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Essays on the economics of religion, charitable giving, and youth crime

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**Essays on the
Economics of Religion, Charitable Giving, and Youth Crime**

Brian J. Osoba

Dissertation submitted to the
College of Business and Economics
at West Virginia University
in partial fulfillment of the requirements
for the degree of

Doctor of Philosophy
in
Economics

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2004

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Abstract

Essays on the Economics of Religion, Charitable Giving, and Youth Crime

Brian J. Osoba

This dissertation includes essays on the application of economics to areas previously thought to be the domain of sociology, psychology, and political science. Chapter 1 introduces the paths that economics has blazed into the areas of religion, charitable giving, crime, and government formation. The second chapter examines the functions that risk and time preference play in the strength of an individual's religious belief. The results illustrate that individuals treat religion like other goods exhibiting uncertainty and a delayed expected future payoff. Chapter 3 investigates the role of prestige and warm glow in the market for charitable giving. The results indicate that contributions to faith-based organizations depend on the strength of the warm glow effect *relative* to that of the prestige effect. The fourth chapter utilizes a model of government evolution to explore the formation of Los Angeles street gangs. The results indicate that already existing violence in the inner city causes youths to join gangs. It is also shown that the existence of gangs actually promotes an overall net decrease in crime. Chapter 5 summarizes the findings of the dissertation, provides concluding remarks, and discusses opportunities for future research in the economics of religion, charitable giving, and crime.

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Any errors are the sole responsibility of the author.

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Chapter 1

An Introduction to the Economics of Religion, Charitable Giving, and Youth Crime

1.1 Introduction

This dissertation looks at religion, altruism, and crime; topics that, until recently, were considered by economists as being primarily within the realm of sociology, psychology and political science. Although the respective literatures are growing, there are a great many areas that still need to be explored using standard economic reasoning. In addition, research in these areas helps to cross the artificial boundaries that separate economics from the other social sciences. Such crossovers may eventually help lead to comprehensive social science models of human behavior. Because my research comprises these lesser known areas, I will provide a brief introduction to each in order to acquaint the reader to the subjects. I will also explain the relevance of each area to economics and vice versa.

1.2 The Economics of Religion

A popular saying goes “when in polite company, avoid talking about politics and religion.” As anyone who has ever broken this law of social politeness may have witnessed, religion is an especially passionate issue for people. Perhaps one reason for this passion is that religion, as stated by Iannaccone (1995), is the “ultimate credence good.” Religious individuals accept the existence of their respective belief system completely on “faith”, without any tangible empirical evidence. For many individuals, religious beliefs have significant influence on their daily activities, many of which are of significant interest to economists.

Over the last fifty years, surveys in the United States have consistently reported that around 95 percent of the adult population subscribes to a belief in “God or a universal spirit.” In addition, approximately 75 percent of adults belief in an afterlife. Religious beliefs, according to the sociological and economic literature, may influence an individual’s respective behavior patterns, like consumption (e.g., no alcohol, fish on Fridays), labor supply (e.g., no work on Saturday and/or Sunday), and voting issues (e.g., abortion, death penalty, disregard of atheist political candidates) to varying degrees. Most major religions obligate adherents to behave according to a certain code of conduct. Also, the belief systems of these religions may predispose adherents to prefer one type of market or political system over another.

Throughout history, religious beliefs and institutions have been instrumental in shaping government policies and actions. These include state views on property rights, warfare (including the Crusades and much present-day terrorism), and market issues such the levying of interest on debt. However, the influence works in the opposite direction as well. Finke (1990) and Iannaccone, Finke, and Starke (1997), among many others, have looked at how government policies on religion have affected the levels of participation and membership in religious activities. Perhaps not surprising to economists, a “free market for religion”, where religious freedom is highest, results in increased religious competition and more specialization. In fact, participation is lower in countries in which there exists a government-supported religion. So, competition in the religious market appears to be good for consumers of religion.

Consistently high proportions of the U.S. population have remained religious over time. The proportion of Americans believing in the existence of a god or universal spirit

has hovered around 95% for the last 60 years. Belief in an afterlife has ranged between 71% and 76% over the same time period, with most of those people believing in a heaven, where those who have led good lives are eternally rewarded.¹ If so many individuals believe in “life” after death, it is important as economists to understand how such thinking affects human economic behavior. For example, do people consume differently knowing that they likely will be “consuming” again after death? Are religious people more reckless, as death only expedites the onset of “eternal bliss”? In fact, some of the earliest economic research on religion uses models of the current life and an afterlife to attempt to answer similar questions.

Weekly church attendance rates for U.S. Christians over the last 60 years have lingered around 40 percent for Protestants and about 50 percent for Catholics. What drives so many millions of individuals to allocate their scarce time resources each week to attend worship services? Instead of spending time at church, these individuals could be providing extra labor supply or consuming additional leisure goods. Certainly this weekly religious devotion has some impact on economic performance. In fact, Barro and McCleary (2002) looks at the influence that religion plays on a region’s pattern of economic development. On the other hand, the effect of economic factors on religious devotion was first studied by Azzi and Ehrenberg (1975). In their seminal paper, they find an individual’s hourly wage to have a negative effect on church attendance. Since then, several others have studied the role that similar opportunity costs play on church attendance.

¹ Incidentally, the belief in a hell has ranged between 53% and 60% of survey respondents. Perhaps this discrepancy indicates that people are somewhat optimistic.

1.3 Economics, Altruism, and Charitable Giving

Friedman (1990) defines altruism as the “devotion to the welfare of others, regard for others as a principle of action; opposed to egoism or selfishness.” As such, it seems that the very existence of altruism violates one of the main assumptions of standard economic models; that individuals are self-interested. However, economists should not worry. Incentives still govern human behavior, even when the activities appear to be utility-reducing. Economic theories of altruism abound, all based on some variation of the self-interest assumption. The standard paradigm explains how changes in incentives will lead to changes in an individual’s level of altruism. In fact, as shown by Becker (1976), altruism can actively promote one’s own interests. Empirical studies have confirmed these theories.

Charitable giving is an expression of altruism. In the U.S., faith-based charitable giving is particularly high. In 2003, total charitable giving equaled \$240.72 billion, or 2.2 percent of the U.S. GDP. Donations to religious activities were \$86.39 billion, representing approximately 35% of all charitable giving.² This money could have been spent on other, more tangible goods and services for the individuals and their families. So, what drives individuals to part with so much income, especially when it typically goes to strangers?

Several models have risen to prominence recently in the charitable giving literature to answer this question. Prestige Motive Models explain charitable giving as a way to buy social recognition and membership in an exclusive club of elite individuals. Warm Glow Models look at the joy individuals gain from acts of charity. Just as people may buy access to the cable channel, *Comedy Central*, to experience the pleasure of laughter, so

² Source: American Association of Fundraising Counsel (www.aafrc.org).

too do people “buy” happiness through charitable giving. In Public Goods Models, rational actors contribute to charitable activities in order to benefit from the positive externalities such support creates. For example, by contributing to an organization like the Police Athletic League, the contributor may experience less crime or harassment from groups of teens that otherwise may wander the neighborhoods looking for “recreational activities.”

1.4 Crime, Government, and Youth Gang Membership

In the early 1970s, fewer than 300 cities cited having problems with youth gangs. Since then, gangs have been identified in all 50 states, with over 2,500 cities reporting problems by the late 1990s.³ A popular perception of youth gangs is that they create much of the strife that the poor inner cities experience. Most scholars, the media, and policy makers alike seem to suggest that eliminating gangs would help to curb violence within the gang-infested areas. Certainly any reasonable person would acknowledge that gang members do participate in both violent and property-based crimes. However, a scant literature has considered the impetus behind youth gang formation. Likewise, few scholars have studied whether gangs actually cause a *net* increase in crime compared to situations where gangs are absent.

According to economic theories of government formation, in the vacuum of power that exists in anarchy, individuals having a comparative advantage in violence will form private protection agencies. These groups will gain control over a certain geographical area and coerce the population into paying the agency for the protection

³ Miller (2001) reports that smaller cities, especially those with populations below 10,000, have seen much more growth in gang-related activity than their larger counterparts between the 1970s and the 1990s.

services it provides – akin to a government. Because of the limited protection provided to urban youth and young adults by legitimate government law enforcement agencies, there exists a significant amount of anarchy in the inner-city. Due to the presence of this violence and anarchy, it seems natural for youth to seek assistance from protection firms (a.k.a., “gangs”) as a way of obtaining a higher level of personal safety. So, in lieu of a more effective government supply of safety to urban youth, gangs will continue to thrive in violent city neighborhoods.

As I have indicated in this introduction, religion, altruism (and charitable giving), and youth crime are important and relevant for study by economists. As will be shown in the following chapters, empirically studying these topics is perhaps more challenging than more traditional fields because of the lesser availability of reliable data. Despite this shortfall, with a bit of creativity (and possibly a sense of humor), advances in knowledge can take place.

