

Religious Practice: A Human Capital Approach*

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This study uses the economic concepts of household production and human capital to develop and test a new model of religious participation. The model explains observed patterns in denominational mobility, religious intermarriage, conversion ages, the relationships between church attendance and contributions, and the influence of upbringing and interfaith marriage on levels of religious participation.

THEORETICAL BACKGROUND

The past few decades have seen major progress in the social scientific study of religion. The body of data on religious behavior has grown immensely; the statistical techniques and computing power needed to analyze these data have grown even more. As a consequence, many of the basic facts of religious behavior have become known. Unfortunately, these empirical gains have not been matched by theoretical ones (Stark and Bainbridge 1987). If empirical research is to avoid diminishing returns, it must be based on conceptual models general enough to account for a range of related behaviors and precise enough to test meaningfully.

The economic concepts of household production and human capital may provide the basis for such a model, one that explains observed patterns in denominational mobility, religious intermarriage, conversion ages, the relationship between church attendance and contributions, and the influence of upbringing and interfaith marriage on levels of religious participation. This paper (1) reviews how economists have used the concepts of household production and human capital; (2) introduces a model of religious practice based upon these concepts; (3) outlines the predictions that follow from the model; and (4) shows how the predictions were tested against observed behavior. The paper draws heavily from my unpublished dissertation (Iannaccone 1984).¹

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1. The dissertation, in turn, built on Stigler's and Becker's (1977) discussion of "consumption capital" and "rational addiction." Recently, Andrew Greeley (1989:122-125) has also invoked these concepts to explain intergenerational stability of religious choice.

Household Production and Human Capital

The household production approach, sometimes called "the new home economics," was pioneered by Gary Becker in the early 1960s (Becker 1964, 1965; Becker and Michael 1973). Since then it has greatly expanded the boundaries of economics, enabling economists to analyze "nonmarket" behaviors traditionally deemed beyond their reach: fertility, education, marriage and divorce, health, discrimination, and even crime (Becker 1976; Hirschleifer 1985). Its central feature is that families are viewed as quasi-firms engaged in the production of "household commodities." These commodities may be as concrete as meals and laundry or as abstract as relaxation and love. Unlike the products of a commercial firm, most household commodities are consumed by family members rather than being sold. Yet, like the products of a firm, household commodities can be produced with only scarce resources; they require inputs of purchased goods, household labor, and human skill. For example, a traditional, home-cooked meal is produced when a family member combines purchased inputs (such as meat, milk, and flour), with machine services (of sink, stove, and refrigerator), and his or her own skilled labor to produce a valued output, which is promptly consumed by family members. As this example suggests, a fair amount of household production is just a scaled-down version of market production. However, the real strength of the household production approach lies in its applicability to abstract commodities such as recreational enjoyment, relaxation, health, and childrearing. So, for example, even though we cannot quantify the relaxation and enjoyment that come from recreational activities, we may usefully speak of households as "producing" this commodity by combining purchased inputs (such as ski equipment, automobile services, or VCRs, TVs, and stereos) with their own skilled labor and time.

Productive skills enter into analyses of both commercial and household production because people's skills critically affect the quality and quantity of what they produce (Becker 1964, 1981). Such skills are just as important in childrearing and home maintenance as in construction and banking. Economists often refer to productivity-enhancing skills as "human capital." They do so (1) because human skill and physical capital both are needed to turn raw labor and physical inputs into valued commodities, and (2) because people typically accumulate their skills through a process of investment (via education and practice) that parallels the investment made by firms in physical equipment. The importance of human capital is underscored by studies which have found that economic progress in developing countries is more often constrained by workforce inadequacies, such as low levels of health, education, and training, than by limited access to modern equipment and technology (Krueger 1968; Hogendorn 1987).

Human capital derives from a variety of sources: native ability, general education that contributes to productivity across the board, and so-called "specific" education or training that enhances the ability to perform specific tasks. Cooking skills provide a concrete example of each source: Native ability may endow one with a fine palate or with the ability to memorize complex recipes; general education helps one to plan nutritious meals, buy wisely, and benefit from cook books; specific training teaches one specific recipes, cooking techniques, and so forth. General education and specific skills likewise affect one's ability to produce abstract commodities such as recreation and childrearing. In the home, as in the workplace, most general training is acquired through schooling,

and most specific training is acquired “on the job” through experience, experimentation, and the imitation of others.

Religious Production and Religious Capital

Religious practice can also be viewed as a productive process. Purchased goods, household time, and human capital affect a family’s capacity to “produce” religious satisfaction just as they affect its capacity to produce meals, health, offspring, and recreational enjoyment. To be sure, religious products are complex and largely unobservable (though possibly no more so than recreational enjoyment). Nevertheless, the *inputs* to religious production are measurable and indeed are already routinely measured by researchers. These inputs include purchased goods (such as Sunday attire and transportation), sacrificial offerings, and money contributions which finance a church’s operation and facilitate its charitable works. They also include time and labor, such as time spent attending and traveling to and from church services, devotional time spent praying, meditating, and reading scriptures, and time and effort required for religious charity or other conduct motivated by religious concerns. Human capital, particularly human capital pertaining specifically to one’s religion, comprises another class of inputs. It is the input class most central to my analysis.

Although we are all familiar with the concept of a skilled clergy, we sometimes dismiss rank-and-file church members as passive consumers of religion. The household production approach reminds us that church members do not merely rely upon the skills of experts but also invoke their own skills and experience to produce religious satisfaction. The skills and experience specific to one’s religion include religious knowledge, familiarity with church ritual and doctrine, and friendships with fellow worshipers. It is easy to see that these skills and experiences, which I will call *religious human capital*, are an important determinant of one’s ability to produce and appreciate religious commodities. For example, the quality of fellowship experienced within a congregation depends strongly on what has been invested in these relationships, and across time this fellowship can become a major source of religious satisfaction as well as a major motive for continued participation (Hoge 1981; Olson 1988). Likewise, it is difficult if not impossible to appreciate religious services without first becoming familiar with the doctrines, rituals, and traditions that underpin them. It is also true that religious capital is an important *product* of religious activity. Many religious activities are explicitly “marketed” as a type of personal investment: Religious services are designed not only to inspire or entertain the participants, but also to instruct them; religious acts of charity and love are supposed not only to better the lot of others, but also to better the actor as well. In one way or another virtually every religion promises improved prospects in this life or the next.

