f_i| \quad (1)$$

The parameter t measures the disutility cost of consuming a religious service that is located one unit of distance away from the household's preferred religious service. The disutility cost t could reflect the cost of attending offering services at non-preferred time, without music or other rituals valued by the individual or household.²

A faith-based organization f_i can potentially serve adherents x_k for whom $V_{ki}(x_k, f_i) \geq 0$. We define the set of potential adherents of faith-based organization f_i by $X_i = \{x_k : V_{ki}(x_k, f_i) \geq 0\}$. If two FBOs, denoted by f_i and f_{i+1} , adjacent on the circle, are located farther than $2D/t$ apart on the circle then their sets of potential adherents *do not* overlap. In this case the two FBOs do not share the same potential adherents. A potential adherent of one faith-based organization would not be willing to contribute to the other faith-based organization. If, on the other hand, the two FBOs f_i and f_{i+1} are located less than $2D/t$ apart on the circle then their sets of potential adherents do overlap or $X_i \cap X_{i+1} \neq \emptyset$.

When two faith-based organization are potentially attractive to an adherent then they have an incentive to compete for the potential adherent. One way FBOs can compete is by offering additional services to adherents beyond the purely religious ones. These additional services could be community services, which the household cares about as means of fulfilling the household's spiritual needs. As noted above, however, they typically also include social services such as health care or educational services, or meals for the elderly or day care.

When $V_{ki}(x_k, f_i) \geq 0$ and $V_{ki+1}(x_k, f_{i+1}) \geq 0$ then the two FBOs f_i and f_{i+1} have an incentive to compete actively for household k . If FBO f_i offers services valued at s_{ik} while FBO f_{i+1} offers services valued at s_{i+1k} to household k then the household will choose to become a member of f_i and donate

² The key dimensions of religiosity are belief, ritual and experience. The ritual dimension captures the participation in religious services or activities. Different households weigh religious services and activities differently.

$V_{ki}(x_k, f_i)$ to f_i when $s_{ik} > s_{i+1k}$, and, conversely, become a member of f_{i+1} and donate $V_{ki+1}(x_k, f_{i+1})$ when $s_{ik} < s_{i+1k}$. In the case that $s_{ik} = s_{i+1k}$ then the individual k will join and donate to the faith-based organization whose basic message is closest to x_k .

Suppose that $V_{ki}(x_k, f_i) > V_{ki+1}(x_k, f_{i+1})$, or household k is “closer” to faith-based organization f_i , than f_{i+1} , and f_{i+1} is among the $n-1$ faith based organizations the next closest to household k . In that case FBO f_i can offer household k additional services whose value is greater than what is feasible for faith-based organization f_{i+1} to offer. Alternatively, the minimum value of the additional services s_{ik} that faith based organization f_i must offer household k in order to secure the household’s adherence is $s_{ik} = V_{ki+1}(x_k, f_{i+1})$. In the absence of additional services being offered, or in the absence of competition, household x_k would in that case attend and contribute to the faith-based organization that is closest to its preferred location.

In an equilibrium outcome, the number of FBOs n are symmetrically located on the circle. The first case that we consider is when the number of FBOs n is such that in equilibrium $n < t/2D$ and the set of potential adherents X_i for each FBO f_i , $i = 1, \dots, n$, do not overlap. Not every household on the circle of unit circumference attends a faith-based organization, or the community is “not covered” by FBOs.

When the community is not covered each faith-based organization f_i supplies religious services to $2P_0 D/t$ adherents and receives donations $D^2 P_0 / t$. In order for a faith based organization to be economically viable when the community is not covered we must have that $D^2 P_0 / t - K \geq 0$. For the remainder of the paper we will assume that intensity of religious preferences, as measured by D and t , the sunk cost K , and the population density in the community, P_0 , are such that $D \geq \sqrt{tK/P_0}$.

For the community not to be covered in an equilibrium outcome it must be the case that a new faith-based organization does not find it feasible to come into the community and serve some of the households who are not currently being served by any of the n FBOs. First observe that this means

that $n > t/4D$ for otherwise since $D \geq \sqrt{tK/P_0}$ entry would be economically feasible and would occur.³

Second it may be economically feasible for the n FBOs to operate in the community, but not feasible for a new faith-based organization to enter the community. This occurs when the potential entry of a new faith-based organization in the community leads to an overlap in the set of potential adherents.

To see this consider the potential entry of a new faith-based organization denoted by f_e . The new FBO f_e will locate at a point on the circle where households are least well served by the existing n FBOs. Thus, without loss of generality f_e will locate at a distance $1/2n$ between FBOs f_i and f_{i+1} . Even though the set of members of the established FBOs f_i and f_{i+1} do not overlap, because $n > t/4D$ or alternatively because $2D/t > 1/2n$ the potential members of f_e do overlap with those of f_i and f_{i+1} . Specifically for the FBOs f_i and f_e there is a subset of potential adherents, defined by $X_{ei} = \{x_k : V_{ke}(x_k, f_e) \geq V_{ki}(x_k, f_i) \geq 0\}$, who would be willing to donate to both faith-based organization f_i and f_e , and these adherents are “closer” to f_e . Similarly, there is a subset of potential members $X_{ei+1} = \{x_k : V_{ke}(x_k, f_e) \geq V_{ki+1}(x_k, f_{i+1}) \geq 0\}$ who would be willing to donate and attend f_e and f_{i+1} , and they are “closer” to f_e .

