

# **Is There an Earnings Premium for Catholic Women? Evidence from the NLS Youth Cohort**

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**Abstract:** *This paper examines the relationship between religious background and earnings for women in the year 2000 wave of the National Longitudinal Survey of Youth 1979 Cohort. The paper estimates selectivity corrected human capital earnings functions, and finds evidence that women raised as Catholics enjoy an earnings premium relative to women raised as Protestants, although the premium diminishes over time. This paper also examines earnings for women raised in various Protestant denominations. JEL Codes: J31, Z12.*

**A**lthough religion continues to play a prominent role in American life, economists know relatively little about how religious background and practice impact economic outcomes, if at all. One barrier is that economists have few sources of data to work with to examine these types of questions. Detailed information on family background, religious practice, and economic data are not usually collected in a single survey. Economists may also be somewhat reluctant to examine an issue with which they have little training or expertise.<sup>1</sup>

There are, however, a variety of ways in which religious upbringing could impact both earnings and the accumulation of human capital. Religious background can impact the formation of character traits such as honesty and diligence, which can have substantial results in the marketplace. Individuals from different religious backgrounds may also have different attitudes toward the acquisition of material goods or the choices of proper careers. Some religious traditions may suggest that appropriate roles for women are limited to childrearing and homemaking, therefore restricting the participation of women in the labor market. Religion can also influence decisions on both family formation and family size, which have important consequences on labor market outcomes.

Individuals from different religious backgrounds may also have different attitudes toward investment in education. Brenner and Kiefer (1981)

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assert that Jews have invested more highly in human capital accumulation due to their historical experiences with the confiscation of their physical capital. Tomes (1985) suggests that religious institutions might provide a framework that influences the intergenerational allocation of resources within a family. Religious background and practice may also be seen as a signal by certain employers of other important characteristics; it is also possible that employers might discriminate on the basis of religion. Hollander, *et al.* (2003) suggest that “religious and secular human capital are complementary inputs in generating income.”

A recent paper by Robert Barro of Harvard University and political scientist Rachel McCleary has even brought this area of research to the attention of the popular media (see, for example, “Probing Religion’s Role in Economic Success,” *The Christian Science Monitor*, October 21, 2002). Barro and McCleary (2003) collected information on religious beliefs from 66 countries and compared it with economic data from these countries. They found that religious beliefs and practice can have a statistically significant impact on the rate of economic growth. Holding beliefs constant, they found that increases in church attendance reduce economic growth; however, certain religious beliefs (in heaven, for example) were associated with greater economic growth.

Given the number of possible influences of religious background on economic outcomes, these potential relationships deserve further examination within the field of economics. Christian economists may have both special interest in, and insights about, these issues and the consequences of this research. This paper estimates selectivity corrected human capital earnings functions to analyze earnings differentials for women from different religious backgrounds, and considers some of the implications for Christians of this type of research. The data used in this study are taken from the year 2000 wave of the National Longitudinal Survey of Youth 1979 Cohort. The results suggest that a Catholic religious background may have a positive impact on a woman’s earnings, especially early in her career. This is one of the first economic studies that examines the impact of religious beliefs and behavior on economic outcomes for women.

### **I. Previous Work**

Although there have been several studies that examine the relationship between religious adherence or background and earnings, very few of these studies have looked at this relationship for female workers. Chiswick (1983) has no direct information on the religious background of

individuals in the 1970 U.S. Census, but uses information on the “mother tongue” of respondents to identify second-generation ethnic Jews in the data. He uses the human capital earnings function to study men in this sample, controlling for education, experience, and occupation, as well as geographic concentration in the New York metropolitan area. Holding other characteristics constant, he finds that Jews received 16 percent higher earnings and a 20 percent higher rate of return on educational investments than non-Jews.

Tomes (1983) analyzes data on white males in the Canadian census of 1971, which provided information on the current religious affiliation of the individual. He finds that current religious Jews received a 46 percent higher rate of return on schooling than the average of the sample, while Protestants received a 9 percent higher return. Protestants received the highest increase in income as a result of obtaining a university degree (40 percent), while Catholics received a 25 percent increase and Jews an increase of just 8 percent. Meng and Sentance (1984) study white males in the Canadian National Mobility Study of 1973, a dataset that allows the authors to hold constant a greater number of characteristics that might impact earnings than the Tomes (1983) study. They find that Jews exceeded the average return to schooling by 167 percent while Catholics received an 18 percent lower rate of return. Tomes (1985) reports results of a study of data from the Canadian census of 1981. Male Jews identified by current religious affiliation earned 10.2 percent more than Protestants, while male Jews identified by ethnicity earned 12.7 percent more. Tomes (1985) also reports some preliminary results on Canadian women, although the results are not corrected for sample selection; ethnic Jews earned 8.8 percent less than Protestants while Catholics earned 3.4 percent more.