Chapter 2

Risk, Discounting, and Religious Choice: Evidence from Panel Data

2.1 Introduction

Economists generally assume that individuals make choices based on rational, self-interested behavior. The economics literature on religion is no different in that it is largely based on the idea that people rationally choose to be religious – attend religious worship services, contribute money to religious organizations, and act religiously (by reading religious literature, praying, and teaching the beliefs to others) – based on expected costs and benefits and the timeframe in which those costs and benefits are incurred. This chapter seeks to add to the economics literature on religion by presenting evidence that an individual's religious belief is to some degree dictated by his risk tolerance and rate of time preference. I test the hypothesis that individuals who exhibit risk-averse behavior will be more likely to express stronger religious beliefs (through more frequent church attendance) than those that behave in a more reckless fashion. In addition, this chapter analyzes the effects that time preferences have on religious behavior. My hypothesis is that, because of the delayed gratification of the afterlife, individuals that discount the future less will tend to be more religious than those that prefer more immediate payoffs. The results indicate that religious belief serves to some degree as an insurance policy that protects an individual's afterlife payoff.

Religion is a very relevant subject for study by economists because of the many choices individuals make regarding their scarce resources that are based on religious beliefs. In the United States, over \$80 billion was donated to religious organizations in 2003. This is nearly 1 percent of the U.S. gross domestic product. Among Christians,

who make up approximately 80 percent of the U.S. population, 40 percent report attending worship services on a weekly basis. This means that every Saturday and Sunday (the days of worship for Christians), around 90 million people are devoting hours of leisure time to religious worship. Finally, individuals base many of their political choices, including voting, political participation (rallies, letter writing campaigns), and contributions to political action committees, on the religious beliefs they embrace. The growing economic literature on religion is a testimony to the relevance that economists now give to the effects of religion on economics and vice versa.

A handful of theoretical and empirical studies have considered the link between risk tolerance and religion. Except for a casual mention, even fewer have addressed the role that discounting plays in an individual's decision to devote scarce resources towards the practice of religion. The basic reasoning is that, due to the uncertainty of the existence of an afterlife, individuals having a lower risk tolerance are likely to buy more afterlife insurance than less risk-averse individuals. This afterlife, according to the beliefs of the most popular U.S. religions, is attained after death (an event whose timing usually occurs with uncertainty). So, those individuals that have a higher discount rate for the future will tend to buy less afterlife insurance, because current-period consumption is so important compared to consumption in the future.

Miller and Hoffman (1995) try to determine the driving forces behind the discrepancy between the rates of male and female religious belief. Their conclusion is that, even among males and females separately, risk plays some role in determining one's level of religious belief. Their results, however, are based on cross-sectional data. In this chapter, I use panel data from the 1970 to 1972 waves of the Panel Study of Income

Dynamics, in addition to state-level church membership data to better test this relationship. My results provide stronger evidence that risk tolerance is an important factor in an individual's decision to be religious. In addition, I also find a significant link between time preference and religious belief. In addition to being interesting by itself, this finding also helps to better explain the nagging question of why religious belief and practice do not generally decline with education.

A simultaneity issue exists between risk and religious belief. As stated above, risk-averse individuals will buy more insurance. However, once insured, the individual may in fact behave more recklessly knowing that eternal bliss awaits. So, religious individuals may, in fact, take on more risk. While the data I use does not allow for the resolution of this issue, it is important to state its existence.

Section 2.2 reviews the previous literature on the economics of religion. Economic studies on risk and religious practice are presented in Section 2.3. Section 2.4 provides a brief description to Pascal's Wager. I lay out the chapter's empirical methodology in Section 2.5 and analyze my results in Section 2.6. Conclusions and extensions are given in Section 2.7.

2.2 Economic Models of Religion

Azzi and Ehrenberg (1975) develop the Household Production Model, the first economic model of religious behavior. The authors model utility as a function of both secular and afterlife consumption. Secular consumption depends on household time inputs and purchased goods. Afterlife consumption is a function of lifetime religious activities,

consisting of attendance at religious services.⁴ They assume that, if lifetime religious activities equal zero, then there will be no chance of the afterlife. The probability of earning an afterlife is increasing in an individual's church attendance. The author's find that higher wage-earning individuals will attend worship services less, but contribute proportionately more to the church than lower wage earners.

Individuals may participate in religious activities for reasons besides that of earning an afterlife. Iannaccone (1984, 1990) and Neuman (1986) establish the Religious Capital in Household Production Theory. In it, they postulate that individuals accumulate a stock of religious human capital that is based on each person's knowledge of his own religion's practices and his connections within the church community. Freeman (1986) conducts an empirical analysis that shows churchgoing male African American youth to be more productive (both at work and school) and less socially deviant than their non-churchgoing peers. Despite difficulties in measuring causality, it seems likely that church participation provides inner-city youth with somewhat expanded connections for legal work opportunities and adult mentors.⁵

According to Religious Club Theory, originated by Iannaccone (1992), religious commodities are not only consumed by church participants. Using a club-theoretic approach, he shows how adherents also produce religious goods and services. For

⁴ Although it would be useful to include the individual's religious charitable contributions, volunteer time at faith-related activities, and other religious-related activities (e.g., prayer), these items were not available within the data sets that were employed.

⁵ The church may also serve, to some degree, as a public meeting place where members may become more informed of issues that are pertinent to their particular needs. An interesting example is the role that the Catholic Church played in the democratization of Poland during the 1980s. Eberts (1998) indirectly provides an anecdotal example of this theory. She explains how even Polish non-believers attended church services in order to congregate with their countrymen and women to protest the government rule. Lee (2001) points out that the Church helped to merge the varying political views of non-homogeneous groups into a unified opposition.

example, one individual's passionate singing of religious hymns may inspire other adherents to sing more passionately, resulting in more overall utility for all.

2.3 Religious Belief and Risk

As explained by Miller and Hoffman (1995), religious belief can be seen as a risk management strategy: individuals use rational choice to weigh the expected costs and benefits of religious belief and participation. Religious faith could be considered a risk-averse response to the potentially huge benefits of an afterlife promised by many religions usually at a relatively minimal cost. Using cross-sectional data, they find that an individual's attitudes towards risk have significant explanatory value for one's level of religious belief. Although only a cross-section of adolescents was studied, the authors provide an important initial link between religious choice and risk.

Stark and Bainbridge (1987) explain that as people age, the perceived risk involved with not being religious increases. The increased probability of death an adult faces as he ages motivates him to invest more time, energy, and money in religious activities. Miller (1992) and Cornwall (1989) show similar results. Iannaccone (1994) instead argues that such a pattern may instead be due to the individual's accumulation over time of religious human capital. So, as the individual gains more religious experience and more social capital in the religious community, he will derive increasing returns for his efforts. To some degree, Stark and Bainbridge (1985) confirm Iannaccone's reasoning in their description of Scientology - more an organized cult than an organized religion. According to the authors, at a certain point in their religious training, individuals in Scientology have accumulated enough cult-specific religious

capital that leaving the group does not seem like a reasonable option. Perhaps the same religious capital concept applies to more mainstream religions.

Iannaccone (1995) explains how individuals will seek to hold a diversified portfolio of competing religious commodities in order to spread the risk of those commodities. However, religious firms that are involved in the production of collective worship goods (like mainstream Christian denominations) are inclined to demand exclusivity from patrons to mitigate free riding. This exclusivity reduces risk for the establishment by helping it maintain a fairly stable client base.

As shown above, the effect of risk on religious practice has been empirically studied, albeit indirectly, through age and gender. This chapter uses a measure of risk preference to determine how risk affects religious participation. If religious belief (or religious activity) is, to some degree, a type of risk management strategy, then, *ceteris paribus*, individuals expressing more risk-averse behavior should be more religious (and should attend church more often) than risk-loving individuals.

2.4 Pascal's Wager: An Application of Risk and Religion

Previous studies on the economics of religion have postulated that individuals may consume religious goods and services as a rational risk management strategy. This logic follows a similar line of reasoning as that of the Pascal's Wager argument employed by Blaise Pascal in his *Pensées*, written in the late 1600s. A simplified version of Pascal's Wager can be written as follows:

$$E(V_B) = p(\infty) + (1-p)(0) - C$$

$$E(V_N) = p(0) + (1-p)(0)$$

Where $E(V_B)$ is the expected value function of a believer, and $E(V_N)$ is that for a non-believer. For a believer, if God exists, the reward is an eternal afterlife with infinite benefits.⁶ The costs (C) include opportunity costs of time (attendance at church and other religious functions, praying, etc.) and of money (contributions to one's religious congregation, travel costs of attending the service, extra dry cleaning expenses, etc.). So, as long as the individual believes that God *may* exist (with $p > 0$), the individual should still make his wager on believing in God.⁷ Within this model, non-believers cannot exceed zero benefits from not believing. Also, if eternal damnation exists for non-believers, as is believed by some religions, then the potential losses of not believing are substantial.⁸

The philosophy of religion field has a large literature dedicated to debating the merits of Pascal's Wager.⁹ One major criticism points out that the Christian God is promoted as being merciful. Thus, such a merciful deity may provide non-believers an afterlife despite their lack of belief. To simplify the analysis, I assume that non-believers face a zero-benefit (no heaven), zero-cost (no hell) decision. Also, several unique religions claim to worship "the one true god." Religious philosophers argue that, if there is only one true God, then people that believe incorrectly may have just invested their entire religious resources in a lemon. For simplification purposes, I assume that the individual believes in the "true god," whichever that may be. Finally, some philosophers point out that Pascal's approach is based on blatant, calculating self-interest. If God is

⁶ As the data limits my analysis to subscribers of Christianity, I adopt the convention of spelling the name of their god as "God."

⁷ Strict atheists, as indicated by Rescher (1985), fall out of the realm of this reasoning.