In this case the new entrant FBO f_e “competes” with f_i for the potential members defined by X_{ei} and offers additional services that these households care about. The set of the services that f_e must offer in order to secure the membership of these k households is $S_{ei} = \{s_{ek} : s_{ek} = V_{ki}(x_k, f_i), x_k \in X_{ei}\}$. Similarly, f_e must “compete” with f_{i+1} for the potential members defined by X_{ei+1} and offer additional services described by the set $S_{ei+1} = \{s_{ek} : s_{ek} = V_{ki+1}(x_k, f_{i+1}), x_k \in X_{ei+1}\}$. The aggregate value of the additional services that entrant f_e must offer members X_{ei} and X_{ei+1} is equal to $(D - t/4n)(D/t - 1/4n)P_0$. The sum of the potential donations that the new faith-based organization would receive from its $1/2n$

³ If $2D/t < 1/2n$ and there is no overlapping then the new entrant would serve $2D/t$ new members and would earn a net revenue $D^2/t * P_0$. Since by assumption $D \geq \sqrt{tK/P_0}$ then unless there is some restriction upon entering this community entry would occur and the outcome of n faith-based organizations could not be an equilibrium.

members is equal to $(D/2n - t/16n^2) P_0$. Thus the net revenue that the new entrant f_e receives from its adherents is $R_e(n) = (D/n - D^2/t - t/8n^2) P_0$.

For the entry of f_e not to be feasible it must be that $R_e(n) - K < 0$. This condition together with the condition that $t/2D \geq n \geq t/4D$ and the fact that the community is not covered in equilibrium implies that

the number of faith based organizations $n = \frac{t}{2D \left(2 - \sqrt{2 \left(1 - \frac{tK}{P_0 D^2} \right)} \right)}$, and the willingness to

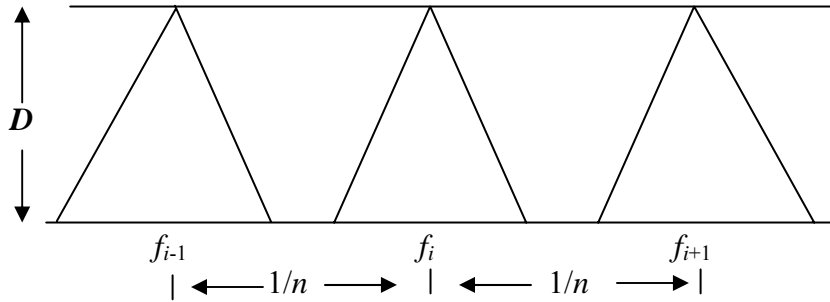
contribute of households D is such that $\sqrt{2tK/P_0} \geq D \geq \sqrt{tK/P_0}$. Observe that when $D = \sqrt{tK/P_0}$ the

number of FBOs n is such that $n = t/4D = \frac{1}{4} \sqrt{tP_0/K}$, and each faith based organization just breaks even.

When $D = \sqrt{2tK/P_0}$ $n = t/2D = \frac{1}{2} \sqrt{tP_0/2K}$, and each faith based organization earns some surplus. In

either case, there is no spending on additional services. This equilibrium is illustrated in Figure 1.

Figure 1
No Overlapping Equilibrium with No FBO Spending on Services



When the community is not covered the established FBOs do not offer any additional social services. They supply religious services only and only to some segments of the community. Each faith-based organization in the community earns either positive or zero net revenue. Observe that this outcome is likely to occur in communities where the ratio of the sunk cost K to the density of the population P_0 is high relative to a household's willingness to contribute or pay for religious services D .

Suppose now that the number of established FBOs n in an equilibrium outcome is such that $2D/t \geq 1/n \geq D/t$, or equivalently, $t/2D \leq n \leq t/D$. In this case the set of potential adherents $X_i = \{x_k : V_{ki}(x_k, f_i) \geq 0\}$ for each faith-based organization f_i , $i = 1, \dots, n$, do *partially* overlap. That is, for two adjacent FBOs f_i and f_{i+1} there is a subset of potential members, defined by $X_{ii+1} = \{x_k : V_{ki}(x_k, f_i) \geq V_{ki+1}(x_k, f_{i+1}) \geq 0\}$ who would be willing to attend faith-based organization f_i and f_{i+1} but these members are “closer” to f_i . Similarly, there is a subset of members $X_{i+1i} = \{x_k : V_{ki+1}(x_k, f_{i+1}) \geq V_{ki}(x_k, f_i) \geq 0\}$ who would also be willing to attend f_i and f_{i+1} , but these potential members are “closer” to f_{i+1} .

Faith-based organization f_i can successfully “compete” with f_{i+1} for the potential members defined by $X_{i,i+1}$ by offering additional non-religious services. These services, which are often visible social services, are defined by the set $S_{i,i+1} = \{s_{ik} : s_{ik} = V_{ki+1}(x_k, f_{i+1}), x_k \in X_{i,i+1}\}$. Similarly faith-based organization f_i can successfully compete with f_{i-1} for members $X_{i,i-1}$ by offering to these household additional services $S_{i,i-1} = \{s_{ik} : s_{ik} = V_{ki-1}(x_k, f_{i-1}), x_k \in X_{i,i-1}\}$.

The aggregate value of the additional services that faith-based organization f_i must offer to attract the members defined by $X_{i,i+1}$ and $X_{i,i-1}$ is equal to $(D/t - 1/2n) * (D - t/2n)P_0$. The total value of the donations that faith-based organization f_i receives from all the P_0/n members is equal to $[t/4n^2 + (D - t/2n)/n]P_0$. Thus the net revenue of each established faith-based organization i is $R_i(n) = (2D/n - D^2/t - t/2n^2)P_0$. In equilibrium it must be the case that each established faith-based organization is economically viable $R_i(n) - K \geq 0$.

