

An Empirical Test of Iannaccone's Sophisticated Model of Regulated Religious Markets

Laurence Iannaccone argues that religious monopolies and government regulation impede religious markets in a 1991 article in this journal (Vol. 3, No. 2). He finds that across Protestant nations, rates of church attendance and religious belief are substantially higher in competitive markets than in markets monopolized by established churches. In other words, as the Protestant concentration goes up, religiosity goes down. However, Iannaccone also finds that when the Catholic concentration goes up, there is no effect or change in religiosity. Thus Iannaccone's research leaves us with a major question: Why does the *Catholic* concentration not affect church attendance and religious beliefs? This comment replicates and expands Iannaccone's original findings by testing his conjectures about the aforementioned question in an attempt to provide an answer; it also offers a more comprehensive theory about religion.

Iannaccone (1991) offers no empirical answer to the Catholicism question, but conjectures that "Catholic national churches have managed [their] monopoly better than their Protestant counterparts for two reasons" (p. 170). The first reason is Catholicism's *internal* diversity. This internal diversity is supposed to cause competition "within the Catholic church and substitute for competition between Catholicism and other denominations" (p. 170).

I disagree and argue that there is less diversity in the Catholic church in comparison to Protestant churches. The Protestant churches find Rome rigid and authoritarian; Rome finds Protestant churches too loosely structured and vacillating. The loose structure and vacillation among Protestant churches is responsible for the greater diversity. Catholicism is characterized by its rigorously centralized structure, dependence on tradition and precedent, and uniformity of doctrine and ritual (McKenzie 1969). The similarity of Catholicism all over the world is remarkable. The local autonomy granted Protestant churches stands in stark contrast. Iannaccone claims that the different orders of priests in the Catholic church is evidence of Catholicism's internal diversity. However, this diversity offers amazingly little diversity and choice in comparison to the variety offered among and within Protestant denominations.

The second explanation offered by Iannaccone is that the ties between the Protestant church and the state, in comparison to the Catholic church and the state, are closer even if the Protestant and Catholic churches are both established churches. Again I disagree because the differences among the ties between established churches and the state are minor in comparison to whether or not the state has an established church. Due to the lack of refined hypothesis testing, which Iannaccone acknowl-

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edges, and the high level of aggregation, it is unlikely that evidence of Iannaccone's second explanation would be detected because the distinction is small among Catholic and Protestant established churches compared to the differences among states with and without established churches. At a minimum, the larger effect should be found (i.e., differences among states with and without established churches) alone or together with the differences among Catholic and Protestant established churches. In any case, detecting the latter difference without the first is unlikely. In addition, Iannaccone's assertion that Catholic ties to the state are closer than Protestant ties seems doubtful given the loose structure of Protestant churches in comparison to the rigidity and authoritarian structure of Catholicism. The loose structure results in local autonomy for Protestant churches and allows ample room for close state-church ties, whereas the hierarchical structure of Catholicism makes such relations much more difficult.

The thrust of Iannaccone's argument is that "the Catholic church's failure to fit the simple monopoly model may thus represent a 'success' for the more sophisticated model of regulated religion" (p. 171). The sophisticated model is defined as a model that differentiates between the effects of market share and state support. Iannaccone used the concept of state support to try to provide an argument to account for his results. Although it is clear that I disagree with Iannaccone's reasoning, I tested his hypothesis empirically by replicating and extending his analysis. The sophisticated model can be empirically tested by including state support in the original model. Thus, according to Iannaccone's hypothesis, as concentration and state support decrease, we expect religiosity to increase. State support is measured by the amount of religious liberty in a country.

Religious liberty is a measure of the *de facto* situation in a country with regard to religious freedom. The data are from Barrett (1982). Religious liberty is defined along comprehensive lines and includes, *inter alia*, freedom to organize religious bodies, freedom from state interference in religious matters, freedom for minority as well as majority churches, and freedom for all churches to own buildings and property. These items are arranged as a scale and given a numerical value ranging from 1 to 10 to reflect the level of liberty exercised by churches. The values for Western, industrialized countries used in the analysis are all less than 5.¹ Thus according to the sophisticated model, as state support decreases, religious liberty increases and we expect religiosity to increase.