⁸ The expected value function for the nonbeliever if God sends such people to "hell" is $E(V_N) = p(-\infty) + (1-p)(0)$.

⁹ Since the purpose of this paper is to examine how religious belief may be *a kind of* risk management strategy (Pascal's Wager being only one of many such possible strategies), I will limit my discussion to more general attributes of the Wager.

omniscient, then, based on the teachings of many of the major religions, it seems that he/she would know if one were believing simply because it served one's own personal welfare. In this chapter, it will be assumed that religious individuals operate under the belief that God only cares *that* one believes, not *why* one believes.

2.5 Empirical Methodology

There are few empirical studies of risk, time preference, and religious belief due to a lack of data sets that include acceptable measures of each variable, especially over multiple time periods. However, between 1970 and 1972, the Panel Study of Income Dynamics (PSID) included questions about attendance at religious services, a risk avoidance indicator, and components measuring risk and time preference, like seat belt usage frequency and cigarette smoking habits. Despite the age of the data set, the results will still be applicable to the current day, considering the consistently high levels of religious belief and church attendance from the mid-1940s until the mid-1990s.

In order to test the effects of risk and time preferences on religious belief, I run two sets of models. Model I estimates the effects that the published risk avoidance indicator has on church attendance. Results from this model provide a general confirmation that risk attitudes factor into an individual's religious belief and practice. In Model II, the effects on religious belief of selected components of the risk avoidance indicator are estimated separately. The findings from Model II provide a deeper understanding of the role of risk tolerance and time preference on religious belief.

Church attendance, the dependent variable in my model, will serve as an indicator of an individual's level of religious belief. In the PSID surveys from 1970 through 1972,

respondents were asked “How often do you go to religious services?” The four choices available to respondents were: once a week or more, once a month, less than once a month, and never. As indicated previously, church attendance may well be governed by other motives besides a desire to serve one’s religious duty. By including certain control variables I describe below, I am able to better isolate the religious belief-based motivations for attending church worship services.

The risk avoidance indicator was published in the PSID data set from 1970 to 1972.¹⁰ This indicator was based upon a participant’s responses to questions regarding seat belt use, medical and auto insurance coverage, prevalence of smoking, and savings level. To allow for an easier discussion of risk preferences, I convert this indicator into a measurement of risk preference, with a higher score given to risk-lovers. Based on my hypothesis, *ceteris paribus* individuals with higher risk tolerance scores should attend church less frequently.

Church attendance, as indicated by Iannaccone (1984, 1990) and Neuman (1986), may be affected by the amount of religious human capital the individual has accumulated over his lifetime. As the concept includes social capital, my model employs variables to control for an individual’s non-Church support network and to explain his preferences for social and community-related activities.

As Iannaccone (1990) explains, collective churches actually benefit from increased membership if the positive congestion that active members create overwhelms the negative congestion of the inactive, free-riding members. To control for this effect, I calculate a variable that measure the concentration of the individual’s religious

¹⁰See Table A.1 in the Appendix for information about how the PSID derived the Risk Avoidance Indicator.

denomination in his geographical area. Another figure to control for this effect measures the average congregation size of the individual's denomination.¹¹

Participating in religious activities entails certain costs, like the opportunity cost of time. For example, another leisure good or service could have been consumed, or additional labor income could have been earned. Azzi and Ehrenberg (1975) show that higher wage-earning individuals participate less in religious activities due to the higher opportunity cost they encounter. However, there is strong multicollinearity between wages and several other model variables (e.g., age, education, race, gender). To escape this dilemma while still considering opportunity costs, I use the previous year's work hours for both the head and the spouse, when present. Individuals also incur costs pertaining to travel from home to church. To control for these opportunity costs, I employ a variable that measures the concentration of congregations in the individual's area.

The previous literature has found other variables to affect an individual's level of religious participation. As indicated by Azzi and Ehrenberg (1975) and Ulbrich and Wallace (1983, 1984), age has a strong positive effect on religiosity. This appears to be the result of a shorter payoff time on the individual's religious investment. Ulbrich and Wallace (1984) explain the positive effect that marriage has on religious attendance as a function of the joint-consumption nature of the religious service. So, single people may substitute more secular activities for worship services if church is seen as a place meant more for couples and families. According to Iannaccone (1998), education is usually a

¹¹ The data was downloaded from the American Religion Data Archive <<http://www.thearda.com>> and originally collected by the National Council of the Churches of Christ in the USA. This publication contains information on the number of churches and adherents to certain Christian denominations at both the state and county levels.

weak, but positive predictor of religious activity. It is also important to consider race when modeling religious belief and participation, as African Americans tend to participate in religious services more frequently than other races. As de Vaus (1984) and de Vaus and McAllister (1987) show, females are more likely to express their religiosity than are males. Zaleski and Zech (1994) find that attitudinal and doctrinal factors between denominations can explain differences in giving and attendance for subscribers of those denominations. It is important to note that only Christian denominations were available for the final data set. Summary statistics for the model variables are provided in Table A.2 of the Appendix.

2.6 Empirical Analysis

Due to the ordinal nature of the dependent variable, church attendance, I employ ordered choice estimation techniques to determine the effects of risk on religious attendance. According to Greene (1997), there is no reliable test so far that determines which model is superior, ordered probit or ordered logit. So, I estimate my model using both methods. The econometric model has the following general form:¹²

$$\text{Church Attendance} = \beta_1 + \beta_2[\text{Risk Preference}] + \beta_3[\text{Individual Characteristics}] + \beta_4[\text{Denomination Characteristics}] + \varepsilon$$

In ordered choice models, a variable's coefficients do not always indicate the appropriate direction of its effect on the dependent variable. To determine the direction and magnitude of each regressor's impact on church attendance, I compute marginal

¹² Since the ordered choice models are nonlinear in nature, this depiction is for descriptive purposes only.

effects for all significant independent variables.¹³ Marginal effects on middle values of the dependent variable are ambiguous. So, it is important to review how the independent

¹³ See Greene (1997).

Table 2.1
Random Effects Econometric Results – Model I
Dependent Variable: Church Attendance

Variable	Ordered Probit	Ordered Logit
Characteristics of Individual:		
Risk Tolerance Indicator	-0.17848 *** (0.00729)	-0.32000 *** (0.05396)
Age	0.02311 *** (0.00547)	0.03925 *** (0.00969)
African American	0.69313 *** (0.16223)	1.18373 *** (0.28657)
Married	-0.07982 (0.16192)	-0.09370 (0.29616)
Education Level	0.07908 * (0.04497)	0.14323 * (0.07985)
Male	-0.17584 (0.25866)	-0.36524 (0.46031)
Prior-Year Work Hours	0.00014 * (0.00007)	0.00021 (0.00013)
Member of Union	-0.00021 (0.00024)	-0.00035 (0.00043)
Social Club Attendance	0.05243 (0.03288)	0.10504 * (0.05895)
Family Members Nearby	0.08595 (0.08456)	0.15882 (0.15279)
Number of Neighbors Known	0.01431 (0.01790)	0.01941 (0.03225)
Characteristics of Individual's Religious Denomination:		
Catholic	0.93645 *** (0.15039)	1.70228 *** (0.26827)
Average Catholic Congregation Size	-0.00007 (0.00001)	-0.00012 (0.00014)
Average Protestant Congregation Size	0.00010 (0.00001)	0.00021 (0.00016)
Catholic Churches per 1000 Square Miles	0.00387 (0.00052)	0.00626 (0.00484)
Protestant Churches per 1000 Square Miles	-0.00172 (0.00024)	-0.00242 (0.00236)
Constant	0.54480 (0.48975)	1.07265 (0.86921)
Sigma	1.72757 *** (0.07663)	3.08707 *** (0.14237)
Chi ² Statistic (d.f. = 1)	22528.68 ***	22541.19 ***

Notes:

Results are reported as coefficient (t-statistic); N=3653 Observations; T=3 Periods.

Asterisks indicate the coefficient is statistically significant at the following levels: ***=1%, **=5%, *=10%.

variables affect church attendance at that the highest and lowest values: (3) once a week and more and (0) never.

Table 2.1 displays estimation results for Model I. The estimated coefficients on the risk tolerance indicator are negative and significant for both the ordered probit and ordered logit specifications. Marginal effects for significant variables are displayed in Table 2.2. For both model specifications, the marginal effect of an individual's risk tolerance is negative on the highest value of church attendance and positive on the lowest value. This signifies that, an individual with a risk tolerance level of 6 (according to this chapter's risk preference indicator) will be 2.4 to 3.4 percent less likely to attend church once a week or more than a person who with a tolerance level of. The same individual will also be 2.0 to 2.4 percent more likely to never attend church. These results provide strong support for the hypothesis that individuals who exhibit higher levels of risk tolerance will attend church less frequently than those who are more risk averse.