Consider then the potential entry of a new faith-based organization denoted again by f_e for this case. The new faith-based organization f_e would again locate at a point on the circle where households are least well served by the existing n FBOs, i.e. at a distance $1/2n$ between FBOs f_i and f_{i+1} . Even though the set of members of the established FBOs f_i and f_{i+1} do not completely overlap, the potential members of f_e do completely overlap with those of f_i and f_{i+1} . Recall that for this case we assume that $2D/t \geq 1/n \geq D/t$, and so by assumption $D \geq t/2n$. Therefore the household located at f_i at a distance $1/2n$ from f_e would be willing to be a member of and donate to the new faith-based organization.

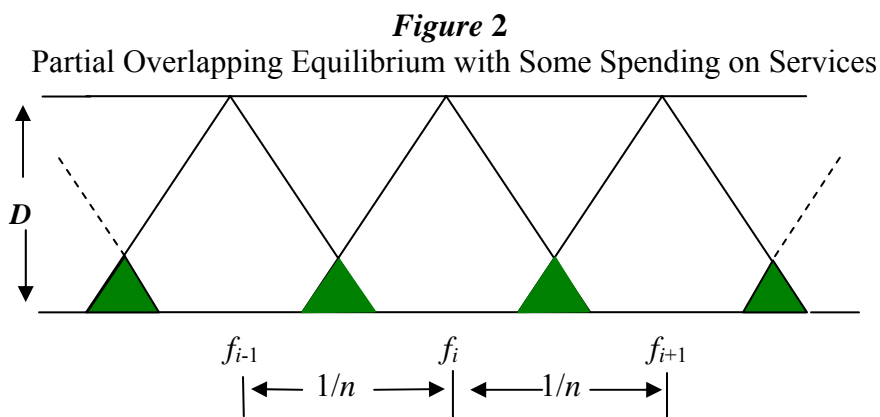
The set of potential adherents for the entrant f_e thus *completely* overlaps with adjacent FBOs f_i and f_{i+1} and so there is competition for adherents. To attract adherents the new entrant FBO would need to offer additional services to each and every potential member of its congregation. For members who are currently being offered religious services by f_{i+1} the new faith-based organization must offer services defined by the set $S_{ei+1} = \{s_{ek} : s_{ek} = V_{ki+1}(x_k, f_{i+1}), x_k \in X_{ei+1}\}$ and for members who would be willing to donate and attend f_i the new faith based organization offers to these households additional services defined by $S_{ei} = \{s_{ek} : s_{ek} = V_{ki}(x_k, f_i), x_k \in X_{ei}\}$.

The aggregate value of the services that f_e must offer its members X_{ei} and X_{ei+1} is equal to $[D/2n - 3t/16n^2]P_0$. The potential donations that the new faith-based organization would receive from its members is equal to $[D/2n - t/16n^2]P_0$. Thus the potential net revenue of the new entrant $R_e(n) = tP_0/8n^2$. For entry to be infeasible we must therefore have that $tP_0/8n^2 - K \leq 0$.

The no entry condition, together with the equilibrium conditions that an established FBO is economically viable and that $t/D \geq n \geq t/2D$, implies that the equilibrium number of FBOs is $n = \sqrt{tP_0/8K}$.

Hence, the willingness of households to contribute D is such that $2\sqrt{2tK/P_0} \geq D \geq \sqrt{2tK/P_0}$. This

equilibrium is illustrated in Figure 2. Here, the shaded triangles reflect spending on social services. FBO f_i is responsible for one half of the shaded triangle to its immediate left and one half of the shaded triangle immediate right. As noted above, this amount is equal to $(D/t - 1/2n)*(D - t/2n)P_0$.

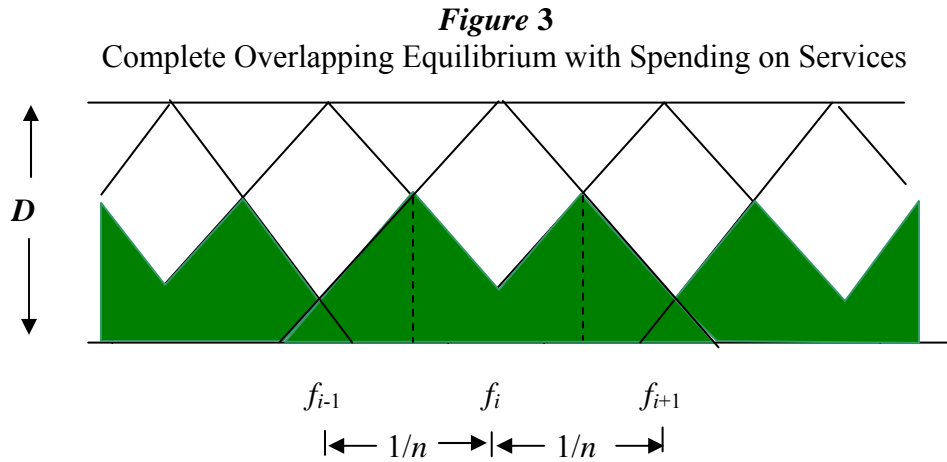


Finally we have the case that in equilibrium the number of FBOs n on the circle is such that $D/t > 1/n$ or $n > t/D$. In this case the set of potential adherents for each faith-based organization f_i completely overlaps with adjacent FBOs f_{i+1} . All households located between f_i and f_{i+1} would be willing to donate and attend either of FBOs f_i or f_{i+1} . In this case FBO f_i must offer additional services and compete for all the members of its congregation. For members who would have been willing to donate and attend f_{i+1} it supplies additional services defined by the set $S_{i,i+1} = \{s_{ik} : s_{ik} = V_{ki+1}(x_k, f_{i+1}), x_k \in X_{i,i+1}\}$, and for members who would have been willing to donate and attend f_{i-1} it offers to these households additional services defined by $S_{i,i-1} = \{s_{ik} : s_{ik} = V_{ki-1}(x_k, f_{i-1}), x_k \in X_{i,i-1}\}$.