The empirical results for the original model and the sophisticated model are both presented in Table 1 for easy comparison.² The coefficients and significance level for the variables used in both models are relatively similar. Primary interest is in the concentration measure and religious liberty variables.

Concentration loses significance only once, in the regression on afterlife.³ However, it is barely significant in the original model and is not significant when the original model is estimated without the United States.⁴ The coefficients for the religious liberty variable do not approach significance nor do they have the expected sign in any of the regressions. Thus the sophisticated model proposed by Iannaccone can be flatly rejected.

TABLE 1: Regression Results^a

	<i>Attend</i>	<i>Pray</i>	<i>God</i>	<i>Afterlife</i>
Original model ^b				
PS _{cath}	33.3 (1.56)	53.7 (1.27)	15.3 (0.35)	44.1 (1.83)
PS _{prot}	35.2 (3.03)	86.6 (4.06)	63.0 (3.17)	67.3 (5.18)
H(PS _{cath})	-0.017 (-0.07)	0.124 (0.28)	0.253 (0.54)	0.033 (0.12)
H(PS _{prot})	-0.363 (-2.51)	-0.411 (-1.61)	-0.406 (-1.66)	-0.327 (-2.02)
R^2	0.93	0.98	0.93	0.97
Adjusted R^2	0.90	0.97	0.90	0.96
Number of nations	17	13	14	17
Sophisticated model				
PS _{cath}	35.5 (1.53)	53.1 (1.13)	20.7 (0.41)	51.2 (2.35)
PS _{prot}	39.4 (1.98)	93.2 (2.77)	64.2 (1.99)	57.9 (3.14)
H(PS _{cath})	-0.017 (-0.07)	0.154 (0.31)	0.212 (0.41)	-0.019 (-0.08)
H(PS _{prot})	-0.390 (-2.09)	-0.465 (-1.43)	-0.406 (-1.33)	-0.189 (-1.07)
Religious liberty	-0.82 (-0.26)	-0.55 (-0.12)	-0.41 (-0.08)	-0.569 (-0.18)
R^2	0.92	0.98	0.93	0.98
Adjusted R^2	0.89	0.97	0.89	0.97
Number of nations	17	13	14	16 ^c

a. The *t* statistics are in parentheses. The dependent variables are derived from the *World Values Survey, 1981-83* (Inglehart et al. 1989). The dependent variables are attend—the percentage attending church once a week or more; pray—percentage who take moments of prayer, meditation, or contemplation; church—percentage who believe that their church is giving adequate answers to man's spiritual needs; God, afterlife—percentage who believe there is a personal god and an afterlife, respectively. The independent variables are derived from the *World Christian Encyclopedia* (Barrett 1982). The independent variables are PS_{cath}—share of Catholics in the population; PS_{prot}—share of Protestants and other non-Catholics in the population; H(PS_{cath})—the product of H, the Herfindahl index of religious concentration, and PS_{cath}; H(PS_{prot})—the product of H and PS_{prot}; and religious liberty—see Note 1.

b. The results for the original model are from Iannaccone (1991) and have been replicated by the author. However, see Note 2 and c.

c. The reason for the different number of nations between the two models for the dependent variable, afterlife, is because although Iannaccone's results were replicable, based on a scattergram and other regression diagnostics, the United States appears to be an outlier. The diagnosis for the United States give similar results to those for the Irish Republic, which Iannaccone omitted from his analysis.