The significant control variables generally agreed with those in the existing literature. African Americans were between 8.9 and 13.4 percent more likely to attend once per week or more compared to individuals from other races. As individuals aged each year, they were 0.2 to 0.4 percent more likely to attend church once a week or more. Being of the Catholic faith increased an individual's likelihood to attend church services at the most frequent level between 12.9 and 18.3 percent. Having other social connections only mattered to a small degree, and only in the ordered logit model. Only in the ordered probit model was the variable indicating the household head's work hours from the previous year (a proxy for income) significant. While it had an unexpected positive coefficient, it exhibited zero marginal effects on church attendance. Finally, as

Table 2.2
Marginal Effects for Model I
Dependent Variable: Church Attendance 1

Variable	Never	Less Than Once Per Month	Once Per Month	Once Per Week or More
Ordered Probit				
Risk Tolerance***	0.024	0.011	-0.001	-0.034
Age***	-0.003	-0.001	0.000	0.004
African American***	-0.089	-0.045	0.000	0.134
Education Level*	-0.011	-0.005	0.000	0.015
Prior-Year Work Hours*	0.000	0.000	0.000	0.000
Catholic***	-0.113	-0.064	-0.006	0.183
Ordered Logit				
Risk Tolerance***	0.020	0.005	0.000	-0.024
Age***	-0.002	-0.001	0.000	0.003
African American***	-0.071	-0.019	0.000	0.089
Education Level***	-0.009	-0.002	0.000	0.011
Social Club Attendance*	-0.006	-0.002	0.000	0.008
Catholic***	-0.098	-0.029	-0.002	0.129
Marginal effects are only reported for statistically significant variables. Marginal effects may not sum to zero across rows due to rounding. Asterisks indicate the coefficient is statistically significant at the following levels: ***=1%, **=5%, *=10%.				

expected from the previous literature, education had a small, but positive effect on church attendance. Individuals having an additional level of education were 1.1 to 1.5 percent more likely to attend church once a week or more.

2.7 Extensions

While the risk indicator variable in the PSID is a useful start, it comprises variables that have value themselves both for measuring an individual's risk tolerance and his rate of time preference. For instance, the indicator consists of a variable that indicates the frequency with which the survey respondent wears a seat belt. It also contains a variable measuring the amount of money spent on cigarettes each year. These two variables

themselves are interesting indicators of an individual's risk tolerance. However, they also can provide a comparison of the individual's rate of time preference. An immediate and catastrophic death or injury is unlikely to be caused by smoking a cigarette. While the probability of having a fatal automobile accident is still low, such an event is much more likely to happen. So, an individual that does not wear a seat belt risks an unlikely, but potentially immediate death from his actions, while an individual that smokes risks a much more certain but also much more delayed risk of death.

As extensions to Model I, I evaluated separately the effect that each risk indicator component had on church attendance. My *a priori* assumption is that each indicator should help reveal in more depth the role played not only by risk, but also by time discounting.¹⁴ Estimation results for Models IIA through IID and their respective marginal effects are located in Tables A.3 through A.10 in the Appendix.

The results indicate that both risk and time preferences play an important role in an individual's level of religious belief.¹⁵ Variables that significantly and positively affect an individual's level of church attendance are seat belt usage, car insurance coverage, and a variable indicating the proportion of income one has in a savings account. On the other hand, the amount spent on cigarettes per year has a negative effect on church attendance. The positively signed variables all describe actions that require a relatively small, but immediate payment. In return, the individual gains some level of assurance against an unlikely, but potentially catastrophic event. Smoking, in contrast, is an activity that provides the individual with immediate pleasure (or at least temporary relief from the nagging cravings for nicotine), while exacting a larger, higher-probability

¹⁴ A special thank you to my dissertation committee for pointing this out.

¹⁵ Recall again that these results do not apply to atheists and agnostics.

payment at a later time (like an early death from emphysema and/or lung cancer). The religious equivalent is the proverbial sale of one's soul to the devil.

2.8 Conclusion

Risk preferences motivate individuals to buy different levels of insurance coverage, participate in activities with different levels of physical danger, drive more or less carefully, and to maintain different portions of their respective incomes in savings accounts. If risk tolerance can motivate these differences in behavior, then, with an afterlife of eternal bliss being an uncertain fate, it is a simple extension that risk preferences can also cause individuals to have different levels of religious belief. This chapter has investigated this risk-religion link. Using the risk avoidance indicator from the 1970 through 1972 PSID, I am able to show that risk is strongly related to the level of religious belief than an individual exhibits. Individuals that participate in less risky activities are likely to attend church more frequently than individuals that ostensibly seek out more risk.

My findings show that risk-averse individuals and/or those who discount the future less, may employ reasoning similar to that expressed by Pascal's Wager: by making relatively small payments at present (e.g., attending church, praying), they gain an increased assurance – at least according to some religious providers - of attaining an infinite and perfectly blissful afterlife. Risk-loving individuals and/or those with a high rate of time preference attend church less frequently, placing more value on current earthly activities and less concern about potential future consequences.

Within the literature on economics and religion, there has been much discussion on why education has a positive effect on both religious belief and practice. Despite the lively debate, little empirical evidence has been provided to explain this phenomenon. My findings on time preference and religious provide some of this missing proof. Since education is an activity that provides most of its tangible rewards at a later time, it can be argued that individuals having higher levels of education also have lower rates of time preference.¹⁶ Since religious belief also has a delayed, but substantial payoff (according to religious providers), it is easy to see how educated individuals *that already believe* would be willing to invest more in religious activity than the average individual.

¹⁶ Again, I thank my dissertation committee for pointing this out.

Chapter 3

Sins of the Father: The Impact of Sexual Abuse on Faith-based Charitable Giving

3.1 Introduction

Faith-based charitable giving is big business. Total charitable giving in the United States exceeded \$240 billion in 2003. Charitable giving to religious organizations historically has hovered near 1 percent of U.S. Gross Domestic Product since data on such giving has been publicly available. The goal of this chapter is to study the role of prestige and warm glow motivations in charitable giving to religious ideological organizations.¹⁷

Specifically, this chapter examines the impact that publicized incidents of sexual abuse in Catholic Church dioceses have had on donations to organizations that promote Catholic ideological values. These organizations include the Catholic Church specifically, along with other Catholic faith-based organizations that are not directly affiliated with the Catholic Church. A few such non-church affiliated organizations are Good News for Catholics, Inc., Catholic Truth International, and Catholic Action for Peace through Songs. The prestige of Catholic faith-based institutions declined following the abuse incidents in their dioceses. However, non-Church, Catholic faith-based organizations may have actually benefited from a substitution effect, due to the bureaucratic distance these organizations maintain from the Church. This chapter tests the degree to which contributions to non-Church Catholic faith-based organizations are warm-glow substitutes for donations made directly to the Catholic Church. While this chapter pertains directly to charitable giving by Catholics, the results have implications that

¹⁷ For an interesting discussion of issues related to intangible goods, see Copeland and Laband (2002).

extend both to other religious charities and to other ideologically-based organizations, like the National Rifle Association and Amnesty International.

There is a well-developed economic literature devoted to studying the motives of altruism and charitable giving. Such motives include the desire for prestige and a preference for helping others – known in the charitable giving literature as “warm glow”.¹⁸ Because this chapter addresses issues with religious charitable giving, the warm glow motive also includes the fulfillment of a perceived religious duty, like promoting a particular religious faith or the ideals that faith espouses. The publicized incidents of sexual abuse of children by Catholic clergy resulted in a decrease in expected prestige gained from donating to anything related to the Catholic faith. In addition, individuals saw the unit price of warm glow provided by the Church increase relative to that of non-Church faith-based organizations. Such a increase occurred because a significant amount of individual donations were being directed towards the payment of legal fees and other abuse-related expenses, instead of either helping people in need or promoting the Catholic ideology.¹⁹ To remain close to their former respective utility levels, individuals substituted some portion of giving away from the Church and into these other organizations. However, the total effect on giving to non-Church organizations is ambiguous, depending on whether the negative prestige effect or positive warm glow effect dominates.

Anecdotal evidence presented by news media sources suggests that many Church dioceses have seen declines in donations from their respective congregations due to the

¹⁸ Andreoni (1993) even introduces the concept of Sucker Aversion – a motive for *not* providing charitable contributions.

¹⁹ Catholics may have even felt that their contributions were actually helping to support the sexual abuse of children, which should have a decidedly negative impact on warm glow for most individuals.

publicity that local abuse incidents have generated.²⁰ However, the discussion has not considered the role such abuse has had on contributions to *substitute* religious ideological organizations. While no data is available on charitable giving directly to Catholic Church dioceses, published data on contributions *is* available for organizations that serve similar ideological purposes. Combining this data with a unique database that categorizes all publicized abuse incidents that took place within the Catholic Church, I am able to test the impact such negative publicity had on religious contributions to these similar organizations. My results indicate that the positive substitution effect from the warm glow motive overpowered the negative effect from the prestige motive, resulting in a net increase in contributions to non-Church Catholic faith-based organizations.

The implications of my findings are important because they indicate that substitute goods exist, even when we are referring to less tangible items, like prestige, religion, and ideology. My results also confirm that charitable giving is driven by several motives, including the acquisition of prestige and warm glow. Finally, for the markets housing these ideological goods, it is efficient for there to exist alternative providers of the same or similar ideologies. So, free-markets for religious and political ideas are utility-enhancing for the participants of those markets.

Section 3.2 introduces the economic models of altruism and charitable giving. Empirical models of religious charitable giving are summarized in Section 3.3. I present my theoretical and empirical models in Sections 3.4 and 3.5, respectively. The results of my empirical analysis are discussed in Section 3.5. Section 3.6 concludes the chapter.

²⁰ Two of several examples include: (1) Eltman, Frank. 2004. "Child Advocate Urges Church Donation Boycott," AP Wire, February 11 and (2) Paulson, Michael. 2004. "Archdiocese sets \$10.M as its Annual Fund-raising Goal," The Boston Globe, April 30.