The aggregate value of the additional services that faith-based organization f_i must offer to members defined by $X_{i,i+1}$ and $X_{i,i-1}$ is equal to $(D/n - t/4n^2) P_0$. The total value of the donations that faith-based organization f_i receives from all the P_0/n members is equal to $(D/n - t/4n^2) P_0$. Thus the net revenue of each established faith-based organization i is $R_i(n) = tP_0/2n^2$. In equilibrium each established faith-based organization is economically viable or $tP_0/2n^2 - K \geq 0$.

As usual, the equilibrium in this case is defined by the zero profit condition for a new FBO f_e . Such an organization would again locate at a point on the circle at a distance $1/2n$ between FBOs f_i and f_{i+1} and again the potential members of f_e would also completely overlap with those of f_i and f_{i+1} . The new entrant FBO f_e , similar to the established FBOs, must offer services to each and every member of its congregation. For members who are currently attending f_{i+1} the new FBO f_e must offer additional non-religious services defined by the set $S_{ei+1} = \{s_{ek} : s_{ek} = V_{ki+1}(x_k, f_{i+1}), x_k \in X_{ei+1}\}$, and for members who currently attend f_i it offers to these household additional services defined by $S_{ei} = \{s_{ek} : s_{ek} = V_{ki}(x_k, f_i), x_k \in X_{ei}\}$. The aggregate value of the services that f_e must offer its members X_{ei} and X_{ei+1} is equal to $[D/2n - 3t/16n^2]P_0$. The potential donations that the new FBO would receive from members is equal to $[D/2n - t/16n^2]P_0$. Thus the potential net revenue of the entrant $R_e(n) = tP_0/8n^2$. In equilibrium, entry is not feasible, or $tP_0/8n^2 < K$.

The no entry condition, together with the equilibrium conditions that an established FBO is economically viable and that $n > t/D$, implies that the equilibrium number of FBOs is $n = \sqrt{tP_0/8K}$, and that the willingness of households to contribute D is such that $D \geq 2\sqrt{2tK/P_0}$. The community is covered and each faith based organization offers additional services to all of its members the total value of which again is $(D/n - t/4n^2) P_0$. This equilibrium is illustrated in Figure 3 below. Here, the value of services offered by FBO f_i is indicated by the shaded area between the two vertical dashed lines.



It is clear that the equilibrium number of FBOs n depends critically on the key structural parameters of the model. Specifically, n depends on the intensity of religious preferences as measured by household willingness to contribute D ; the disutility cost t of not being served the preferred religious service; the density of population P_0 , and the sunk overhead cost of running a denomination K . When n is relatively low, because for example the sunk cost K is relatively high, then the community may not be covered and the amount of spending on civic services will be negligible. A fall in K would lead to more FBOs sustainable in equilibrium, or an increase in n , and as a result more competition for adherents. This leads to increased spending on civic services. Alternatively, a decline in the disutility cost variable t , which is also a measure of intensity of religious preference, implies that adherents are willing to “travel” and contribute to FBOs further away from their preferred faith. For a given n the competition for adherents increases. Hence, as t falls fewer FBOs survive in equilibrium.

It is equally clear that FBO spending on civic activities also varies with the key model parameters.

First, when the community is not covered and the established $n \leq \frac{1}{2}\sqrt{tP_0/2K}$ FBOs are not in competition

with each other for adherents then no FBO will engage in civic or social service spending. That is, when

$\sqrt{2tK/P_0} \geq D \geq \sqrt{tK/P_0}$ the $SS_i = 0$ for $i=1, \dots, n$. However, when the community is covered and there is

partial overlapping in the sets of potential adherents then FBOs do spend on additional services to attract

members. The total value of social services provided is $SS_i = \left[\frac{D^2}{t} - \frac{D}{n} + \frac{t}{4n^2} \right] P_0$ for $i=1, \dots, n$. Since

for this case equilibrium $n = \sqrt{tP_0/8K}$ and D is such that $2\sqrt{2tK/P_0} \geq D \geq \sqrt{2tK/P_0}$ it follows that social

service spending by FBO $f_i = SS_i = \frac{D^2}{t} - D\sqrt{8K/tP_0} + 2K/P_0$ in this case. Finally when there is

complete overlapping in the sets of potential adherents then FBOs have an incentive to spend on

additional services for each potential member. The total value of social services is $SS_i = \left[\frac{D}{n} - \frac{t}{4n^2} \right] P_0$.

Since $n = \sqrt{tP_0/8K}$ and $D > 2\sqrt{2tK/P_0}$ it follows that $SS_i = D\sqrt{8K/tP_0} - 2K/P_0$. These results are

summarized below in Table 1.