Tomes (1984) examines white males in U.S. data from the NORC General Social Surveys of 1973–1980. This dataset has the advantage in that it contains information about the religious background of the individuals in the sample in addition to the current religious affiliation. As the author notes, current religious affiliation may have no causal significance for earnings differences between religions, but instead may result from current income differences. He also finds important differences in his results depending on whether religious background or current affiliation is used in the analysis. When religious background variables are used in a human capital earnings function, he finds no differences in earnings between different religious groups. When current religious affiliation is used, he finds that current religious Jews have 32.2 percent higher earnings than Protestants. Steen (1996) uses data on men from the 1991 wave of the National Longitudinal

Survey of Youth 1979 Cohort. This dataset also reports information on the religious upbringing of individuals in the sample in addition to other detailed information on family background. Holding other characteristics constant, he finds that Jews earned 27.9 percent more than Protestants while Catholics earned 7.1 percent more. Ewing (2000) uses similar data from the 1990 wave of the National Longitudinal Survey of Youth 1979 Cohort. He finds a wage premium for full-time workers raised as Catholics of 6 percent; men and women are analyzed together in the sample. Steen (2004) studies men in the 2000 wave of the National Longitudinal Survey of Youth 1979 Cohort and finds that men raised as Jews earned around 50 percent more than Protestants while men raised as Catholics earned 6 percent more.

Overall, the previous work in this area suggests one strong finding: men raised as Jews earn significantly more than non-Jews. However, it is difficult to draw any strong conclusions on the impact of other religious backgrounds on economic outcomes. One striking shortcoming in previous work is a lack of attention on the economic outcomes of women.

The previous work in this area suggests a number of questions of interest. First, what is the impact of religious background on the earnings of women and their rates of return on investment in human capital? Second, how does the impact of religious background differ from that of current religious affiliation, which may be an endogenous variable in the process of earnings determination? Third, how does the impact of religious background change as workers grow older? Fourth, how does religious background impact individuals within different racial and ethnic groups? Fifth, are there differences in earnings among different Protestant denominations? This paper addresses all of these issues for U.S. women. It uses data from the 2000 wave of the National Longitudinal Survey of Youth 1979 Cohort; the following section describes the data available in this sample.

## **II. Data Source**

The data used in this paper are from the year 2000 wave of the National Longitudinal Survey of Youth 1979 Cohort (NLSY 1979). This survey, initiated in 1979 with 12,686 respondents, continues to ask questions to this day, with a total of 8,033 individuals still responding to the survey as of the year 2000. The survey asked questions of the respondents during every year from 1979 through 1992, followed by questions every two years from 1994 through 2000. This dataset includes responses to more than 30,000 questions over the last 20 years, and includes a wealth of data

on both the family background and economic behavior of the individuals in the sample. The survey is jointly administered by the Center for Human Resource Research at The Ohio State University and the Bureau of Labor Statistics.<sup>2</sup>

The survey also includes substantial information concerning the religious background and current religious practice of the individuals in the sample. In the 1979 wave of the survey, respondents were asked in what religion they were raised. Other variables include information on current religious affiliation and frequency of religious attendance. In the 1982 wave of the survey, questions were asked about the religious background and current affiliation of the respondent's spouse (if present). Between 1982 and 2000, there were few additional questions concerning the religious activity of the individuals in the sample. However, with the 2000 wave of questions, respondents were again asked about their religious background as well as their current religious affiliation. There is also additional information available in 2000 concerning the frequency of religious attendance and the religious behavior of the spouse (if present).

The empirical investigation of this paper is limited to the 3,478 women who were still responding to the survey as of the year 2000. The women in the survey were restricted by age, with respondents being aged 14–21 when the survey was commenced in 1979. In the 2000 wave of the survey, respondents were between the ages of 35 and 43.<sup>3</sup> Although the survey is limited in terms of the ages of the respondents, the women in the survey have had substantial work experience; this dataset provides an excellent opportunity to see if religious background has an impact on the earnings of women. The following section of this paper will present the results of empirical analyses using data on the women from the 2000 wave of the National Longitudinal Survey of Youth 1979 Cohort.

### **III. Empirical Results**

The theoretical model used to analyze the data is based on the human capital earnings function developed by Becker (1975). The dependent variable in the earnings function is the natural logarithm of earned income, while the explanatory variables include education, experience, and a variety of other economic and demographic characteristics including religious background. The empirical specification used in the analysis is corrected for selectivity in labor force participation using the method suggested by Heckman<sup>4</sup> (see Killingsworth (1983) for details). The definitions and means of the variables included in the analysis are presented in Table 1.