These examples illustrate a fundamental interaction between religious capital and religious participation. Religious capital is both a prerequisite for and a consequence of most religious activity. Religious capital — familiarity with a religion’s doctrines, rituals, traditions, and members — enhances the satisfaction one receives from participation in that religion and so increases the likelihood and probable level of one’s religious participation. Conversely, religious participation is the single most important means of augmenting one’s stock of religious human capital. Religious activities yield a stock of specialized

skills that enhance the satisfaction received from subsequent religious activities. In this last respect, religion is like many other household activities that involve learning by doing.

APPLYING AND TESTING THE HUMAN CAPITAL MODEL

In religion, as in economics, the concepts of household production and human capital prove their value by generating testable predictions. Some of these predictions provide theoretical explanations for facts that are already well known but not well understood. Others suggest new lines of empirical research. Discussed below are predictions about denominational mobility, religious intermarriage, conversion, and religious participation. The purpose is to illustrate the value of an approach rather than to prove any particular hypothesis. Hence, the treatment of each subject is brief, limited to a statement of the model's predictions and a summary of the empirical evidence relating to them.

Denominational Mobility

Religious training, unlike general education and occupational training, is received directly from parents and from the religious institutions they support. Hence, children are more likely to remain within their parents' denominations than to remain within their parents' occupations. Most of children's religious human capital is built up in a context determined and favored by their parents. As children mature and decide for themselves which beliefs they will accept and which church they will attend, they naturally gravitate to those of their parents. Even those who do switch religions will tend to join religions similar to the ones in which they were reared. Hence, the likelihood of conversion between particular religious groups should be greater the more similar the groups, and overall rates of conversion to and from a particular groups should be lower the more nearly unique the group.

Empirical Evidence: These predictions have been confirmed by Kluegel's (1980) analysis of denominational mobility. Drawing on merged data from five years of NORC General Social Surveys, Kluegel cross-classified about 6,000 white adult respondents by their current denominations and "background" denominations (in which they were reared) and analyzed the resulting matrix with log linear methods. Members of all denominations showed a strong tendency to maintain their background affiliations, and this tendency was stronger in groups with fewer close substitutes. The two most distinctive major religious groups in America, Jews and Catholics, had retention rates of 87% and 85% respectively. The less distinctive Protestant denominations had lower retention rates, ranging from 78% for Lutherans to 55% for Disciples of Christ. Those reared with no religious affiliation, and hence little or no religious capital, remained unaffiliated only 38% of the time. Moreover, those who had changed religious affiliation manifested a clear affinity for denominations that were similar to their background denominations.² Similar

2. Mobility was limited by three lines of cleavage. Foremost was the Christian-Jewish cleavage: Individuals from Christian backgrounds were much more likely to switch to another Christian group than to become Jewish. Next in importance was the Catholic-Protestant cleavage. Finally, mobility among Protestant Christian denominations manifested significant patterns of affinity and aversion based on theology, history, and geographical concentration.

patterns appeared in Mueller's (1971) study of intergenerational religious mobility.³

Conversion Ages

The human capital model predicts that religious switching, like job changing, will tend to occur early in the life cycle as people search for the best match between their skills and the context in which they produce religious commodities. Across time, the gains from further switching will diminish as the potential improvement in matches diminishes and the remaining years in which to capitalize on that improvement decrease; in other words, the costs of switching will increase as one accumulates more capital specific to a particular context. Conversions among older people should thus be very rare.

Empirical Evidence: These predictions have been strongly confirmed by empirical studies. Three studies conducted earlier in the century found that people made their first personal religious commitments at a mean age of 16 or 17 (Pressey and Kuhlen 1957). Apparently, these patterns have not changed much across time. A 1928 study of 1207 people found that religious "awakenings" usually began at age 12, but clear-cut conversion experiences occurred at a mean age of 16 (Clark 1929). In 1954, the modal age of "converts" at Billy Graham crusades was 15 (Argyle and Beit-Hallahmi 1975). Not surprisingly, the typical religious commitment in all these studies was a personal affirmation of the religion in which the subject had been reared. Decisions to join a different church usually came later. For example, my own analysis of the 1964 and 1973 NORC surveys of Catholic Americans found a modal age of conversion to Catholicism (among Catholic respondents reared in non-Catholic households) of 20 and a median age of 25 (Figure 1). A similar pattern was observed in a study of 210 Catholic converts (Hoge 1981). The basic conclusion is clear: The decisions that lead to new religious commitments cluster in the early part of the life cycle. Eleventh-hour conversions of aging sinners preparing at last to meet their Maker are mostly mythical.