3.2 Economic Models of Altruism and Charitable Giving

Before I provide my empirical methodology, it is instructive for me to present a basic introduction to the economic models that have been developed to explain charitable giving. While altruism and charitable giving are often interpreted as selfless acts by the general public, empirical tests of the current theories confirm that altruistic actions are just another form of self-interested behavior.

According to sociobiological theories, an individual will perform an altruistic act toward a genetically linked individual when the benefit to the relative exceeds a certain fraction (determined by the percent of genes the two share) of the loss to the altruist. In the model from Becker (1974), an individual's utility is increasing in other individuals' utilities. This model has interesting implications for transfers between the individual and those with whom he has close relations (like family, friends, and special groups). Although this model has some testable implications, it does not explain why so many people assist others that are strangers, as in the case of charities.

Becker (1976) uses an economic model of altruism to illustrate the survival of altruists. As the model contains social interaction, the advantages of altruism are explained by the beneficiaries' desires to protect the altruist from harm. The self-interested altruist gains fitness due to this increased protection, resulting in favorable natural selection. Samuelson (1993) provides another example of such a model. However, these biological models have not held up to empirical scrutiny.

Charitable giving is just a form of altruism. Individuals provide monetary donations to strangers either directly or through organized charitable institutions. Although much of the charitable giving literature pertains to the effect that changes in

marginal tax rates have on individual charitable contributions, there is also a good deal of theoretical literature on *why* people part with resources that go effectively to strangers.

Individuals may contribute to certain causes to obtain implicit membership in exclusive philanthropic groups. Chiswick (1991) develops a club-theoretic model to explain altruism to strangers by linking club members' respective utility functions.

Harbaugh (1998) introduces the Prestige Motive Theory. This model considers both an intrinsic benefit and a prestige benefit for the contributor. The author finds that donors significantly value prestige as a benefit of giving. A much earlier work that considers the effect of prestige on altruism is Landes and Posner (1978). The authors look into the formation of Good Samaritan Laws. They argue that a model of reciprocal altruism by itself should not be a significant explanation for charitable and altruistic activity. Instead, they discuss how recognition is an attractive reward for altruists. Because of this prestige-seeking motive, Landes and Posner (1978) conclude that such laws may actually result in fewer rescues because the public will interpret the person's altruism as being done in order to avoid prosecution, instead of to act heroically.

According to the Warm Glow Theory, developed by James Andreoni, individuals supply charitable contributions because they derive pleasure in helping other individuals. Andreoni (1989) models the propensity to donate into egoistic and altruistic motives in order to determine how government donations affect private giving. The author concludes that government contributions are imperfect substitutes for private gifts due to this warm glow effect. The experimental model developed by Andreoni (1993) shows how individuals can derive pleasure from contributing to a public good.

Sucker Aversion, a term developed by Andreoni (1993), actually helps to confirm the warm glow concept. According to Andreoni (1993), individuals attempt to avoid being fooled into contributing to a cause that is in some way misrepresented. This indicates that contributors really do care that their money is used to help other people. Walker (2002) reports similar results, with 84 percent of people in the United Kingdom expressing the need for a high level of trust in a charity prior to contributing.

3.3 Empirical Studies of Religious Charitable Giving

There exist a handful of papers that empirically study religious charitable giving. These studies implement a variety of methods and employ quite different kinds of data. The conclusions they reach also vary widely. Some have used micro-level data to exact differences in individual giving patterns. Others have looked at issues related to the organizations themselves.

Sullivan (1985) uses a simultaneous equations approach to investigate the determinants of an individual giving level. The author finds that church attendance, congregation size, and tax incentives are important contributing factors to religious charitable giving levels. Zaleski and Zech (1994) look at the differences between Catholic and Protestant charitable giving. The authors determine that parish size and membership attitudes of the parish have the largest impact on per capita giving in the Catholic Church. According to Weisbrod (1988), an organization's characteristics, like fundraising expenses and duration of existence, along with the demographics of its supporters, play a role in the level of donations it receives. Greeley (1987) provides a less technical analysis of Catholic Church donation revenues. The author explains the

decrease in the Church's contributions between the early 1960s and the mid-1980s as primarily due to organizational problems, like leadership failures and membership alienation.

3.4 Modeling Religious Ideological Goods

As indicated earlier, there are several motivations behind individual charitable giving, including the desire for prestige, and the satisfaction of helping others (a.k.a., warm glow). Before conducting an empirical investigation of the impact of abuse on faith-based charitable giving, it is important to discuss how these motivations work. Because the abuse occurred within the Catholic Church, any association with Catholicism will tarnish an organization's reputation to some degree. As the prestige of giving to such institutions declines, charitable contributions to Catholic faith-based organizations, both the Catholic Church and non-Church affiliated institutions, will decline.

On the other hand, individuals are also motivated by a desire to experience a certain amount of warm glow. For Catholics, some of this is generated from supporting organizations that promote the ideals of the Catholic faith. Another portion of the warm glow experience is derived from helping other individuals. Due to the abuse incident, individuals gain less warm glow from giving the same amount of money to the Church. So, the price per unit of warm glow, generated by giving to one's church congregation, increases. This unit price increase drives individuals to seek lower cost alternatives. Non-church affiliated Catholic organizations fulfill this role. Because they are not directly connected to the Church (and, thus, not involved in the abuse), these faith-related organizations continue to provide a lower cost option for Catholics to attain the desired

level of warm glow (from helping others and supporting the Catholic ideology). So, Catholics will substitute some religious charitable giving away from their church congregations and into these faith-related organizations. The effect of this behavior on contributions to the Catholic Church itself is unambiguously negative. However, the negative prestige effect and positive substitution effect together exhibit an ambiguous net effect on giving to non-Church Catholic faith-based organizations.²¹ That is, they will increase if the substitution effect dominates, and will decrease if the prestige effect is stronger.

To improve the understanding of this relationship, suppose, for example, that the Catholic Church receives positive publicity for one of its actions, like the opening a new homeless shelter. In such a situation, the prestige effect would be positive both for the Church and all other Catholic faith-based organizations. However, in this situation, the price of warm glow would *decrease* for the Catholic Church relative to the other organizations. So, individuals will substitute contributions into the Church from these other organizations. The effect on giving to the Catholic Church is positive. The net effect of this positive publicity on the other organizations is ambiguous, with the direction determined both by the intensity of the positive publicity and the relative degree of substitution between the two organizations.²²

²¹ Thanks to Russ Sobel for pointing out this explanation.

²² Another way to explain this situation, indicated by Ron Balvers, is to determine whether religious faith-based charitable organizations are substitutes or complements for church institutions that represent the same faith.

3.5 Empirical Methodology

Prior to discussing the data used in this chapter, I will clarify the hierarchical nature of the data employed. The basic elemental unit of the Catholic Church is the parish. A typical parish maintains a house of worship (the church you see on the corner), a certain number of religious leaders (priests), and the parish auxiliary staff. A certain number of parishes belong, and are subservient to a diocese (headed by a bishop) or an archdiocese (headed by an archbishop).²³ The Catholic Church in the United States comprises 176 dioceses. All, except 2 of those dioceses comprise one or many whole counties. Therefore, discarding those 2 exceptions, county-level data is mutually exclusive to each diocese and can therefore be summed when the diocese in fact contains more than one county. Publicized abuse incidents by diocese are presented in Table A.11 in the Appendix.

My variable of interest – a binary variable indicating a publicized incident of alleged sexual abuse - is from a database on clergy crimes available on the website of Survivors First.²⁴ Located in Boston, Survivors First was created by concerned Catholic and non-Catholic individuals in 2002 with the aim of, among other things, serving as a clearinghouse on clergy sexual abuse and related crimes. The organization maintains a comprehensive database of all publicly known abuse crimes and abuse allegations, collected from reputable newspapers and legal documents.²⁵ Included with each abuse incident is the diocese in which the abuse occurred, the source and date of publication, and the current status of the incident. Wide-scale, nationwide reporting of abuse within

²³ To simplify the analysis, diocese will be employed to signify itself and archdioceses.

²⁴ <http://www.survivorsfirst.org>.

²⁵ See the following article for more information on this organization: Rezendes, Michael. 2002. "Advocates for Victims Release Priest Names," *Boston Globe*, November 13.

the Catholic Church began in earnest in early 2001. Prior to this national reporting, most abuse events were only reported on locally. Studying the incidents from before 2001 reduces the amount of noise likely caused by national reporting. So, a pre-2001 abuse incident in one diocese should have a negligible effect on charitable contributions within other dioceses.

To measure the effect of the abuse on charitable contributions to non-Church Catholic faith-based organizations, I use an unbalanced panel data set spanning 1990 to 2001 from the National Center for Charitable Statistics (NCCS)²⁶. Among the variables included within this data set are annual organization contribution levels and the date when the organization's tax-exempt status was approved. Because this data contains county-level geographic identifiers, I am able to merge this data with the diocesan-level abuse data.²⁷ The data include all nonprofit organizations that seek 501(c)(3) tax-exempt status from the Internal Revenue Service (IRS). Such organizations must file IRS Form 990 in any fiscal year in which their gross receipts exceed \$25,000. Among those excluded from filing include religious congregations and organizations that are directly affiliated with these congregations. Therefore, the Catholic Church parishes and dioceses described above will not be included among this data. What this exclusion allows, though, is a solid test of how contributions to *non-Church affiliated* organizations changed due to the sexual abuse incidents.