**Table 1. Definitions and Means of Variables**

<b>Variable</b>	<b>Definition</b>	<b>Mean</b>
INCOME	Total yearly income from wages and salary (1999), \$	27155
EDUC	Number of years of schooling	13.500
EXPER	Number of years of experience	14.854
EXPEXSQR	Experience squared	252.247
DEGREE*	Has college degree	0.231
Religion	Religious Upbringing	
CATH*	Catholic	0.339
JEW*	Jewish	0.009
NONE*	No religion	0.039
OTHER*	All other non-Protestant religions	0.020
Protestant	Denomination raised in if religion is Protestant	
METH*	Methodist	0.140
LUTH*	Lutheran	0.089
PRES*	Presbyterian	0.051
EPISC*	Episcopalian	0.020
BAPT*	Baptist	0.511
ATTEND*	Religious attendance 2 or more times a month (1999)	0.416
LNWEEKS	Natural log of weeks worked (1999)	3.793
DIFFJOBS	The number of different jobs ever had	10.175
AMTWORK*	Health limits the amount of work performed	0.067
GOVT*	Employed in the public sector	0.201
SELF*	Self-employed	0.052
MARRIED*	Married	0.557
BLACK*	Race = Black	0.297
OTHRACE*	Race = Other	0.059
INSMSA*	Place of residence is in an SMSA	0.947
CENTCITY*	Place of residence is in a central city	0.286
SOUTH*	Geographic location in the South	0.425
FATHERED	Highest grade of schooling completed by father	11.091
MOTHERED	Highest grade of schooling completed by mother	10.948
IMMIGRNT*	Born outside US	0.066
AGE	Age	39.059
PRIVATE*	Attended private school as youth	0.055
SIBLINGS	Number of siblings	3.780

\*Categorical variables: 1 if criterion satisfied, 0 otherwise.

Women in the sample were classified into five different categories based on their religious background: Catholics, Protestants, Jews, Others (women not raised in the Catholic, Protestant or Jewish religions) and None (women not raised in any religion). The mean earned income in 1999 for women raised as Catholics in the sample was 29,483 dollars, with 25,679 for Protestants, 39,641 for Jews, 27,459 for Others, and 26,456 for those reporting no religious upbringing. These sample means are for

women reporting positive earned income.

The comprehensive nature of the NLS Youth Cohort data allows for a more accurate measure of labor force experience than is usually available in the analysis of human capital earnings functions. Three measures of experience were constructed and used in various specifications of the selectivity corrected human capital earnings functions. The first was a standard measure of experience based on the worker's age and education (age minus education minus 6). A second measure was based on the sum of weeks worked reported for each year since 1975, and the third measure was based on the cumulative hours worked since 1975 converted into equivalent "years" of full-time employment. All regressions presented in this paper were initially estimated separately with each of these experience variables; the results presented use the third experience measure, the one based on total hours worked. This measure of experience yielded the highest goodness-of-fit measures in the regression models that were estimated. An additional variable counting the number of different jobs ever held was also included in the model. Other variables describing the current job were incorporated into the model; these include a variable for the natural logarithm of weeks worked in 1999, whether or not the worker is self employed or works for the government, and whether or not health concerns limit the amount of work that the individual can perform.

In order better to isolate the impact of religious background on earnings, the model also holds constant for a variety of demographic characteristics that are reported in the NLSY 1979 data. Variables measuring the years of education completed by the worker, the level of education attained by the worker's parents, the number of siblings, and the age of the worker are included in the human capital earnings functions reported in this paper. Explanatory dummy variables used in the analysis control for race and ethnicity, marital status, urban and regional location, achievement of a college degree, immigrant status, and attendance at private schools.

The results from the selectivity corrected human capital earnings functions for the 2000 wave of the NLSY 1979 data are presented in Table 2. Two regressions are estimated, a basic specification reported in regression (1) and a more extensive specification reported in regression (2). The first specification includes only variables for education, experience, log of weeks worked, attendance at religious services, and religious background variables. The second specification also includes a number of variables measuring job characteristics, family background, and demographic characteristics that might also be expected to impact income. Before suggesting that religious background has a statistically significant

impact on income, it is important to hold constant for as many factors as possible that could influence income. Comparing the basic and extended specifications also allows an examination of whether the results on religious background variables are robust or whether these variables may be picking up differences in other measurable characteristics.