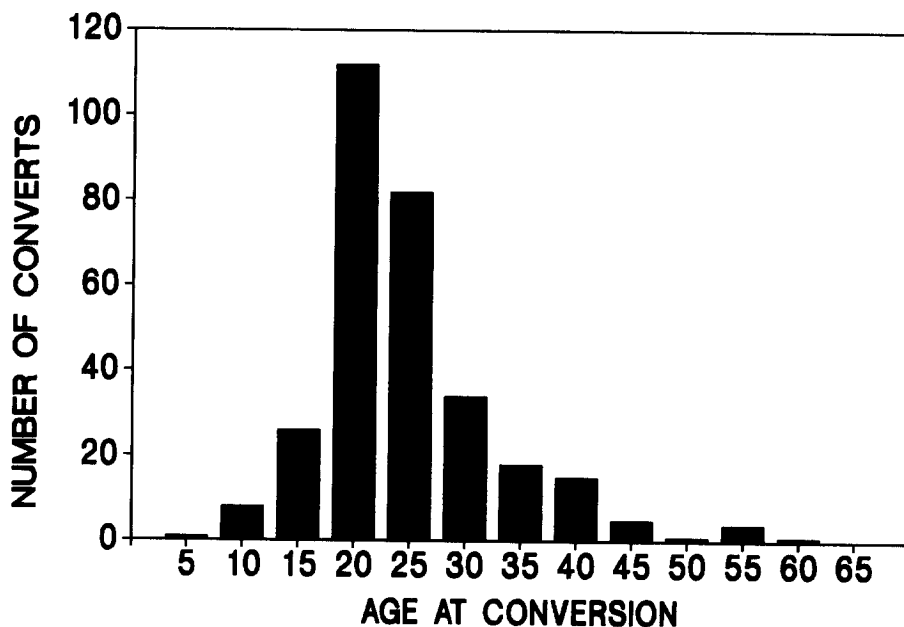
Religious Inter marriage

A household can produce religious commodities more efficiently when both husband and wife share the same religion. Single-faith households benefit from "economies of scale": The same car drives everyone to church; there is no question as to how time and money contributions will be allocated to different religions; it is not necessary to debate the religion in which one's children will be reared. (The magnitude of these costs has been underscored by Becker et al. 1977 and Schneider 1989, who found significantly higher rates of divorce for intermarried couples even when other traits were held constant.) Hence, the same forces

3. Mueller (1971) applied a factor-analytic technique to data from a national study designed by Glock and Stark (1966) and conducted by the National Opinion Research Center. Respondents were cross-classified according to their current religious affiliation and to that of their father when they were growing up. There was, of course, a strong tendency for children to be of the same religion as their parents, but changes in denominations, when they did occur, revealed four underlying dimensions of denominational similarity. In order of importance, these were: (1) a Protestant-Catholic cleavage; (2) a dimension of "accessibility," which reflected both socioeconomic similarities and geographic concentrations; (3) a high-low liturgical dimension; and (4) a dimension of theological orthodoxy.

FIGURE 1

AGE DISTRIBUTION OF CONVERSIONS: 1963 AND 1974 CATHOLIC SURVEYS



that lead people to remain with the religion of their parents will also lead them to choose mates from within their religion. Moreover, even those who do intermarry will have a strong incentive to adopt later the religions of their spouses (or vice versa). The efficiency gains from such marital realignments will tend to be greater when the less religious spouse converts to the religion of the more religious spouse.

Empirical Evidence: Empirical studies have found patterns in religious intermarriage very similar to those of intergenerational religious mobility. (This is to be expected, since most intergenerational mobility is due to one spouse's adopting the religious affiliation of the other.) In particular, the tendency to marry within one's denomination is always very strong: *Intramariage* rates are higher in denominations with fewer close substitutes, and the *intermarriage* that does occur tends to be between people from relatively similar religions. These patterns have been identified in both Canadian and U.S. data (Travis 1976; Johnson 1980).⁴

4. The Bureau of Canadian Statistics keeps records of the religious affiliations of brides and grooms married each year in Canada. The data are published in frequency tables, cross-classified by denomination of groom and bride, in the *Canada Year Book*. Using log linear methods, Travis (1976) has analyzed patterns of Canadian religious intermarriage for the years 1934 through 1969. Throughout the period there was a strong and significant tendency for people to marry within their religious groupings. Moreover, the denominations could be clustered into groups within which endogamy was roughly of the same order. From high to low, they were (1) Jews, (2) Mennonites, (3) Greek Orthodox, Ukrainian Catholics, and Pentecostals, (4) Roman Catholics, Baptists, Presbyterians, Lutherans, and "Other," and (5) Anglicans and United Church of Canada. The intramarriage rates ranged from nearly 90% among Jews to less than 50% among members of the United Church

Intermarriage and Participation

Empirical studies have consistently found rates of church attendance much higher among marriage partners sharing the same religion (Hoge and Roozen 1979). The reason for this finding, however, has been unclear, prompting Hoge and Roozen to remark that "a convincing explanation, if found in future research, would probably have far-reaching implications for understanding motivations for church participation today" (47).

The household production model provides such an explanation for the higher rates of church attendance among shared-faith marriages. Partners of the same religion can produce religious commodities more efficiently. Their religious activities tend to be complementary, reducing the overall costs and raising the overall benefits of religious participation. In interfaith marriages, complementarity is replaced by competitive (or at best neutral) use of family resources. Since this argument applies to any religious activity that admits a sharing of partners' resources, we would also expect more contributions and perhaps even more prayer and Bible reading in shared-faith marriages. On the other hand, a shared faith should have only indirect effects on individual belief.

Empirical Evidence: In this study, I tested and confirmed these predictions with regression analyses of data from three surveys: NORC's 1963 and 1974 Catholic American Surveys (Greeley et al. 1976); Glock and Stark's 1963 survey of Northern California church members (Glock and Stark 1966); and the 1978-1987 General Social Surveys. The dependent variables included household church contributions and the respondent's frequency of church attendance, prayer, and Bible reading. The list of independent variables, designed to control for a large number of exogenous effects, included the standard socio-economic and demographic variables as well as several religious background variables. Because the

of Canada. (Log linear methods adjusted these rates to take account of the differences in group sizes.) Evidently, the more nearly unique the religion, the greater the propensity toward endogamy.