Table 1

<i>Competition for Adherents</i>	<i>Spending on Social Services</i>	<i>Willingness to Contribute</i>
<i>No Overlap of Members</i>	$SS_i = 0$	$\sqrt{2tK/P_0} \geq D \geq \sqrt{tK/P_0}$
<i>Partial Overlap of Members</i>	$SS_i = \frac{D^2}{t} - D\sqrt{8K/tP_0} + 2K/P_0$	$2\sqrt{2tK/P_0} \geq D \geq \sqrt{2tK/P_0}$
<i>Complete Overlap</i>	$SS_i = D\sqrt{8K/tP_0} - 2K/P_0$	$D > 2\sqrt{2tK/P_0}$

When there is either partial or complete overlapping so that the community is covered and there is spending on additional services each FBO has a membership defined by P_0/n , which in equilibrium is

equal to $\sqrt{\frac{8P_0K}{t}}$. With this in mind, we may then define for these cases, a new variable Y^* equal

to the level of spending on civic services per FBO member. Hence, $Y^*(D, K, t, P_0) = SS_i(D, K, t, P_0)$

* $\sqrt{\frac{t}{8P_0K}}$. For the case where there is a partial overlap of members $Y^*(D, K, t, P_0) =$

$\frac{D^2}{\sqrt{8tKP_0}} - \frac{D}{P_0} + \frac{1}{P_0}\sqrt{\frac{Kt}{2P_0}}$. For the case where there is complete overlap of members we

have instead $Y^*(D, K, t, P_0) = \frac{1}{P_0} \left(\frac{D}{\sqrt{P_0}} - \sqrt{\frac{Kt}{2P_0}} \right)$. In either case, it is easy to see that:

$$\frac{\partial Y^*}{\partial D} > 0; \quad \frac{\partial Y^*}{\partial K} < 0 \quad \frac{\partial Y^*}{\partial t} < 0.$$

These three comparative static effects each have a clear underlying intuition. As community members increase the total donation D that they are willing to make, per member spending on civic activities also increases. In contrast, a rise in sunk costs K reduces the equilibrium number of FBO's, and thereby reduces the competitive pressure for each FBO to pursue civic spending as a means of attracting members. Finally, while an increase in the disutility cost t does lead to an increase in the number of FBOs, it nevertheless reduces civic spending per member. The reason is that the higher t makes it more difficult for each FBO to reach "distant" potential members. As a result, a rise in t implies that each FBO is more insulated from competition with nearby rivals. Since this competition is the source of the civic spending impulse, a rise in t reduces such spending even as it increases the equilibrium number of FBOs.

The effect of population density is slightly more complex. In the case of complete overlapping, it is readily shown that $\frac{\partial Y^*}{\partial P_0} < 0$. It is also easy to show that increases in P_0 that switch the equilibrium from one of partial to complete overlapping of FBOs, again imply $\frac{\partial Y^*}{\partial P_0} < 0$. The slight ambiguity arises for increases in P_0 that maintain the equilibrium wholly within the partially overlapping case. In this region, $\frac{\partial Y^*}{\partial P_0}$ has an ambiguous sign. This is because competition in this case leads to service spending to attract only marginal consumers whereas Y^* is defined as service spending divided by all FBO members.

In sum, we view religious organizations as participants in a marketplace in which each FBO competes for members against rivals offering a somewhat differentiated product. This competition

can take one of two forms. First, FBO's can adjust or version their basic religious message or practice to the individual needs of consumers but only at some cost. Second, FBO's can compete by funding civic activities such as hospital work, food assistance, or educational programs that also serve to attract members by deepening and enriching their spiritual experience. In our view, it is this latter competition that generates the extensive civic engagement that is somewhat distinctive to American FBOs. The model that we have built gives clear predictions on the impact of key variables on this social spending competition. We now consider a simple test of those predictions in the next section.

3. Empirical Analysis

The theoretical model suggests a number of testable hypotheses related to religious market competition and its impact on charitable church spending. However, the model is highly stylized. Adherents all are assumed to have the same maximum donation D . FBO costs are assumed identical, and the distribution of potential FBO members is assumed to be uniform. These are strong restrictions that are unlikely to be replicated in the real world. However, the basic thrust of the analysis is clear. It is that the typically high service spending per member that distinguishes American FBOs reflects competition for membership. It follows, that such spending should increase as that competition intensifies.

We use data from three sources to test for a relationship between religious market competition and charitable church spending. The sources are the American Religion Data Archive (ARDA), and The Presbyterian Church USA (PCUSA), and the US Census (1990 and 2000). The ARDA's 2000 Congregation and Membership Report identifies 149 religious denominations reporting 268,254 congregations with 141,371,963 adherents, or roughly 50.2% of the US population. The PCUSA data contain detailed information on the membership and finances of all 11,000 of the PCUSA's congregations (with about 2.5 million members) from 1994 to 2000. Hungerman (2004) has used the PCUSA data to see if charitable church spending is displaced or "crowded out" by government spending on social services. We match Hungerman's (2004) PCUSA data with county-level data from the ARDA and the US Census to test the hypothesis that charitable church spending increases with religious market competition.

We estimate a very straightforward generalization of Hungerman’s (2004) two-stage least squares, fixed-effects specification. Let Y_{ikt} represent per-member spending on social services by church i in county k in year t . Hungerman (2004) employs the following fixed-effects specification:

$$Y_{ikt} = \alpha_{it} + \text{gov}_{kt}\delta + X_{ikt}\beta + \varepsilon_{ikt} \quad (2)$$

where α_{it} is a church-and-year-specific intercept (reflecting church and year fixed-effects); gov_{kt} is per-capita welfare spending in county k and year t ; X_{ikt} is a vector of observable control variables; and ε_{ikt} is a random error term.⁴ Hungerman’s (2004) preferred estimate of δ implies that a \$1.00 reduction in per-capita government welfare spending will be offset, on average, by \$0.40 of charitable spending per member of PCUSA congregations. Assuming the same value of δ for all religious denominations, this implies crowding out of about \$0.20 per dollar of government expenditure since total religious adherents account for roughly half the U.S. population.