Pollak (1997) provides a methodology for finding all religious faith-related organizations within the IRS Business Master File. His approach is based on the assumption that an organization's primary or secondary name (as listed in the database)

²⁶ The panel data set is created by merging the IRS Business Master File with each year's NCCS Core File.

²⁷ The best available micro-level religious contributions data is available over a very limited time period. Also, the lowest level geographical indicator for the individual is the Census Region.

will contain at least one of several religion-affiliated keywords. Using a modification of his approach, I selected certain keywords that Catholic faith-related organizations will likely report in these database fields. To ensure that no organization was overlooked, I also selected all organizations that classified themselves as Roman Catholic Religion-Related.²⁸

Some organizations in the data set are headquarters of nationally recognized charities. As they receive contributions from both inside and outside the diocese, they would introduce white noise into the analysis. Therefore, I removed any organizations whose contributions exceeded \$1,000,000 in any year of the data.

Equation (1) illustrates the econometric model:

$$\begin{aligned} Contributions_{i,t} = & \beta_0 + \sum_{p=0}^P \gamma_p Abuse_{k,t-p} + \beta_1 Tax_Price_t + \\ & \beta_2 PCPI_{j,t} + \beta_3 Organization_Age_{i,t} + \beta_4 Catholic_Concentration_{i,t} + \varepsilon_{t,i} \end{aligned} \quad (1)$$

where t indicates the time period, and i, j , and k represent data at the organization, county, or diocese level, respectively. The number of lags is denoted by p . Except for *Abuse* and *Organization_Age*, all variables are in natural log form. Again, the variable of interest includes *Abuse*, along with its respective lags. This binary variable equals one for a diocese during the year when an abuse event pertaining to that diocese was publicized. Thus, within the panel data set, all organizations located in the diocese during the time of the abuse would be affected by the publicity.

The model in this chapter includes current-year contributions as the dependent variable and price and income as independent variables. Such a specification, first employed by Clotfelter (1985) and widespread throughout the charitable giving literature,

²⁸ National Taxonomy of Exempt Entities (NTEE) Classification Code: X22.

allows for the estimation of price and income elasticities. Because I am using aggregate data, I substitute county-level per capita personal income for individual income. This assumes that each organization receives its contributions from the county in which it is located. Removing large organizations from the data set, as I explained above, seems like a reasonable method to limit the contributions to the organization from outside areas. The contribution and per-capita personal income figures are converted into 2000 dollars.²⁹

The tax price is derived by taking one minus the maximum marginal Federal tax rate for that time period. This method is used by Partha (2002) due to the lack of individual tax information from aggregate data. The highest marginal tax rate is the most reasonable figure to utilize for calculating the tax price of giving because wealthier individuals have the greatest impact on charitable contributions. Because of the tax-deductibility of charitable contributions, an increase in the current period's tax price of giving (and subsequent decrease in the top marginal tax rate) should result in a decrease in charitable giving.

Following Weisbrod (1988), *Organization_Age* is a variable used to control for an organization's reputation effects. All else equal, an organization with longer ties to the community should have an advantage in raising money over newer institutions. I calculate each organization's age using the current panel year minus the year when the entity was approved for tax-exempt status.

Finally, I included a variable to take into account the effect that the size of the Catholic population has on contributions to the Catholic faith-based organizations. The

²⁹ I use the Personal Consumption Expenditures: Chain-Type Price Index Less Food and Energy from the U.S. Department of Commerce, Bureau of Economic Analysis. (<http://www.bea.gov>).

American Religious Data Archive and the Glenmary Research Center provide data on the number of adherents to Catholicism within each county.³⁰ The adherent data is only available for the years 1990 to 2000. So, to generate adherent data for other years, I assume a constant growth rate (calculated using the published data), and calculate the number of adherents based on that growth rate. Table A.12 of the Appendix provides descriptive statistics for the model data I employ.

3.5 Empirical Analysis

I estimated both random and fixed effects models to explore this panel data set, testing various lag lengths of the *Abuse* variable. Results from the Hausman Test provided strong results favoring the fixed effects models. Due to the volume of results from the various models, I present results in Table 3.1 that provide the most valid and interesting interpretations of the data.

The model indicates that an incident of diocesan sexual abuse increased charitable contributions to organizations within that diocese. This result is significant across all models for the year in which the abuse occurred. This positive impact on charitable contributions, however, persists for two years beyond when the abuse incident was publicized. While the result on the first post-abuse year becomes insignificant, the second post-abuse year result is highly significant. While additional lagged values of *Abuse* are positive, but insignificant, the results on years 0 and 2 remain positive and highly significant throughout.

There is a clear economic interpretation of this finding: the organizations in this data set are strong enough warm glow substitutes for the Catholic Church that this

³⁰ An adherent is considered an active member of the church community.

substitution effect overwhelms the negative prestige effect that affects all Catholic faith-related organizations. Recall that the data used in this model is only for Catholic *faith*-related organizations. While the organizations are related to the Catholic Church *in ideology*, they are not directly related to the Church. So, when the abuse incidents were publicized, individuals shifted some of their charitable consumption out of the Catholic Church and into similar, though unaffiliated, organizations. It appears clear that the abuse events decreased the marginal utility of warm glow giving to the Catholic Church, resulting in a shift of some contributions to more utility-enhancing organizations.

All of the control variables were the expected signs with levels of significance of at least 10 percent. Variables exhibiting a positive effect on charitable contributions include: per-capita personal income, the age of the charitable organization, and the ratio of Catholic adherents to the total county population. As anticipated, the tax price of giving negatively affected contributions.

Table 3.1
Estimation Results for Panel Data Models
Dependent Variable: Contributions(t)

Variable	Fixed Effects	Random Effects	Fixed Effects	Random Effects	Fixed Effects	Random Effects
	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)
Abuse(t)	0.07596 * (0.04074)	0.06729 * (0.04018)	0.07954 * (0.04066)	0.07663 * (0.04066)	0.10213 ** (0.04176)	0.09089 ** (0.04100)
Abuse(t-1)	- -	- -	0.02098 (0.04172)	0.02179 (0.04101)	0.05189 (0.04254)	0.04974 (0.04166)
Abuse(t-2)	- -	- -	- -	- -	0.15734 *** (0.04257)	0.15760 *** (0.04174)
Tax_Price(t)	-0.29058 *** (0.06114)	-0.07757 * (0.04566)	-0.29391 *** (0.06114)	-0.07860 * (0.04566)	-0.29339 *** (0.06112)	-0.07840 * (0.04565)
PCPI(t)	0.47917 *** (0.12661)	0.57391 *** (0.0496)	0.47484 *** (0.12661)	0.57455 *** (0.04962)	0.46344 *** (0.12662)	0.56718 *** (0.04965)
Organization_Age(t)	0.01706 *** (0.00371)	0.00021 ** (0.00009)	0.01727 *** (0.00371)	0.00022 ** (0.00009)	0.01731 *** (0.00371)	0.00022 ** (0.00009)
Catholic_Conc(t)	3.32947 * (1.83844)	2.89172 ** (1.34963)	3.32931 * (1.83775)	2.89605 ** (1.34942)	3.35099 * (1.83727)	2.90946 ** (1.34923)
Lagrange Multiplier Test (df=1)	43168.38***		43179.31***		43186.43***	
Hausman Test (df=5,6,7)	188.21***		189.08***		188.83***	

Notes: (1) Levels of significance denoted as follows: ***(1%), **(5%), *(1%)

3.6 Implications and Conclusion

While the sexual abuse scandal appears to have decreased overall donations to the Catholic Church, similar but unaffiliated organizations that promote the Catholic religious ideology have actually benefited. This chapter examines the impact that abuse incidents have had on giving to Catholic faith-related organizations located within the diocese in which the abuse occurred. My results indicate that charitable contributions to these organizations *increased* after the incidents of abuse occurred. This is important in that it confirms that Catholic faith-based organizations are strong warm glow substitutes for Catholic Church congregations.

My analysis uses a demand function for charitable giving, with contributions dependent on price and income, along with a binary variable indicating the presence of an abuse incident. Using an unbalanced panel of contributions data for a large number of Catholic faith-related organizations, I examine the impact that abuse incidents have on faith-related charitable giving. My reasoning is based on established models of charitable giving that explain individual charity motives based on rational self-interest.

These results confirm that individuals treat religious ideological goods as any other good. So, when the quality of one ideological good declines, provided a sufficient substitute good is available, the individual will switch some portion of his consumption to the substitute good. Another implication is that, for ideological markets to be efficient, it is important for there to exist alternative providers of the ideology. So, if the quality of one good decreases, consumers will be able to purchase a similar good from another provider. These results should apply not only to religious organizations, but to other

ideologically based groups, like the National Rifle Association and the American Civil Liberties Union.

The driving force behind the increased contributions to non-Church faith-based organizations is the strength of the positive warm glow effect relative to that of the negative prestige effect. Because the net effect in this case is positive, Catholics gain a substantial level of warm glow from supporting their faith and providing happiness to other individuals. However, it is also possible for, in other situations, there to be a net decrease in contributions to substitute organizations if the amount of positive warm glow is insufficient to compensate for the negative prestige from bad publicity. For example, if individuals contribute to an ideological cause mainly for prestige reasons (making it a “prestige good”), then negative publicity towards one prominent organization may result in lower giving to all organizations related to the cause. In contrast, giving driven principally by warm glow motives will be affected very little by a negative shock to prestige levels.