Among those who married out of their religious groupings there were highly significant patterns of religious intermarriage. These may be interpreted as reflecting a tendency for persons to intermarry in such a way as to preserve similarities along some underlying dimensions of denominational attributes. Travis has noted that "[i]f one were to know the year in which a marriage partner were married, his or her religious denomination, and the fact that a heterogeneous marriage was formed, then one could predict the denomination of the spouse and never be in error more than 12 percent of the time" (66). In particular, "almost two thirds of the interdenominational variance of marriages was due to the association between the three Catholic groups, Roman Catholics, Greek Orthodox, and Ukrainian Catholics" (69). Applying Brown's (1974) method for the analysis of two-way contingency tables to these same data, I have also found evidence of affinities among liberal Protestants (Presbyterian, Anglican, and United Church of Canada) and conservative Protestants (Baptists, sect members, and Lutherans). Multidimensional scaling seems to indicate that the underlying dimensions of affinities and dissimilarities are: (1) a Jewish-Christian cleavage, (2) a Protestant-Catholic cleavage, (3) a liberal-conservative dimension of doctrinal orthodoxy, and (4) a high-low dimension of ritualism and liturgy.

Additionally, Johnson (1980) has used log linear methods to study religious assortative marriage in the United States. His data were derived from three sets of cross sectional surveys: the 1973, 1974, 1975, and 1976 NORC General Social Surveys; the 1960 Growth of American Families survey; and the 1958, 1959, and 1966 Detroit Area Study surveys of the University of Michigan. Analyzing the religious origins of nearly 7,000 married couples, Johnson, like Travis, found that the tendency to in-marry was always strong but varied significantly from one denomination to the next. There were also significant patterns in religious intermarriage which seemed to identify a simple, linear ordering of Christian denominations: (1) Baptists and other fundamentalists; (2) Methodists; (3) Presbyterians, Congregationalists, and Episcopalians; (4) Lutherans; and (5) Catholics. ("Others" — Jews, Quakers, members of the Eastern Orthodox church, persons with no religious preference, etc., were treated as a separate category.) Although Johnson did not attempt to demonstrate the reason for this ordering, he noted that it may reflect "cognitive distance," or "Low Church-High Church" ritualistic differences, or "regional loyalties, prejudices, or ties" (81-82).

results tended to be so consistent from one survey to the next, I will present only a few of the regressions below. (A more extensive set of tables is available upon request.) Consider, for example, Tables 1 and 2 which report results for married respondents in

TABLE 1
PARTICIPATION REGRESSIONS: 1974 CATHOLIC SURVEY

Variable	CONTRIBUTE		ATTEND		RATIO (A/C)	
	coeff†	t-stat	coeff†	t-stat	coeff†	t-stat
MARSAME	70.984***	4.60	11.836***	5.25	-0.105**	-2.64
RLGINSTR	3.313*	2.14	0.509*	2.25	-.000149	-0.04
PCHURCH	0.512	1.63	0.219***	4.80	.000909	1.19
NOINCOME	172.257***	3.58	6.199	0.88	-0.425***	-3.30
INCOME	9.025***	9.73	0.019	0.14	-0.034***	-4.53
HEDUC	4.124	1.75	0.231	0.67	-0.007	-1.35
AGE	3.702***	7.66	0.316***	4.47	-0.018*	-2.47
SEX	-0.912	-0.07	7.232***	4.13	0.103***	3.70
NONWHITE	-36.259	-1.83	-0.723	-0.25	0.252***	5.34
NKIDS	4.646	1.17	-0.020	-0.03	-0.023*	-2.38
BELIEF	35.256**	2.96	12.591***	7.23	0.039	1.40
NBHD	-25.373	-0.95	-2.725	-0.69	-0.035	-0.56
RAISECA	-5.044	-0.12	-1.068	-0.18	-0.036	-0.37
PCATH	-64.239	-1.62	-11.243**	-1.94	0.025	0.26
(CONSTANT)	-194.256	-4.02	4.122	0.58	1.276	7.64
R-squared	.39		.28		.31	
Cases	555		555		456	

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

†Unstandardized regression coefficients.

NOTES:

Source: N.O.R.C. American Catholic Survey, 1974.

Sample: All married respondents.

Variable definitions:

AGE = respondent's age.

ATTEND = yearly number of masses attended.

BELIEF = 9-item additive scale of respondent's strength of religious belief.

CONTRIB = yearly contributions to church (excluding Catholic school tuition and contributions).

HEDUC = years of education of family head.

INCOME = yearly income (thousands).

MARSAME = coded 1 if respondent and spouse of same religion.

NBHD = fraction of Catholic neighbors when growing up.

NKIDS = number of preschool or school-age children.

NOINCOME = dummy (1 if income not reported, 0 otherwise).

NONWHITE = dummy (1 if respondent is nonwhite, 0 otherwise).

PCATH = dummy (1 if either parent Catholic, 0 otherwise).

PCHURCH = mean of parents' yearly mass attendance.

RAISECA = dummy (1 if respondent was raised a Catholic, 0 otherwise).

RATIO = time intensity of religious participation — ATTEND/CONTRIB.

RLGINSTR = respondent's religious instruction scale score.

SEX = sex of respondent — 1 if female, 0 if male.

TABLE 2

PARTICIPATION REGRESSIONS: 1963 NORTHERN CALIFORNIA SURVEY

Variable	CONTRIBUTE		ATTEND		RATIO (A/C)	
	coeff†	t-stat	coeff†	t-stat	coeff†	t-stat
MARSAME	86.530***	8.36	2.144**	2.73	-0.074***	-5.61
RLGINSTR	5.465**	2.62	0.340*	2.15	-0.002	-1.09
NOINCOME	-81.633***	-3.68	-1.917	-1.14	0.044	1.56
INCOME	23.630***	17.82	0.064	0.64	-0.062***	-7.49
REDUC	3.446	1.93	0.654***	4.84	.000528	0.23
AGE	1.788***	4.28	0.159***	5.04	-0.002***	-3.88
SEX	-32.642***	-3.59	1.386*	2.01	0.036***	3.11
NKIDS	-0.492	-0.14	0.805***	3.16	0.003	0.87
BELIEF	71.000***	8.18	9.136***	13.87	0.019	1.76
EXPERIENCE	54.393***	7.55	3.198***	5.85	-0.004	-0.51
SICKTIME	-2.802	-1.71	-0.522***	-4.21	0.003	1.53
LIBERAL	-58.537***	-5.26	-0.606	-0.71	0.027	1.91
CONSERV	33.505	1.90	-0.181	-0.13	-0.020	-0.88
CATHOLIC	-191.861***	-14.33	2.240*	2.20	0.234***	13.64
(CONSTANT)	-63.597	-1.74	19.101	6.91	0.701	11.10
R-squared	.33		.24		.21	
Cases	2186		2186		2186	

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

†Unstandardized regression coefficients.