**Table 2. Earnings Functions for all Females, 2000**  
**Dependent variable: log of earned income, 1999.**

Independent Variables	(1)		(2)	
INTERCEPT	5.2222	(28.40)*	5.9435	(17.97)*
EDUC	0.0607	(5.68)*	0.0646	(5.84)*
EXPER	0.1326	(12.26)*	0.1346	(12.38)*
EXBERSQR	-0.0021	(5.87)*	-0.0021	(5.91)*
DEGREE	0.1999	(3.45)*	0.1948	(3.37)*
NONE	0.0499	(0.61)	0.0312	(0.38)
JEW	-0.0968	(0.62)	0.0001	(0.00)
OTHER	0.1295	(1.22)	0.1083	(1.03)
CATH	0.0883	(2.81)*	0.0499	(1.39)
ATTEND	0.0844	(2.81)*	0.0836	(2.71)*
LNWEEKS	0.5934	(18.96)*	0.5843	(18.84)*
DIFFJOBS			-0.0075	(2.75)*
AMTWORK			-0.2188	(3.76)*
GOVT			-0.0273	(0.73)
SELF			-0.2040	(3.08)*
MARRIED			-0.0984	(3.17)*
BLACK			0.0320	(0.82)
OTHRACE			-0.0187	(0.29)
INMSA			0.2654	(4.03)*
CENTCITY			-0.0221	(0.66)
SOUTH			-0.0286	(0.91)
FATHERED			0.0042	(0.84)
MOTHERED			-0.0043	(0.71)
IMMIGRNT			0.1755	(2.84)*
AGE			-0.0223	(3.38)*
PRIVATE			0.1263	(1.94)**
SIBLINGS			0.0084	(1.37)
LAMBDA	0.0324	(0.05)	0.0228	(0.04)
N	3016		3016	
Log-Likelihood	-4651.951		-4583.955	

Absolute values of z-scores in parentheses; for LAMBDA, standard error is in parentheses.

\*Significant at 0.05 level.

\*\*Significant at 0.10 level.

Sample: National Longitudinal Survey of Youth 1979 Cohort (2000 wave).

The dependent variable in the regression is the natural logarithm of earned income; the omitted religious background category is Protestants. In the basic specification, the coefficient of 0.0883 for women raised as Catholics translates into 9.2 percent higher incomes, holding other characteristics constant; this result is significant at the 5 percent level.<sup>5</sup> None of the other religious background variables are statistically different from zero.

In the more extensive specification including additional economic and demographic characteristics, the coefficient on Catholic background, while positive, is no longer statistically significant.<sup>6</sup> This suggests that initially this variable may have picked up differences in other measurable characteristics that were not included in the first regression (attendance at private schools, for example). In contrast, variables measuring education, experience and log of weeks worked are statistically significant in both specifications, suggesting an impact on income independent of other job characteristics and demographic factors. The variable for attendance at a private school is positive and significant at the 10 percent level; the coefficient of 0.1263 translates into 13.5 percent higher earnings. Women raised as Catholics were three times more likely to attend private school (10.2 percent) than non-Catholics (3.2 percent). One variable that shows a statistically significant impact on earnings in both of the year 2000 regressions is that of attendance at religious services. Women who attended two or more services a month had over eight percent higher earnings in both the basic and extended specifications as reported in Table 2.<sup>7</sup> A current strong commitment to any religious tradition may become a greater factor than religious background in earnings differences as women become older.

Table 3 reports results from regressions using data from the 1991 wave of the NLSY 1979 data; the dependent variable is the natural logarithm of 1990 earned income. In both of the specifications reported here, the coefficient on Catholic religious background is positive and statistically significant at the five percent level. In the basic specification the coefficient of 0.1349 translates into 14.4 percent higher earnings for women raised as Catholics, while in the extended specification the coefficient of 0.0784 translates into 8.2 percent higher earnings.<sup>8</sup> The signs and level of significance for most of the other variables in the analyses are similar in both the 1991 and 2000 data.<sup>9</sup>

The NLSY data provide two cross-sectional samples of data, with the 2000 data providing information on a sample of women that is, on average, nine years older. The results from these two years of data suggest

that women raised as Catholics may enjoy greater incomes at some times over their working lives, holding other characteristics constant. However, the results from Tables 2 and 3 also suggest that the impact of Catholic