Chapter 4

Youth Gangs as Governments: Implications for Violent Crime

4.1 Introduction

In the early 1970s, fewer than 300 cities cited having problems with youth gangs.³¹ Since then, gangs have been identified in all 50 states, with over 2,500 cities reporting problems by the late 1990s.³² Anecdotal evidence, along with casual empirical correlation, has led many people to hold a strong belief that youth gangs are a serious problem because areas with more gang activity tend to have higher rates of violent crime committed by youths. Simply put, the commonly accepted wisdom is that gangs cause violence. In this chapter we propose and test a hypothesis suggesting that the causal relationship between youth violence and gang activity is exactly opposite of what is commonly accepted. We propose that the failure of government to protect the rights of younger individuals from violence *committed by* other youths has led to the formation of gangs as a protective agency in areas with high pre-existing rates of violent crime. While gangs, like governments, use violence to enforce their rules, the net impact of gangs (and governments) is to lower the amount of violent crime.

Our analysis is solidly founded in the economic literature on the formation and evolution of ‘governments’ from a situation of anarchy developed by Nozick (1974) and Buchanan (1975).³³ These authors, particularly Nozick, explain how and why infant governments evolve as protection firms in the anarchistic ‘Hobbesian Jungle’

³¹ Curry, Ball, and Fox (1996) provide a methodology for estimating data on gangs, gang membership, and gang-related criminal activity.

³² Miller (2001) reports that smaller cities, especially those with populations below 10,000, have seen much more growth in gang-related activity than their larger counterparts between the 1970s and the 1990s.

³³ For a good summary and review of this literature, see Gordon (1976).

characterized by violence and theft. While other authors have previously applied this theoretical framework to coercive organizations such as the Mafia, very little has been done on applying this model to youth gangs with the exception of a purely theoretical model by Skaperdas and Syropoulos (1995).

In this chapter we develop this youth gang application of government evolution theory to a much greater extent than has previously been done in the literature. In particular we show that this model predicts an exactly opposite direction of causality between youth gang activity and the rate of violent crime than is commonly accepted. Our hypothesis, that gangs form in areas where there is a high rate of pre-existing violence as a protection agency substituting for the lack of government enforcement of rights, is an alternative explanation for the well-documented cross-sectional correlation between gang activity and violent crime. We use empirical causality testing to confirm our hypothesized model. Our model also better explains the reason why the age distribution of youth gang membership does not show a significant drop at exactly age 18, but rather tapers off through the mid-20s. In our model, it is those individuals most likely to be the *victims* of aggression from other youths (who will go unpunished by the government legal system because of their age), that get the most benefit from gang membership.

Finally, our results have significant implications for government policy directed towards youth gangs. Just as the overthrowing or dissolving of a government in a geographic area would result in more violence, due to the lack of rights enforcement in the resulting anarchy, government policy aimed at dissolving youth gangs will not be

successful in reducing violent crime, and will in fact increase it.³⁴ By failing to punish youth offenders when they violate the rights of other individuals, the current government legal system has created an environment where there is a significant demand for these private protective agencies (youth gangs). While gangs do use violence to enforce their rules and protect the rights of their members, the net result of gangs is to reduce the amount of violent crime. Because there will always be a market for private protection when government fails to protect individual rights, the implications are clear for how policy reform can reduce gang activity – enforce laws that protect the rights of individuals from violent crimes committed by youths.

4.2 The Traditional View of Gangs

Prior to developing our hypothesis in more detail, it is important for the reader to understand the widely-accepted view and perception of gangs among academics in general. Sociologists and criminologists have weighed in most heavily on the debates regarding gang formation. Spergel, Chance, Ehrensaft, Regulus, Kane, Laseter, Alexander, and Oh (1996) theorizes that youth gang problems are brought about by several community-level factors, including a lack of both social opportunities and social organization, institutional racism, and failures of social policy. They claim that, especially in black neighborhoods, the street gang provides control and “employment” opportunities that are not provided by legally recognized institutions. The popular perception is that gangs, like the infamous Bloods and the Crips, seek out new markets in which to franchise their names. However, the empirical literature has found results that

³⁴A current-day example of this is post-war Iraq, where private security firms are being hired to compensate for the lack of protection by U.S. and Iraqi government sources.

reject this hypothesis. For example, Spergel, Curry, Chance, Kane, Ross, Alexander, Simmons, and Oh (1996) notes that most new gangs are not franchises. This is later reaffirmed by Maxson (1998).

Other authors have hypothesized that gangs are little more than organized drug dealing firms, and that the main reason for gang existence is the fact that drugs are illegal. This claim is widely made by law enforcement officials. While it is true that some gangs use the drug trade to help finance their activities, the empirical literature has uniformly provided results that reject the view that drug activity is the main reason for gang formation and existence. Maxson (1995) tests the connection between street gangs, illicit drug sales, and violence and finds that street gangs are far less likely to be involved in the illegal drug trade and the associated violence than the law enforcement literature suggests. The author finds that only a few gangs seemed to specialize in drug sales. Levitt and Venkatesh (2000) describe the inner workings of a gang that, in fact, does sell drugs. However, the gang charges a “membership fee” for those who wish to sell drugs.

One reason to be very skeptical of these claims by law enforcement officials of the gang relationship with the drug trade is because if law enforcement exaggerates the extent to which gangs are involved in drug trade, they are more likely to get bigger budgets. The fact that budgetary considerations play a major role in the decisions and actions of police departments is now widely demonstrated in the literature by authors such as Rasmussen and Benson (1994).

That gang activity is present to a greater extent in areas with higher rates of violent crime has been well demonstrated *in the cross section*. Based on this strong correlation, it is widely accepted that the way to reduce violent crime is to reduce gang

activity. Inherent in this statement is an underlying assumption about the direction of causation between violent crime and gang activity. An intervention that reduces gang activity will only reduce violent crime if gangs cause violent crime. All protection firms and organizations, from the Mafia, to private security, to traditional governments, use coercion, retaliatory violence, and predatory violence to enforce certain rules of conduct and to enforce and protect the rights of their members. However, saying that gangs cause violence based on this observed behavior is identical to claiming that governments who use coercion and violence as a means to provide protection services are causing more total violence than would exist without any government in place. The gang's use of retaliatory violence against someone who aggresses against a gang member actually results in a lower level of total violence because it creates a strong incentive for individuals not to initiate violence to begin with because of the fear of retaliation by the gang. Within the economic model of protection services, an intervention that resulted in weakened gangs (or weakened governments) would result in more violence, not less.

Actually, there are some theoretical papers that show violence decreases with fewer competing coercive organizations. Buchanan (1973) explains that a monopoly on violence is better than a more competitive market in the protection industry because monopolists tend to underproduce. So, society should experience a lower output of violence when one gang has monopoly power over a certain geographical area. In this case, as Buchanan indicates, by following its own self-interested goals, a monopoly producer of a "bad" makes society better off by underproducing violence. Similarly, in the model presented in Skaperdas (2001), increased competition in the violence industry results in decreased social welfare.

Any theory of gangs should be accepted or rejected based on its ability to explain real world empirical observations. As we have already discussed, the real-world evidence rejects the hypothesis that gangs primarily form to participate in the drug trade (although it may be a secondary function performed by the gang once it is organized). Perhaps the most useful empirical observation that must be explained by a good theory of gang formation is why these gangs are primarily present among youths and not adults.³⁵ The most widely accepted reason within law enforcement and in sociology is that gangs *employ* and recruit youth members because these members can commit crimes virtually without punishment because of their age. In this framework, youths are employed to coerce other individuals and commit violent acts to obtain resources for the gang leaders. Data on the age distribution of gang members seem to clearly provide evidence that is inconsistent with this view, however.

Figure 1 presents the age distribution of gang members from the National Youth Gang Survey. If gang members are employed based upon their ability to commit illegal acts without punishment from law enforcement, there should be a large, discreet, decline in gang membership beginning at age 18. Our alternative hypothesis, that violence committed by youths who will not be punished causes gangs to form among the potential *victims* of this violence, would predict a slightly different age profile. The age profile our theory predicts would be the age profile of the potential *victims* of violent youth criminals (under age 18). Because social groups and interactions do tend to be stratified by age, our theory also predicts that gangs would form among youths more than adults.

³⁵ Interestingly, gang activity among adults is most prevalent in prisons, a place where the enforcement and protection of individual rights is almost nonexistent, an observation that would also reject the commonly accepted wisdom in favor of our theory.

Figure 4.1
Age Distribution of U.S. Gang Members, 1998

Source: National Youth Gang Survey, 1998

However, within our model the age distribution of gang membership should begin to smoothly decline after age 18 as individuals move into new social groups of individuals as they age. The fact that both a 16-year old and an 18-year old are just as likely to be the victim of a 17-year old criminal explains why our model fits this data better than the existing, and more commonly accepted view of youth gangs. In our model, gangs as protective firms have as customers the potential victims of youth violence and the age distribution of gang membership is clearly more consistent with our view than of the view that gangs cause violence by employing youths (who will go unpunished) to carry out their coercive activities. Interestingly, as Figure 1 shows, adults (those over age 18) comprise a larger proportion of gang members than do youths (under age 18).