NOTES:

Source: 1963 Northern California Church Member study.

Sample: All married respondents.

Variable definitions:

AGE = respondent's age.

ATTEND = yearly number of Sunday services attended.

BELIEF = 9-item Z-scale of respondent's strength of religious belief.

CONTRIB = yearly contributions to church.

EXPERIENCE = 3-item Z-scale of respondent's religious experiences.

INCOME = yearly income (thousands).

LIBERAL, CONSERV, CATHOLIC = denominational dummy variables.

MARSAME = coded 1 if respondent and spouse of same religion.

NKIDS = number of preschool or school-age children.

NOINCOME = dummy (1 if income not reported, 0 otherwise).

RATIO = time intensity of religious participation, ATTEND/CONTRIB.

REDUC = respondent's years of education.

RLGINSTR = respondent's religious instruction scale score.

SEX = sex of respondent - 1 if female, 0 if male.

SICKTIME = respondent's number of sick days in last year.

the 1974 American Catholic survey and 1963 Northern California Church Member survey. The variable MARSAME is a dummy variable which was coded one if both respondent and spouse were of the same denomination and zero otherwise. Hence, its coefficient equals the effect that a shared faith has on religious participation after controls for all the other

variables in the regression. As predicted, the effect was large, positive, and significant throughout. In the first two columns of Table 1, MARSAME increases family contributions by \$71 per year (relative to a mean of \$193) and increases the (Catholic) respondent's frequency of mass attendance by 11.8 services per year (relative to a mean of 39). In Table 2, the corresponding effects are \$86 per year and 2.1 services per year.

There is, however, an alternative explanation for these results which has more to do with sample selection bias than with production efficiency. People who are more serious about their religion, and so more likely to participate in it, may well be more likely to marry in their faiths. If much of this sorting goes on, members of shared-faith marriages should average higher rates of religious participation than do their interfaith counterparts *even if marriage itself has no impact on an individual person's participation*. Although the household production model predicts some sorting (since people desiring high levels of religious participation gain more than others from shared-faith marriages), the model also predicts higher rates of participation in shared-faith marriages *even if no sorting has occurred*. Stated differently, the model predicts that members of shared-faith marriages will participate not only more than members of inter-faith marriages, but also more than they themselves would have participated had they remained single. Hence, we can empirically measure the relative importance of pure sorting versus pure efficiency effects by comparing religious participation rates among single, interfaith, and shared-faith respondents. Under pure sorting, average participation rates for single people should equal those of married people as a whole, with interfaith marriages averaging less and shared-faith marriages averaging more. Under pure efficiency, average participation rates for single people should be lower than those for married people as a whole, with interfaith marriages averaging about the same and shared-faith marriages averaging more.⁵

The results in Tables 3 and 4 indicate that production efficiency has an impact that is independent of and stronger than the impact of sorting alone. The sample included both married and single General Social Survey respondents between the ages of 18 and 43.⁶ The two independent variables of key interest are: MARRIED, which was coded 1 if the respondent was married, and MARSAME, which was coded 1 if the respondent had a spouse of the same denomination. The remaining independent variables are merely controls for other effects. Since MARRIED and MARSAME were both coded zero when the respondent was single, the participation rates of single people formed the baseline for the regressions. The regression coefficient for MARRIED equals the difference between the participation rates of *interfaith* married respondents and single respondents. The sum of the regression coefficients for MARRIED and MARSAME equals the difference between the participation rates of *shared-faith* married respondents and single respondents. Note that for every measure of religious participation — attendance, contributions, and

5. The test could be invalidated if other unobserved factors affect the relative participation rates of married and unmarried people, e.g., if older people participate more and married people tend to be older than single people. However, the likelihood of this problem has been minimized by including a large number of controls (such as age) in the regressions.

6. Since church participation and the probability of being married both tend to rise with age, the age restriction was imposed to reduce the likelihood of confounding these effects. Age group dummies were included among the independent variables for the same reason.

TABLE 3
RELIGIOUS PARTICIPATION: GENERAL SOCIAL SURVEYS

Variable	ATTEND		CONTRIBUTE		RATIO (A/C)	
	coeff†	t-stat	coeff†	t-stat	coeff†	t-stat
MARRIED	-3.888	-1.32	-170.851	-.97	.002	.00
MARSAME	17.032***	11.29	352.056***	3.93	-1.49	-1.21
MAATTEND	.140***	5.40	NA	NA	NA	NA
PAATTEND	.110***	4.32	NA	NA	NA	NA
AGE20	1.591	.79	-87.751	-.74	.708***	4.34
AGE30	.166	.10	-167.148	-1.71	-.043	-.32
AGE35	3.684*	2.16	-247.960*	-2.45	-.014	-.10
AGE40	4.689*	2.45	31.313	.27	-.066	-.42
SEX	5.278*	2.47	77.833	.61	-.107	-.62
EDUC	1.143***	4.65	34.576*	2.40	.008	.44
INCOME	.072	1.19	2.032	.56	-.009*	-2.00
MARSEX	.253	.09	-140.653	-.92	.257	1.23
MARINC	-.074	-1.01	9.820*	2.24	.004	.69
MODERATE	8.223***	4.35	118.281	1.06	-.049	-.32
NOBAPT	8.686*	2.49	68.227	.33	-.030	-.10
SOBAPT	14.606***	5.40	-7.338	-.04	.144	.66
CONSERV	13.118***	4.85	467.617**	2.94	-.015	-.07
SECT	34.691***	13.84	399.277**	2.76	.097	.49
MORMON	22.935***	6.38	1494.057***	7.02	-.069	-.23
CATHOLIC	10.686***	6.48	-17.645	-.18	.275*	2.08
(Constant)	-21.131	-5.05	-430.765	-1.74	.168	.50
R-squared	.277		.252		.126	
Cases	1963		495		339	

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

†Unstandardized regression coefficients.