**Table 3. Earnings Functions for all Females, 1991**

**Dependent variable: log of earned income, 1990.**

Independent Variables	(1)		(2)	
INTERCEPT	4.0097	(25.77)*	5.5334	(21.73)*
EDUC	0.0670	(6.66)*	0.0663	(6.45)*
EXPER	0.1747	(9.88)*	0.1760	(9.94)*
EXPEXSQR	-0.0048	(4.42)*	-0.0042	(3.88)*
DEGREE	0.3236	(6.03)*	0.3179	(6.00)*
NONE	-0.0053	(0.07)	-0.0138	(0.18)
JEW	0.1659	(0.97)	0.1600	(0.95)
OTHER	0.0761	(0.74)	0.0576	(0.57)
CATH	0.1349	(4.63)*	0.0784	(2.36)*
ATTEND	-0.0367	(1.32)	-0.0447	(1.60)
LNWEEKS	0.8924	(31.58)*	0.8457	(30.50)*
DIFFJOBS			-0.0149	(4.53)*
AMTWORK			-0.1177	(1.85)**
GOVT			0.0107	(0.29)
SELF			-0.4029	(6.09)*
MARRIED			-0.0397	(1.41)
BLACK			0.0241	(0.66)
OTHRACE			0.0399	(0.63)
INSMSA			0.1626	(4.57)*
CENTCITY			0.0827	(2.07)*
SOUTH			-0.0487	(1.67)**
FATHERED			0.0027	(0.56)
MOTHERED			-0.0019	(0.32)
IMMIGRNT			0.1794	(2.97)*
AGE			-0.0463	(7.13)*
PRIVATE			0.0445	(0.78)
SIBLINGS			0.0003	(0.05)
LAMBDA	0.0357	(0.04)	0.0247	(0.42)
N	3070		3070	
Log-Likelihood	-4258.539		-4107.684	

Absolute values of z-scores in parentheses; for LAMBDA, standard error is in parentheses.

\*Significant at 0.05 level.

\*\*Significant at 0.10 level.

Sample: National Longitudinal Survey of Youth 1979 Cohort (1991 wave).

religious background may diminish over a women's lifetime, as other more recent factors impact current earnings.

A number of possible explanations for the earnings premium for Catholic women can be examined empirically with the NLSY data. Eight variables describing the attitudes of women toward work and family issues were included in the participation equation in the first stage of the selectivity corrected regression model, but none of these variables were statistically significant. Attitudes toward the place of women in the workplace and its consequences are remarkably similar between women raised either as Protestants or Catholics. For example, 22 percent of both Protestant and Catholic women agreed or strongly agreed with the statement "it is better if the woman takes care of the home and the family," and 72 percent of both Protestant and Catholic women agreed or strongly agreed with the statement "employment of both parents is necessary to keep up with the high cost of living." Therefore, it seems very unlikely that differences in attitudes towards women's roles in society are a key explanatory factor in causing a wage premium for Catholic women.

Another potential explanation for earnings differences is that of differential fertility on the part of women raised in different religions. In the NLSY data from 2000, women raised as Catholics reported an average of 2.00 children ever born, while those raised as Protestants reported an average of 1.92 children. A variable measuring the number of children ever born was not statistically significant in the participation equations in the first stage of the selectivity corrected regression model. Regressions were also done separately on women with less than two children and those with two or more children. In the 2000 data women raised as Catholics with less than two children have 13.5 percent higher earnings (in the extended specification;  $t=2.22$ ), while there are no significant differences in earnings for women with two or more children. It is unclear why the impact of religious background remains important later in life for women with fewer children. Regressions were also estimated separately for women raised as Catholics or Protestants in order to determine whether rates of return to investment in schooling or experience were higher for Catholic women.<sup>10</sup> Women raised as Catholics had higher rates of return for both schooling and experience, but the differences were not statistically significant at the five percent level.

Variables for race and ethnicity are not statistically significant in the regression results presented in Tables 2 and 3. It is still possible, however, that the impact of religious background varies among different racial and ethnic groups. In Table 4, selectivity corrected human capital earnings

functions for the 2000 data are estimated separately for whites, blacks and others (as classified in the NLSY 1979 data). The coefficient for Catholic background is positive and significant for whites in the 2000 sample, with 14.4 percent higher earnings (coefficient of 0.1345) in the basic specification and 10.9 percent higher earnings (coefficient of 0.1037) in the extended specification. A comparable regression (results not shown) on a sample of white women in the 1991 data yielded very similar positive and statistically significant coefficients on the Catholic background variable. The results from Table 4 suggest that the significant