A more compelling hypothesis that is completely consistent with the arguments presented here and accounts for the significant and nonsignificant Protestant and Catholic coefficients, respectively, is that as concentration increases, religiosity decreases provided that the degree of choice offered by the religion is seen as a constraint. Protestantism offers a variety of choices (among and within Protestant denominations, which includes, *inter alia*, Presbyterian, Baptist, and Methodist) as long as it is not a monopoly. However, Catholicism offers little choice regardless of whether or not it is a monopoly. Therefore, we do not expect the Catholic concentration to affect religiosity. An economic theory of religious markets is still viable with the hypothesis; however, one needs to realize that Catholicism essentially offers no choice, whereas Protestantism offers a variety of choices if the market is not concentrated and does not offer a choice when the market is concentrated. This hypothesis is more inclusive than Iannaccone's since it provides a theory of religion by uniting Iannaccone's findings into one theory, rather than giving us a theory of Protestantism and a theory of Catholicism.

A test of this hypothesis would include Catholics, Jews, and Protestants in the same regression equation. Protestants would be expected to have the largest coefficients and the strongest significance levels because they offer the greatest choice within their religion. Sixteen denominations are typically listed under Protestantism (Dirks 1977, 1634). Catholics would be expected to have the smallest coefficients and insignificant *t* ratios because they are essentially offered no choice within their religion. That is, Roman Catholics have no further denominational breakdowns among which to choose. Jews would have mid-level values for the coefficients and *t* ratios because they are given basically a choice among three divisions: orthodox, conservative, and reform.

Unfortunately, due to the small number of Jews in the countries under consideration and the high level of aggregation, this hypothesis cannot be tested with the present data set because one would essentially be regressing on a constant. The next step in this debate and the focus of my current research is an extensive analysis of the economic theory of religious institutions at a lower level of aggregation which allows more refined hypothesis testing.

NOTES

1. The typology is that the state (1) exists solely for promotion of Christianity, (2) makes sizable to massive subsidies to promote, but not control, churches (clergy salaries, new buildings), (3) aids churches, without implying control, with special but limited privilege (tax exemption, legal aid, and radio/TV time), (4) makes subsidies not to churches but to church schools and/or church medical/social services, and (5) noninterference: Churches receive no privileges or aid, nor interference or obstruction.

2. Despite much effort, Iannaccone's results for the dependent variable, church, were unable to be replicated and thus were not included in the table. An obvious problem is that in Iannaccone's original article, his Table 1 lists 13 data points for church, including the Irish Republic. In his Table 2, regression results are presented, and 13 nations are listed for the

dependent variable, church. However, he noted in his Note 15 that the Irish Republic was an outlier and was not included in the analysis. Thus reporting on 13 nations when only 12 data points were used is impossible.

3. The greatest difference occurs in the regression results for the dependent variable, afterlife. This is due to the exclusion of the data for the United States in the sophisticated model, which is explained in Note c in Table 1. There is a small change in the coefficients that are common to both regressions when the number of nations is the same (either 16 or 17).

4. See Note c in Table 1.

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REFERENCES

- Barrett, D. 1982. *World Christian encyclopedia*. Nairobi: Oxford University Press.
- Dirks, J. 1977. Religion today. *The volume library*. Nashville, TN: Southwestern.
- Iannaccone, L. 1991. The consequences of religious market structure. *Rationality and Society* 3:156-77.
- Inglehart, R. et al. 1989. *World Values Survey, 1981-1983*. Computer file. 2d ed. Ann Arbor, MI: Institute for Social Research, producer, and Inter-university Consortium for Political and Social Research, distributor.
- McKenzie, J. 1969. *The Roman Catholic church*. New York: Holt, Rinehart & Winston.

Response to Box-Steffensmeier

Janet Box-Steffensmeier has raised several objections to my comments regarding Catholic monopolies. She argues (a) that Catholicism's internal diversity is *less*, not greater, than that of established Protestant churches; (b) that church-state ties are *not* weaker in Catholic countries than in countries with established Protestant churches; (c) that regression results refute my explanation for the relative success of some Catholic monopolies; and (d) that these results are better explained by her alternative hypothesis that the "degree of choice" offered by Catholicism does not vary from place to place. I respectfully disagree with all four claims for the following reasons.

First, Catholicism's internal diversity is a matter of record. Consider, for example, the following scholars' statements regarding the range of products available to Catholic Church customers. Hanson (1987) observed that in order to be truly "Catholic," the Church always "has tolerated large variations in the content and style of

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