NOTES:

Source: General Social Surveys, 1983-1987.

Sample: All non-blacks, aged 45 or younger, currently married or never married.

Variable definitions:

AGE20, AGE25, AGE30, AGE35, AGE40 = dummy variables coded 1 or 0, depending on respondent's age (rounded to the nearest 5 years). AGE25 is the omitted (baseline) category.

ATTEND (mean = 23.6) = average number of religious services that respondent attended each year including both weekend and weekday services.

CONTRIBUTE (mean = \$376) = household's contribution in 1986 dollars.

EDUC (mean = 13.2) = respondent's highest year of school completed.

INCOME = household's 1986 real income (thousands).

MARRIED = coded 1 if respondent was currently married.

MARSAME = coded 1 if respondent had spouse of same religion.

MAATTEND, PAATTEND = respondent's parents' frequency of church attendance. (These items were not included in the survey which asked about contributions.)

MARSEX, MARINC = interaction dummies, MARRIED \times SEX and MARRIED \times INCOME, respectively.

MODERATE, CONSERV, SECT, MORMON, CATHOLIC, SOBAPT (Southern Baptist), NOBAPT (Baptist, Non-Southern) = denominational dummy variables.

RATIO = time intensity of religious participation, ATTEND/CONTRIB.

SEX = coded 1 if respondent was female.

TABLE 4

PRAYER AND BELIEF: GENERAL SOCIAL SURVEYS

Variable	PRAY		AFTERLIFE		BIBLE	
	coeff†	t-stat	coeff†	t-stat	coeff†	t-stat
MARRIED	-.547	-.64	.046	.90	.184	1.39
MARSAME	2.238***	5.15	.018	.69	.010	.15
MAATTEND	.027***	3.68	.001**	2.83	.001	1.13
PAATTEND	.008	1.12	.00063	1.41	.001	1.16
AGE20	-.551	-.95	-.026	-.75	.034	.37
AGE30	.279	.59	-.014	-.50	-.050	-.68
AGE35	.870	1.77	-.011	-.37	.001	.01
AGE40	1.556**	2.82	-.036	-1.08	.012	.14
SEX	1.668**	2.71	.042	1.13	.089	.93
EDUC	.128	1.82	.004	.98	-.057***	-5.21
INCOME	-.012	-.70	.001	1.31	.001	.37
MARSEX	1.240	1.68	.011	.25	.056	.48
MARINC	-.014	-.66	-.001	-.90	-.003	-1.16
MODERATE	1.913***	3.51	.146***	4.45	.427***	5.02
NOBAPT	.890	.88	.166**	2.73	.269	1.71
SOBAPT	2.101**	2.69	.193***	4.11	.398***	3.27
CONSERV	3.485***	4.47	.209***	4.44	.784***	6.44
SECT	5.367***	7.42	.121**	2.77	.567***	5.01
MORMON	5.958***	5.75	.277***	4.42	.328*	2.02
CATHOLIC	1.299**	2.73	.126***	4.40	.205**	2.76
(Constant)	-3.92	-.32	.496	20.63	.365	8.67
R-squared	.17		.07		.24	
Cases	1567		1448		536	

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

†Unstandardized regression coefficients.

NOTES:

Source: General Social Surveys, 1983-1987.

Sample: All non-blacks, aged 45 or younger, currently married or never married.

Variable definitions:

AFTERLIFE = coded 1 if respondent believed in an afterlife, 0 otherwise.

AGE20, AGE25, AGE30, AGE35, AGE40 = dummy variables coded 1 or 0, depending on respondent's age (rounded to the nearest 5 years). AGE25 is the omitted (baseline) category.

BIBLE = coded 1 if respondent believed the Bible is the literal word of God, 0 otherwise.

EDUC (mean = 13.2) = respondent's highest year of school completed.

INCOME = household's 1986 real income (thousands).

MAATTEND, PAATTEND = respondent's parents' frequency of church attendance. (These items were not included in the survey which asked about contributions.)

MARRIED = coded 1 if respondent was currently married.

MARSAME = coded 1 if respondent had spouse of same religion.

MARSEX, MARINC = interaction dummies, MARRIED \times SEX and MARRIED \times INCOME, respectively.

MODERATE, CONSERV, SECT, MORMON, CATHOLIC, SOBAPT (Southern Baptist), NOBAPT (Baptist, Non-Southern) = denominational dummy variables.

PRAY = respondent's frequency of prayer per week.

SEX = coded 1 if respondent was female.

prayer — interfaith, married respondents participated only slightly (and never significantly) less than did single respondents, whereas shared-faith, married respondents participated substantially (and significantly) more than did single respondents. On the other hand, in regressions measuring belief (in the Bible and in an afterlife) all effects were insignificant. Both of these sets of results are consistent with the “efficiency” model but contradict the pure “sorting” model.

Religious Upbringing

Since religious capital is accumulated largely as a by-product of religious participation, and since religious capital provides an incentive for further religious participation, the household production model predicts that adult rates of religious participation will be strongly correlated with childhood religious participation and training.

Empirical Evidence: It comes as no surprise that strong religious upbringing is a “leading indicator” of adult religious participation. Nevertheless, it is worth noting that the regressions in Tables 1 through 4 support this prediction as well. In the 1974 Catholic American survey (Table 1), both childhood religious instruction and parents’ frequency of mass attendance (during respondent’s childhood) had positive effects on the respondents’ current contributions and mass attendance. The effect of childhood religious instruction was also positive in the 1963 Church Member study (Table 2) which did not include information on parental church attendance. The effect of parental church attendance was again positive in the General Social Surveys (Table 3) which did not include information on childhood religious instruction.