**Table 4. Female Earnings Functions by Race and Ethnicity, 2000**  
**Dependent variable: log of earned income, 1999.**

Independent Variables	Whites	Blacks	Others	Whites	Blacks	Others
INTERCEPT	5.2109 (21.72)*	4.8386 (16.00)*	5.6571 (6.78)*	5.5529 (12.96)*	6.2835 (11.59)*	7.1102 (4.77)*
EDUC	0.0569 (4.13)*	0.0755 (4.03)*	0.0574 (1.37)	0.0628 (4.43)*	0.0623 (3.27)*	0.1050 (2.44)*
EXPER	0.1335 (8.77)*	0.1144 (7.48)*	0.2622 (4.43)*	0.1371 (8.92)*	0.1095 (7.23)*	0.2717 (4.76)*
EXPERSQR	-0.0019 (3.82)*	-0.0020 (3.92)*	-0.0065 (2.93)*	-0.0021 (4.13)*	-0.0017 (3.36)*	-0.0069 (3.18)*
DEGREE	0.2300 (3.12)*	0.1291 (1.31)	0.2693 (0.92)	0.2215 (3.03)*	0.1416 (1.46)	0.0955 (0.34)
NONE	0.1171 (1.12)	-0.0615 (0.47)	0.0007 (0.00)	0.1144 (1.11)	-0.0898 (0.70)	-0.1769 (0.37)
JEW	-0.0676 (0.41)		0.2544 (0.35)	0.0280 (0.17)		0.8384 (1.17)
OTHER	0.1598 (1.16)	0.0833 (0.47)	0.3060 (0.71)	0.1579 (1.15)	0.0448 (0.26)	0.0714 (0.16)
CATH	0.1345 (3.49)*	-0.0785 (0.89)	0.1738 (0.78)	0.1037 (2.51)*	-0.1464 (1.62)	0.0431 (0.20)
ATTEND	0.0843 (2.23)*	0.1159 (2.14)*	0.0894 (0.59)	0.0741 (1.94)**	0.0870 (1.59)	0.1033 (0.69)
LNWEEKS	0.5794 (14.48)*	0.7205 (13.74)*	0.2574 (1.96)*	0.5709 (14.33)*	0.7124 (13.82)*	0.3311 (2.64)*
LAMBDA	0.0330 (0.59)	0.0107 (0.07)	-0.0058 (0.21)	0.0162 (0.058)	0.0008 (0.07)	-0.0032 (0.20)
Demographic and family background variables	No	No	No	Yes	Yes	Yes
N	1942	897	177	1942	897	177
Log-likelihood	-2992.376	-1317.969	-285.600	-2944.754	-1285.076	-263.591

Absolute values of z-scores in parentheses; for LAMBDA, standard error is in parentheses.

\*Significant at 0.05 level.

\*\*Significant at 0.10 level.

Sample: National Longitudinal Survey of Youth 1979 Cohort (2000 wave).

coefficients on Catholic background from Tables 2 and 3 may be solely due to the influence of this background on white women. None of the other religious background coefficients are significant for any of the racial/ethnic subgroups in the sample.<sup>11</sup>

The Protestant religious background category includes women who were raised within a number of different Protestant denominations. Given the extensive nature of the religious background information provided in the NLS Youth Cohort data, it is possible to examine the impact of these different denominational backgrounds on the earnings of women who were raised within the Protestant tradition. Table 5 presents the results of human capital earnings functions estimated for Protestants. Women in the sample were placed into six different categories: Baptists, Episcopalians, Lutherans, Methodists, Presbyterians, and other Protestants; women

**Table 5. Earnings Functions for Women Raised as Protestants, 2000**  
**Dependent variable: log of earned income, 1999.**

Independent Variables	(1)	(2)
INTERCEPT	5.0204 (21.17)*	5.7940 (14.00)*
EDUC	0.0551 (3.89)*	0.0482 (3.32)*
EXPER	0.1197 (9.02)*	0.1192 (8.90)*
EXBERSQR	-0.0018 (4.20)*	-0.0018 (3.99)*
DEGREE	0.2162 (2.92)*	0.2388 (3.23)*
OTHERPROT	0.0062 (0.13)	0.0132 (0.26)
EPISC	0.0759 (0.58)	0.0863 (0.65)
LUTH	-0.1342 (2.04)*	-0.0965 (1.35)
METH	-0.0198 (0.36)	0.0165 (0.29)
PRES	-0.2171 (2.57)*	-0.2007 (2.30)*
ATTEND	0.0924 (2.47)*	0.1008 (2.60)*
LNWEEKS	0.7034 (16.96)*	0.6973 (17.04)*
LAMBDA	0.0289 (0.06)	0.0231 (0.05)
Demographic and family background variables	No	Yes
N	1805	1805
Log-likelihood	-2730.051	-2689.682

Absolute values of z-scores in parentheses; for LAMBDA, standard error is in parentheses.

Omitted religious background category is Baptists.

\*Significant at 0.05 level.

\*\*Significant at 0.10 level.