Our generalization of specification (2) is based on two simple measure of inter- and intra-denominational competition. Our measure of inter-denominational competition is a Herfindahl index based on the ARDA data from 1990 and 2000. Our Herfindahl index is the sum of the squared percentage membership shares of each denomination in a county. An increase in the index shows an increase in concentration and, presumably, a decrease in the intensity of FBO competition. For example, an index of 1.0 would imply a religious monopoly in which all religious adherents in the county belonged to a single denomination. Our measure of intra-denominational competition is a “Presbyterian-only” Herfindahl index based on the PCUSA membership data from 1994 and 2000.

Our general expectation is that increases in either Herfindahl index should be associated with reductions in charitable church spending. This effects will be non-linear, even in the symmetrical equilibrium outcome of our theoretical model. Nonlinearities are even more probably in the real world. For example, if churches need to be a certain size before their service spending becomes “visible,” then the effect of religious market competition may even be non-monotonic. To allow for a non-linear

⁴ Gruber and Hungerman (2005) employ a similar strategy for the Depression years, using state data and a broader sample of churches.

relationship between religious market concentration and charitable church spending, we add polynomials in the Herfindahl indices to specification (2). Our results are shown in Table 1.

Table 1:
Regression Results (Two-stage least squares with church and year fixed-effects)
Dependent Variable: Per-member charitable church spending

	Hungerman (2005)	Specification without Herfindahl Indices	Specification with Herfindahl Indices
Time span:	7 years: 1994 – 2000	2 years: 1994 and 2000	2 years: 1994 and 2000
Observations:	66,899 church-year observations	18,946 church-year observations	18,946 church-year observations
Regressor	Coefficient (std. error) [p-value]		
<u>County-level</u>			
Imputed welfare spending	-0.401 (.140) [$<.01$]	-0.322 (0.118) [$<.01$]	-.326 (.118) [$<.01$]
Herf			-213.3 (187.9) [.26]
Herf ²			826.5 (552.0) [.13]
Herf ³			-874.2 (473.1) [.07]
P-Herf			-177.0 (95.1) [.06]
P-Herf ²			116.2 (74.8) [.12]
Unemployment rate	2.56 (1.31)	6.88 (2.94)	6.99 (2.93)
% black	-1.52 (2.56)	.308 (1.26)	.335 (1.26)
% Hispanic	-1.07 (3.01)	-1.14 (1.71)	-1.58 (1.70)
% single female-headed hhs	-5.60 (7.09)	-4.04 (3.34)	-3.61 (3.37)
Per-cap income (\$1,000)	0.69 (0.85)	.409 (.580)	.362 (.587)
% non-citizens	-6.7 (5.55)	-3.42 (2.65)	-2.90 (2.62)
<u>Church-level</u>			
% under 18	5.06 (3.50)	2.66 (2.03)	3.14 (2.04)
% 50-64	-9.15 (4.57)	-8.34 (2.84)	-8.50 (2.87)
% 65-84	4.29 (4.22)	1.52 (2.41)	1.42 (2.48)
% over 85	63.63 (30.29)	60.6 (25.9)	62.2 (26.0)
Mortality	0.70 (0.28)	.649 (.687)	.645 (.685)
Church Size 50-100	-11.3 (7.65)	-9.49 (9.3)	-10.1 (9.4)
Church Size 101-150	-18.98 (10.26)	-15.1 (11.3)	-15.9 (11.4)
Church Size 151-200	-20.88 (10.61)	-14.5 (12.4)	-15.4 (12.5)
Church Size 201-300	-25.26 (11.33)	-21.9 (13.6)	-23.0 (13.6)
Church Size 301-500	-34.34 (12.66)	-35.4 (16.7)	-35.6 (16.9)
Church Size 500+	-37.89 (13.67)	-39.6 (17.9)	-38.6 (18.1)

The first column of Table 1 re-prints the results of Hungerman's preferred specification (2005, Table V, pg. 2260). We have replicated these results with the original data, kindly shared by Professor Hungerman. The estimates in the next column of Table 1 are based on Hungerman's preferred specification, after restricting the data to the years 1994 and 2000. We limit ourselves to 2 years of data since we can only match Hungerman's PCUSA data with 2 years of data from the ARDA (1990 and 2000). Hungerman's results are not sensitive to the data restriction. The last column of Table 1 reports estimates for a representative specification, after adding polynomials in our two Herfindahl indices. The variable "Herf" is our measure of inter-denominational market concentration, while "P-Herf" is our measure of intra-denomination market concentration within the Presbyterian denomination.

Before interpreting the Herfindahl index coefficients, note that Hungerman's crowd-out estimate is robust to the addition of these new variables. The significant coefficient of $-.326$ on imputed welfare spending implies that charitable church spending increases by \$0.326 per member when government welfare spending in a county falls by \$1 per capita. The aggregate affect depends on the share of a given county's population that belongs to a church. The national average is about 50%, but adherence rates range from 10% to nearly 100% across the 2,127 counties in our data. Crowd-out would be about \$0.16 on the dollar overall ($\$0.326 \times 50\%$), but would range from \$0.03 on the dollar to \$0.33 on the dollar, depending on the share of religious adherents in a county.