Time Versus Money

The concept of “input substitution” underpins many of the most distinctive and important predictions of household production theory. Virtually all production processes, whether household or commercial, require both purchased inputs and labor inputs. However the *ratio* of these inputs can often be varied. Home-cooked meals and restaurant meals can be equally good (or bad), but the former require much greater inputs of household time relative to purchased goods. In like manner, lawns can be watered by hand or by automated sprinklers, trips can be taken by bus or by plane, and children can be cared for by parents or by preschools. In each of these cases, the efficient method of production will depend on the monetary value of the household’s time. The higher the value of time, the more likely it is that the household will substitute time-saving, “money-intensive” forms of production for money-saving, “time-intensive” forms. Hence, it comes as no surprise that people with high wage rates are more likely to dine out, install sprinklers, take planes, and have children in preschools.

Applied to religion, the concept of input substitution yields a uniquely economic prediction: People with high monetary values of time will conserve their time by engaging in money-intensive religious practices. In particular, their monetary contributions will be high relative to their rates of attendance and vice versa. People with low monetary values of time will adopt more time-intensive practices and so do the opposite. These predic-

tions provide a strong test of the proposed model since they have no precedent within traditional models of religious participation.

Empirical Evidence: The three surveys discussed above support the prediction that religious participation is more "money-intensive" among people with high values of time. The regressions in the third columns of Tables 1, 2, and 3 show that income is one of the strongest predictors of the ratio of attendance to contributions. As people become richer, they contribute more dollars per service attended and, conversely, attend less per dollar contributed. Hence, higher income leads to participation that is more money-intensive and less time-intensive. This finding must be kept in proper perspective, however. Participation in religious activities becomes less time-intensive (and hence more money-intensive) whenever time inputs decrease *relative* to monetary inputs. However, this relative decrease need not be accompanied by a decrease in the *absolute* amount of time devoted to religious activity. So, for example, the attendance regressions in Tables 1, 2, 3 show that income has a positive, albeit statistically insignificant, effect on absolute levels of attendance. In other words, the attendance/contribution ratio decreases simply because contributions have increased much more rapidly than attendance. This leads one to ask whether the concept of substitution between time and money really has relevance. Might not the regression results simply reflect people's allocating to religion a fixed fraction of their time (e.g., one morning per week) and a fixed fraction of their income (e.g., 5% per year)?

Figures 2 and 3 help to distinguish between these two competing interpretations by providing a different view of the data. Figure 2 plots respondents' average rates of contributions and church attendance as a function of their ages. Notice that attendance and

FIGURE 2

YEARLY ATTENDANCE AND CONTRIBUTIONS: 1974 CATHOLIC SURVEY

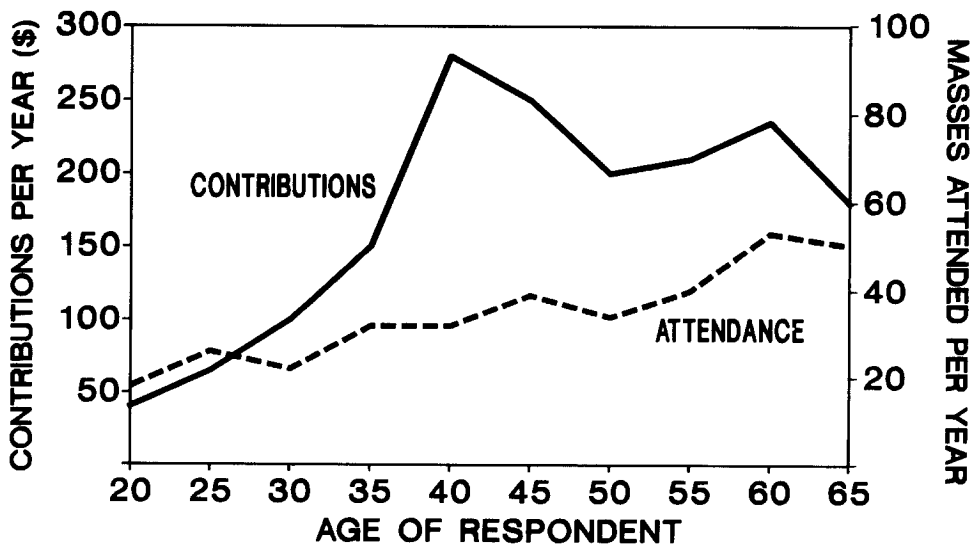
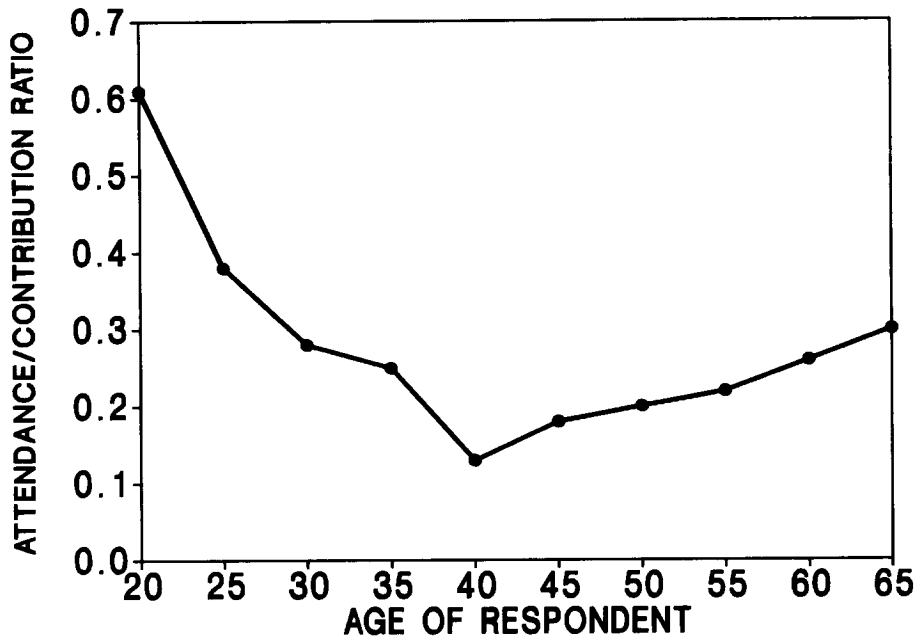