Sample: National Longitudinal Survey of Youth 1979 Cohort (2000 wave).

raised as Baptists (51 percent of the sample) were the omitted category in the regression. Women in the sample who were raised as Presbyterians earn significantly less in both the basic and extended specifications, with the coefficient of -0.2007 (in the extended specification) translating into 18.2 percent lower earnings. Women raised as Lutherans also have

**Table 6. Earnings Functions for all Females, 2000—Current Religious Affiliation**

**Dependent variable: log of earned income, 1999.**

Independent Variable	(1)		(2)	
INTERCEPT	5.2439	(28.53)*	5.9624	(18.01)*
EDUC	0.0596	(5.56)*	0.0644	(5.81)*
EXPER	0.1324	(12.25)*	0.1346	(12.38)*
EXBERSQR	-0.0021	(5.85)*	-0.0021	(5.90)*
DEGREE	0.2022	(3.49)*	0.1935	(3.35)*
NONE	0.0159	(0.28)	0.0049	(0.09)
JEW	0.0587	(0.35)	0.1474	(0.89)
OTHER	0.0555	(1.02)	0.0677	(1.26)
CATH	0.0751	(2.15)*	0.0282	(0.75)
ATTEND	0.0848	(2.65)*	0.0838	(2.58)*
LNWEEKS	0.5935	(18.92)*	0.5848	(18.83)*
DIFFJOBS			-0.0076	(2.76)*
AMTWORK			-0.2205	(3.79)*
GOVT			-0.0275	(0.74)
SELF			-0.2090	(3.15)*
MARRIED			-0.1009	(3.34)*
BLACK			0.0211	(0.55)
OTHRACE			-0.0101	(0.16)
INSMAS			0.2722	(4.14)*
CENTCITY			-0.0257	(0.76)
SOUTH			-0.0324	(1.03)
FATHERED			0.0043	(0.87)
MOTHERED			-0.0050	(0.82)
IMMIGRNT			0.1843	(2.99)*
AGE			-0.0226	(3.42)*
PRIVATE			0.1352	(2.08)*
SIBLINGS			0.0094	(1.53)
LAMBDA	0.0333	(0.04)	0.0229	(0.04)
N	3014		3014	
Log-Likelihood	-4647.408		-4578.641	

Absolute values of z-scores in parentheses; for LAMBDA, standard error is in parentheses.

Religious variables represent current religious affiliation.

\*Significant at 0.05 level.

\*\*Significant at 0.10 level.

Sample: National Longitudinal Survey of Youth 1979 Cohort (2000 wave).

significantly lower earnings in the basic specification, but not in the extended specification. There is no evidence of earnings differentials for women raised in any of the other Protestant denominations.

Although current religious affiliation could be an endogenous variable with respect to income, it is still useful to examine the impact of religious affiliation on earned income to compare these results with the effect of religious background. Of those women who are currently Catholics, just over 90 percent were raised as Catholics; for those women who are currently Protestants, around 83 percent were raised as Protestants. The results of selectivity corrected regressions using religious affiliation variables are presented in Table 6. The results here are very similar to those presented in Table 2. The coefficient on current Catholic religious affiliation (which translates into 7.8 percent higher earnings) is statistically significant for the basic specification, but is not statistically significant in the more extended specification. A similar set of regressions done on a sample of white women (results available upon request) follows the same pattern as those done on the entire sample, with white women who are currently Catholics having statistically higher earnings than Protestant women only in the basic specification.

#### **IV. Conclusion**

Is there an earnings premium for women raised as Catholics? The evidence presented in this paper, while by no means definitive, suggests that a Catholic religious background may have a positive impact on a woman's earnings, especially early in her career. However, this premium seems to be present for white women only. Given the information available in the data, it is still unclear as to how a Catholic upbringing would lead to higher earnings. Some potential explanations, such as different attitudes toward work or a greater likelihood of private schooling, do not seem to be major factors. Although the NLSY 1979 has a great deal of information on economic outcomes, the information available there on religious practice is quite limited. There is no information on the intensity of religious background, and through what activities and channels the religious upbringing manifested itself. Questions on current religious practice are also inadequate.<sup>12</sup> In order to better understand the relationship between the spiritual and economic sides of our lives, there is a great need for better datasets with both religious and economic information.

What are the implications of this research for economists in general and Christian economists in particular? First, in order to more accurately answer existing questions of interest, economists need to be more open to

the inclusion of religious information into studies of economic behavior. Much current research (for example, an examination of the union wage effect) includes variables to control for the effects of gender, race, and marital status. However, if religious background, beliefs, and behavior have a real impact on economic outcomes, conclusions about the variables of interest could be made more accurate with the inclusion of religious variables.