The specification reported in the last column of Table 1 includes a cubic in our measure of inter-denominational concentration (Herf), and a quadratic in the intra-denominational measure (P-Herf). We did try a number of alternative specifications including higher-order terms, and interactions between the two measures. However, the interaction terms were never statistically significant. The cubic specification for Herf reflects our consistent finding that while Herf measures were always jointly significant, they were never individually significant at the fourth or higher order. Non-linear terms P-Herf were never jointly or individually significant at conventional levels. However, they come close and are significant at the 16 percent level so, we have preserved their role in this estimate. In short, findings displayed in the last column of Table 1 are quite robust and representative of our general results.

The three inter-denominational terms (Herf, Herf², and Herf³) are jointly significant (p-value of the F-test is .05), and the estimates do imply a non-linear relationship (Herf² and Herf³ are jointly significant with a p-value of .02). The two intra-denominational terms (P-Herf and P-Herf²) imply a relationship that is clearly negative and almost linear, although these two terms are not quite jointly significant.

Figure 4 depicts the implied relationship between our measure of inter-denominational competition and charitable church spending. The relationship is essentially flat until market concentration exceeds a threshold around Herf = 0.45. At that point, the relationship turns decidedly and increasingly negative. This implies that while a limited degree of monopoly power has little effect on civic spending, anything approaching the virtual monopoly status found in many countries with an official state religion will depress such spending in a statistically significant way. Thus, as noted at the outset, interdenominational competition may be an important reason behind the extensive civic engagement that characterizes American FBOs.

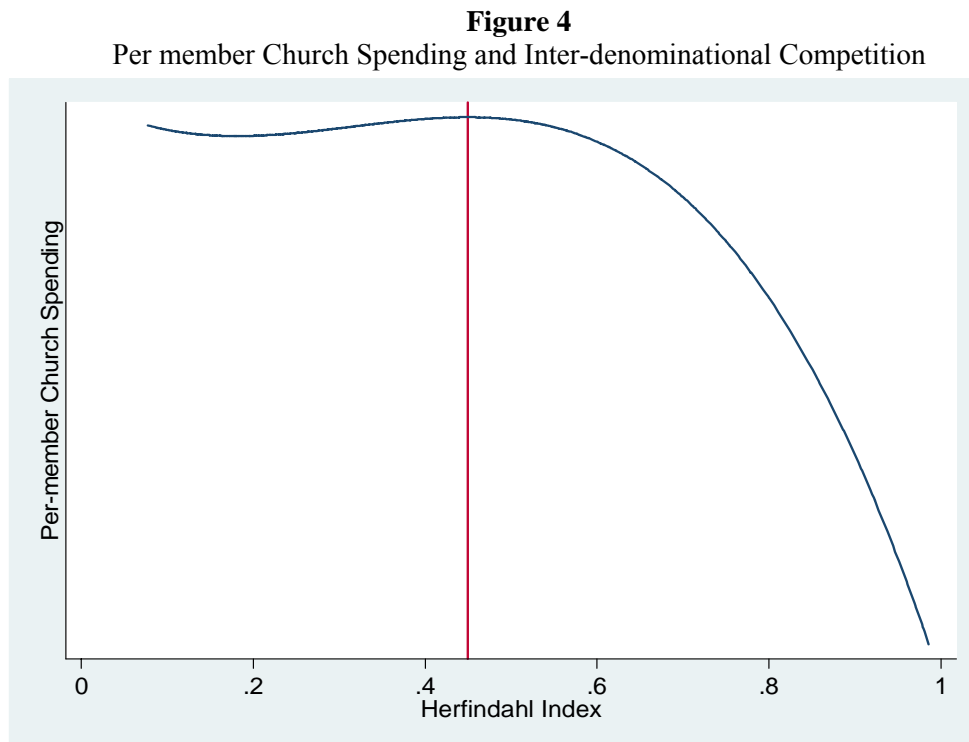
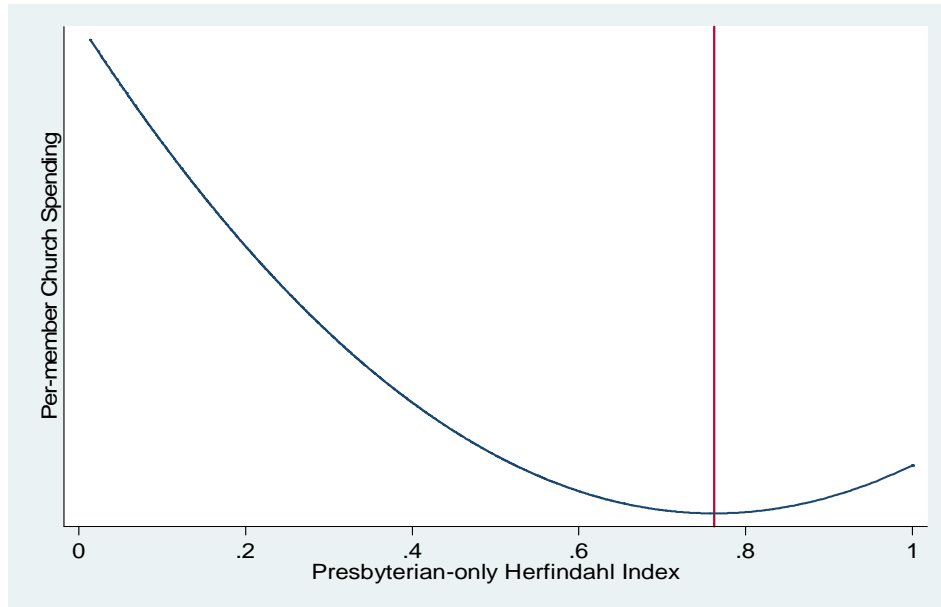


Figure 5 depicts the relationship implied by the point estimates for P-Herf and P-Herf². Again, the estimates underlying this relationship are not quite statistically significant. Nevertheless, the direction of

the relationship is clearly—almost linearly—negative. As the intra-denominational market structure becomes less competitive, civic spending again declines.