FIGURE 3

TIME-INTENSITY OF PARTICIPATION: 1974 CATHOLIC SURVEY



contributions are in no sense static across the life cycle: People do not merely allocate a fixed fraction of their time to religion, nor do they merely allocate a fixed fraction of their income. Attendance displays a strong, albeit somewhat irregular, upward trend.⁷ Contributions increase steadily and far more rapidly than does income between ages 20 and 40, and thereafter trend irregularly downward. Despite these trends and irregularities, the average *ratio* of attendance to contributions (plotted in Figure 3) reveals a lifecycle pattern that is both regular and consistent with the household production model: Compared to people in their prime-earning, middle years, the young and the old attend more relative to each dollar they contribute.⁸ Conversely, the age groups with the highest monetary values of time contribute the greatest number of dollars per hour of church attendance.

In short, the observed effects across both age groups and income strata are quite consistent with the conjecture that people substitute money for time in the production of religious commodities. However, better data are needed to get beyond mere consistency.

7. For the purpose of my analysis it does not matter whether the observed increase is due to age, period, or cohort effects. Nevertheless, studies have suggested that most of this trend is in fact related to age (Argyle and Beit-Hallahmi 1975; Roozen 1980; Hout and Greeley 1987).

8. Note in particular that the attendance/contribution ratios are nearly the same for people in their 30s and their 60s, despite the fact that the latter attend twice as frequently as the former.

The kinds of data I have in mind are information on individual respondents, households, and congregations.

(1) *Individuals*: Results like those reported above would benefit from more precise economic information and more detailed information about religious activities. Economists have stressed that household income constitutes a very crude measure of an individual's monetary value of time. Far better measures result when the respondent's own wage rate and hours of work are distinguished from nonlabor income and from the earnings of other family members. Likewise, overall levels of church attendance and contributions convey little information about substitution between time and money. Much more could be inferred using information on how time and money are allocated among specific religious and secular activities. (Given the growing number of "time budget" studies being conducted by social scientists, this information may soon be available.)

(2) *Households*: Research on the economics of the family has revealed a fair amount of "input substitution" among family members (Becker 1981). That is, family members with relatively high values of time often contribute much of their income but little of their time to various household activities, while other members, with lower values of time and/or fewer hours of employment, do the opposite. Some economists have suggested that a similar division of labor applies to the family's religious activities. In particular, they have argued that traditional differences in wages and rates of employment help explain why women attend church more frequently than men (Azzi and Ehrenberg 1975; Ehrenberg 1977). Others disagree (Long and Settle 1977; Ulbrich and Wallace 1984). The issue will probably remain unsettled until we obtain more joint data on husbands and wives that detail the religious activities and work status of each.

(3) *Congregations*: Congregational studies should provide additional evidence regarding substitution between religious time and money. For example, one might inventory congregations to see whether richer congregations consistently opt for time-saving, money-intensive practices. Examples of these might include shorter services, more reliance on professional staff (clergy, custodians, choir directors, paid soloists, etc.), larger and more costly facilities (permitting less use of members' homes for special meetings), more reliance on purchased goods and services, and less reliance on volunteered labor (e.g., catered meals in place of pot-lucks). Anecdotal accounts would suggest that these practices are in fact more prevalent among richer congregations. A careful, comparative study is needed to determine whether the anecdotes reflect a broad, overall pattern.

CONCLUSION

The economic concepts of household production and human capital generate a powerful model of religious participation. Although the model sidesteps questions about what religion "really" is,⁹ it nevertheless illuminates a great many issues: denominational

9. Such sidestepping is quite common and arguably beneficial in economic discourse, since it facilitates the construction and application of abstract theories. For example, agricultural economists rarely worry about the essential characteristics of apples or why people enjoy eating them. Yet, by studying the external forces that govern the supply of and demand for apples (weather, price, income, familiarity with the product, and so forth), they generate valuable insights and information.

mobility, religious intermarriage, the timing of conversions, the influence of religious upbringing, the ratio of attendance to contributions, and the impact of interfaith marriage.

In each case, the model's predictions have received strong empirical support. Conversions are concentrated in the early stages of the life cycle, as people search for the best match between their religious skills and the context in which they produce religious commodities. Religious mobility, like career mobility, becomes progressively less likely as people age. Moreover, it is not just the timing but also the patterns of mobility that fit the model's predictions. People switch denominations in ways that preserve the value of their religious human capital. Rates of intergenerational mobility tend to be low, particularly for people reared in distinctive religious traditions, and the switching that does occur tends to be among similar denominations. Religious intermarriage displays similar patterns: People seek out partners whose religious human capital complements their own, and the productive efficiency inherent in shared-faith marriages leads to higher levels of church attendance and contributions. Religious upbringing, probably the most important source of religious human capital, is a major determinant of religious belief and behavior. Finally, there is evidence, albeit inconclusive, that money and time substitute for one another in the production of religious commodities. People with high monetary values of time display higher ratios of contributions to attendance, suggesting that they engage in more "money-intensive" forms of religious activity.

None of these findings is, by itself, very surprising. What is surprising, however, is that so many different findings emerge as predictions of a single model. The concepts of household production and human capital deserve attention precisely because they explain so much of what we already know about religious participation. They also raise new empirical questions, such as those concerning the substitution of money for time. Indeed, the human capital approach to religious participation illustrates the threefold contribution of economic theory to the scientific study of religion: integrating numerous predictions within a single conceptual framework; providing theoretical explanations for observed empirical regularities; and generating new hypotheses to guide future empirical research.

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