Second, research into the economic impact of religious background and behavior itself is also a legitimate area of economic study. Studies examining income differentials based on gender, ethnicity, marital status, and other variables are a staple of economic research, while the impact of religion has drawn relatively little attention. The results of this paper suggest many avenues for further research. What is it about being raised Catholic that may increase income relative to other faiths? If there are specific activities or beliefs that cause women raised as Catholics to earn more as adults, can those activities be adopted by other groups of believers or non-believers? How might religious background impact human capital and does this impact decrease over time? Is the specific religious tradition or the intensity of the upbringing most important?

Finally, understanding the channels through which religious background and religiosity impact economic outcomes may provide insights into questions of institutional behavior and public policy. For example, Brooks (2004) finds that people “who regularly practice their religion give and volunteer far more—and more often—than people that do not practice any religion.” As a result, he suggests that non-profit organizations could raise funds more effectively by targeting religious communities.

Robert Barro and Rachel McCleary have recently formed the Religion, Political Economy and Society Project at the Weatherhead Center for International Affairs at Harvard. According to their website (<http://www.wcfia.harvard.edu>), the purpose of the project is:

promoting the study of religion as a significant subject area of the social sciences. We seek to investigate how religion interacts with economic performance and the political and social behavior of individuals and institutions across societies. We want to know, for example, how religiosity responds to economic development and to government regulation, subsidy, and suppression. We want to know how religious beliefs and practices influence individual productivity, economic growth, and the maintenance of political institutions such as democracy. We also want to see how religiosity interacts with violence within societies and across international

borders. By pursuing and disseminating research, we examine in an objective and in-depth manner some of the popularly held perceptions about religion in contemporary culture.

Christian economists may have a greater willingness and inclination than the rest of the economics profession to examine these topics, as well as special insights into these relationships. As the United States experiences greater religious diversity and there are continuing questions concerning the role of religion in American life, understanding these relationships will become even more important. If we find that religious background and behavior have significant economic impacts, what should be the response of both Christians and Christian economists? Do Christians use this information as a justification for more tolerance and even government encouragement or subsidy of religious beliefs? Do Christians see this as good news, or as a cause for concern that our religious practice leads to treasure on earth instead of treasure in heaven? The implications of the interaction between religion and economic outcomes should give Christian economists much to ponder.

### **Endnotes**

- 1 For an excellent survey of the economics of religion, see Iannaccone (1998).
- 2 There are several different cohorts of the National Longitudinal Surveys. Information concerning the surveys, including sample design, can be found at <http://www.chrr.ohio-state.edu/> and <http://www.bls.gov/nls/>.
- 3 The newest National Longitudinal Survey of Youth (1997 Cohort) asks questions of respondents born in the years 1980–84; these respondents were between ages 12–17 when first interviewed in 1997.
- 4 The analysis was done using the Heckman procedure in Stata. This procedure adjusts for the fact that income data is not observed for all of the women in the sample. A variable for the number of children ever born and eight variables reporting attitudes toward women in the workplace were used in the participation equation in the selection model. These results are available upon request.
- 5 In semilogarithmic regression equations, the coefficients on independent dummy variables cannot be directly interpreted as the percentage change of the dependent variable when the criterion is satisfied. The actual percentage change is computed as  $[(\exp(\beta_i) - 1) * 100]$ . For an explanation of this procedure see Halvorsen and Palmquist (1980).

- 6 The  $R^2$  for an OLS regression with the same variables as in this specification was approximately 0.40; the coefficients in the OLS regressions (basic and extended) on Catholic upbringing were almost exactly the same as those in the selectivity corrected regressions.
- 7 Women raised as Catholics were more likely than Protestants to attend religious services two or more times a month (43.4 vs. 39.1 percent). It appears that the impact of religious background is independent of that of current religious attendance; when the regressions in Table 2 were conducted without the attendance variable, there was very little change in the coefficients on the religious background variables.
- 8 These results are similar to those in Steen (1996), where men raised as Catholics have seven to twelve percent higher earnings.
- 9 There is relatively little attrition in the sample between 1991 and 2000, and the percentages of women raised in different religions in the two samples remain about the same.
- 10 A Chow test for the equality of all coefficients across the two regressions was rejected at the five percent level of significance. The results of these regressions are not shown here; they are available upon request.
- 11 One potential explanation for this result is the lack of religious diversity in the Black and Other groups. In the sample of white women, 51.6 percent were raised as Protestants while 42.2 percent were raised as Catholics. For black women, over 87 percent were raised as Protestants, while over 78 percent of non-whites and non-blacks were raised as Catholics. In addition, sample sizes are also smaller for the non-white groups.
- 12 In the twenty-three years since the survey was started, there have been only three years where questions concerning attendance at religious services were asked. The only other information provided in the survey with regard to religion describes the religious background of the respondent and his/her spouse (if present).

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