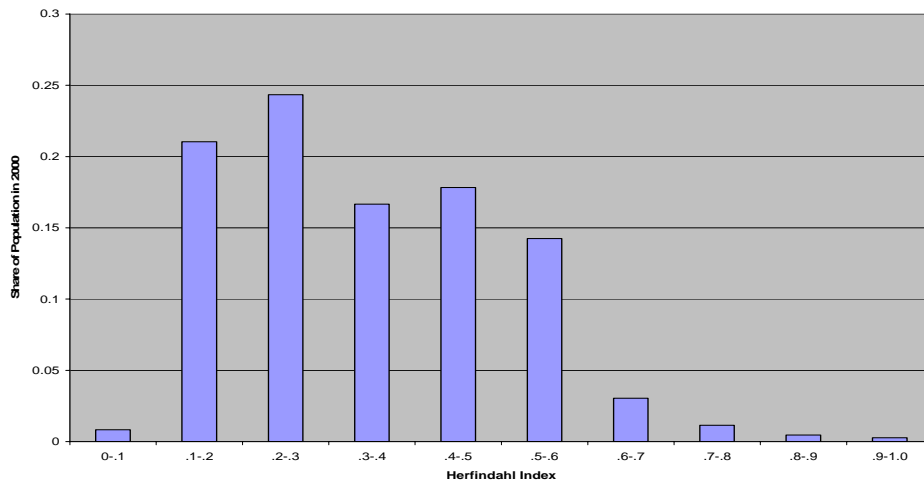
Figure 5
Per-member Church Spending and Intra-denomination Competition



In order to interpret the effects described in Table 1 and Figures 4 and 5, it is helpful to understand the distribution of the population with respect to the Herfindahl measures we have generated. Figure 6 (next page) does this with respect to the variable Herf. As can be seen from that chart, about 26% of the US population—more than one-fourth—lives in counties with denominational Herf values above the critical 0.45 level. Further, for these regions, the implied relationship between Herf and FBO civic spending is economically significant for counties in that range. For example, consider an increase in the inter-denominational Herfindahl index from 0.5 to 0.6.⁵ The median value of per-member church spending for Presbyterian congregations in these counties is \$33.42. Our estimates imply that such a 0.1 increase in Herf would reduce per-member church spending by about \$8 for churches in this range, i.e., by about 24 percent.

⁵ Approximately 14% of the U.S. Population lives in a county with an inter-denominational Herfindahl index between these two values. See Figure 6.

Figure 6
Distribution of US Population by Religious Market Herfindahl Index



We can also conduct a similar thought experiment with respect to the variable P-Herf. Here, we do not provide a population distribution table but simply note first that less than 1 percent of the Presbyterian members in the PCUSA data live in counties in which increases in P-Herf do not depress civic spending. The average value of P-Herf across all Presbyterian congregations is 0.29; the median value is 0.19, and the membership-weighted average is 0.24. Hence, it is useful to consider the impact of an increase in P-Herf in counties with a P-Herf value between 0.2 and 0.3. In such counties, median per-member spending is about \$29 for congregations. Our point estimates imply that increasing P-Herf by 0.10 would reduce per-member civic spending by \$12 in such congregations. This is a reduction of nearly a 41 percent.

To summarize, the estimates presented in Table 1 and illustrated in Figures 4 and 5 are consistent with our basic hypothesis that charitable church spending should decline as competition in religious markets declines. We find statistically significant evidence to this effect using measures of inter- and intra-denominational market concentration. Our estimates imply economically significant inter-denominational effects in highly concentrated markets ($Herf > 0.5$). The implied intra-denominational effects would be economically significant for the vast majority of Presbyterian congregations in our data.

4. Concluding Remarks

We have derived a spatial model of religious market competition in which FBOs compete in part, by funding civic activities such as hospital care or education that strengthen and enrich the spiritual

experience of their members. Broadly speaking, an important prediction of that model is that increases in the competitive structure of the religious marketplace should lead to increases in the extent of civic spending per member. We have tested this hypothesis using county level census data and data from the Presbyterian Church. We find that the religious market structure does indeed play an important role in determining church spending on public goods. Most notably, counties in which the religious market is heavily concentrated among one or two denominations large churches appear to spend significantly less on civic activities. This effect is nonlinear and does not become decidedly negative until our interdenominational Herfindahl Index measures 0.45 or higher. Yet it is a non-trivial impact both in terms of its likely magnitude and the proportion of the population that it affects.

We have also explored the role of intra-denominational competition in affecting Presbyterian church-member civic spending by including an additional regressor, P-Herf—a measure of the extent of concentration among Presbyterians alone. Here again, we find that more competition generally leads to greater social spending. This negative impact obtains through virtually all of the relevant range of Presbyterian experience. However, it is not quite statistically significant.

We read this evidence as generally supportive of our theoretical model. Civic engagement by church members increases with competition for those members. While the effect is non-linear, it makes clear that beyond a threshold level, religious market power suppresses FBO spending on social services. In turn, this suggests an explanation as to why American churches spend notably more on civic activities than do their counterparts in nations with a single, state-sanctioned religion.

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