4.3 The Economic Model of Gang Formation

Lane (1958) describes how government, in its role as a “protection” firm, became a monopolist over the protection industry and then the entire market. Carneiro (1970) confirms that coercive force, not enlightened self-interest, led to the formation of states throughout history. However, the modern economic literature on the formation and evolution of protection firms from a situation of anarchy is generally attributed to the influential works of Nozick (1974) and Buchanan (1975).

The economic model of government evolution has been applied to organized crime and gang-type organizations. According to the literature on organized crime, the Mafia and similar organizations can serve as monopoly providers of protection when the state fails to do so. No work in this literature, though, provides our unique insight that gangs might actually result in less overall violence. In addition, there is very little empirical testing of these theories, and no tests that use a causality approach.

Most of the literature on the evolution of private protection firms focuses on a situation of anarchy, where there is no other provider of protection. Hirshleifer (1995) notes that some degree of anarchy is present in every social order. As government law enforcement cannot completely keep violence and theft from occurring, markets for specialized private protection firms may develop in any level and form of society. Skaperdas and Syropoulos (1995) describe how primitive states and gangs can arise out of a situation of anarchy. Since the gang members have a comparative advantage in violence, they grab and maintain power through coercion of those who have a comparative advantage in production.

Mehlum, Moene, and Torvik (2002) develop a theoretical model to show how

violent gangs may become monopoly producers of violence and protection. This occurs when legitimate government fails to protect individual and property rights. The gangs may extort “protection” fees both from individuals that operate in the underground economy and from others that lack legal protections. In fact, Levitt and Venkatesh (2000) describe how drug dealers in a drug affiliated gang pay a “membership fee” to continue dealing inside the gang’s territory. Konrad (1999) shows how, in the absence of state power, gangs can develop.

According to Anderson (1995), certain conditions encourage the formation of a Mafia: a loss of legitimate state power, and the presence of illegal markets. Although a street gang is not a Mafia, the two criteria are typically present in poor inner cities, potentially aiding in gang formation, just as they do in Mafia formation. Meanwhile, Skaperdas (2001) lists certain contributing factors for the birth and growth of gangs and organized crime, again including illegal markets along with ethnic and/or social distance from “mainstream” society.

In our model, we assume that violence is a form of anarchy. Again, as stated by Hirshleifer (1995), because law enforcement and individual protection cannot prevent all violence, some degree of anarchy exists in all societies. However, of special concern is the degree of anarchy at each location. So, we postulate that, in areas where greater anarchy exists, individuals will be more prone to become members of gangs. By being part of the gang, one obtains the protection and “law enforcement” services of the gang within one’s own community. So, if violence is inflicted upon a gang member, the gang will retaliate against the perpetrator. In neighborhoods with little violence, there is much less need for this protection because state-provided law enforcement is more easily

accessible and efficient.

There is a common misperception in society that *only* government can provide peace and order. In fact, according to Reuter (1983), conflicts in an organized crime setting are usually settled peacefully. Dowd (1997) reminds us that the "Wild West" was usually more peaceful and orderly than generally perceived, due to the occasional creation of citizen vigilante groups that enforced the legal attitudes of the day. Similarly, our chapter provides evidence to show that, in the inner city, where government protection is limited at best, gangs form to provide more safety and order than would otherwise be available.

4.4 The Economic Model of Gang Operation

Not only is it important to understand how gangs *form*, but also how they operate once formed. Spergel, Curry, Chance, Kane, Ross, Alexander, Simmons, and Oh (1996) describe the symbiotic nature of street and prison gangs, with both organizations acting to maintain control and order in their respective geographic areas. Interestingly, the relatively high degree of gang activity within prisons seems also to support our hypothesis. Prisons are well known for being places where the rights of individuals are not very well protected, and inmates can expect to get more protection of their rights from belonging to a prison gang than from the prison security guards.

Skaperdas (2001) argues that organized crime is more like a state than a firm. However, it more closely resembles the predatory states of days well past. Skaperdas and Syropoulos (1995) show how those ruled by the gangs will tend to devote fewer resources towards production, resulting in a lower level of economic activity and growth.

This is especially true in the impoverished inner cities, where the gangs already compete for increasingly scarce resources.³⁶ However, gangs may still be better for the overall social and economic performance of an area than anarchy. Even when the state is assumed to maximize the consumption and utility of the ruling elite, Grossman (1998) finds the presence of the state is still a Pareto improvement over anarchy.

According to Baumol (1990), governments throughout history have for the most part behaved like gangs, being “tyrannical and self-serving.” However, he proposes that gangs are less like governments and more like firms serving clients. Gambetta (1993) also disagrees that the Mafia is another form of a state. He argues that Mafias are not centralized, they do not maintain undisputed control over a certain geographic region, they are not accountable, nor are they universal. Instead, he indicates that the Mafia is probably closer to a business firm that provides protection services to paying clients only, and not to all citizens in their region. For example, as Anderson (1995) points out, existing businesses that are victims of extortion may actually support the gangs because they exhibit some control on the entry of rival firms. In the article by Levitt and Venkatesh (2000), that particular gang behaves somewhat like a business, extorting money for protection, selling drugs, paying a “franchise fee,” charging a membership fee, and taking over nearby territory. The gang they study also goes “out of business.” However, as we indicated earlier, such drug-dealing “franchise gangs” are more the exception than the rule.

³⁶ Another question, though, is whether they actually result in lower economic activity than in the case of anarchy.

4.5 Data

While there is a strong theoretical literature on anarchy, gangs, and organized crime, the empirical testing of these theories is almost nonexistent. This lack of empirics is, to a large degree, due to the relative dearth of data on gang-related activity. Although data on gangs is improving (as evidenced by the clearinghouse currently maintained by the Office of Juvenile Justice and Drug Prevention), the limited time series data still hampers research on many gang-related issues.

In order to test the theoretical model, we employ gang membership data from the Los Angeles Police Department (LAPD) Citywide Gang Crime Summary.³⁷ The LAPD employs undercover gang intelligence officers to infiltrate gangs in order to identify the gang's members. In addition, these officers report on whether each member is currently active in gang activities or is currently absent from the gang. Figure A.1 in the Appendix shows the levels of total gang membership, along with membership data for the three largest Los Angeles gangs: Hispanic gangs, Crips, and Bloods.

We also use violent crime data from the LAPD's 2002 Statistical Digest. This data is useful because it provides a long time-series to explore for a single location: Los Angeles, California. The gang membership data spans 72 months, from April 1998 to March 2004. Monthly crime data is also available for 72 months, from January 1997 to December 2002.³⁸ Because the time periods differ, we can only use the overlapping 57 months of data, from April 1998 to December 2002. Selected statistics on crime and gang data are provided in Table A.13 of the Appendix.

³⁷ This data was prepared by the Los Angeles Police Department Bureau SEU and CRASH units and compiled by the Special Operations Support Division.

³⁸ Gang membership data for February 2002 was not reported. For simplicity, we populate February membership with the midpoint of the January and March 2002 membership statistics.

Our violent crime data consists of the following Type I offenses: homicide, aggravated assault, and robbery.³⁹

The gang membership data contains information on total gang membership tracked by the LAPD. Data is available for total gang membership, and for several individual gang categories. To test the robustness of our model, we conduct our tests not only for total gang membership, but also individually for the three largest individual gang classes. Because of the well documented seasonal nature of criminal activity, as our starting point, we analyze the 12-month seasonal difference of all variables. This results in each monthly observation reflecting the amount by which that variable is higher in that period than twelve months earlier. The monthly gang membership and crime data are provided in Tables A.14 and A.15 in the Appendix. The data are plotted in Figures A.2 and A.3 in the Appendix.

4.6 Empirical Analysis

Because we are interested in employing the Granger-Sims causality test to determine the direction of causality, we need to first ensure that our series are stationary. To test for unit roots, we employ the Augmented Dickey-Fuller (ADF) Test using the following regression specification:

³⁹ According to Howell (1998), gangs are dominated by males. The only violent Type 1 offense we do not report is rape because it is, by definition, a crime against females. According to the Uniform Crime Reporting Division of the Federal Bureau of Investigation (to whom the LAPD reports these figures), Forcible Rape is defined as “The carnal knowledge of a female forcibly and against her will. Assaults or attempts to commit rape by force or threat of force are also included; however, statutory rape (without force) and other sex offenses are excluded.”

$$\Delta y_t = \alpha_0 + \gamma \cdot y_{t-1} + \sum_{i=2}^P \beta_i \cdot \Delta y_{t-i+1} + \varepsilon_t \quad (1)$$

$$\text{where } \gamma = -\left(1 - \sum_{i=1}^P \alpha_i\right) \quad (2)$$

$$\text{and } \beta_i = \sum_{j=1}^P \alpha_j \quad (3)$$

Where y is the variable of interest (in its 12-month difference form) and P is the number of lags determined using the Akaike Information Criterion (AIC).

Table 4.1
Augmented Dickey-Fuller (ADF) Unit Root Test Results

Variable	Model: Δ_{12}	Lags	Model: $\Delta(\Delta_{12})$	Lags
Aggravated Assault	-2.4005	3	-5.9097 ***	2
Homicide	-3.2696 **	2	-7.5734 ***	1
Robbery	-1.8818	3	-4.7064 ***	2
Total Gang Members	-3.1764 **	3	-3.9016 ***	2
Hispanic Gang Members	-3.0666 **	3	-4.1909 ***	2
Crips Gang Members	-2.9507 **	3	-5.2163 ***	1
Bloods Gang Members	-2.0283	1	-5.1372 ***	1
Notes: The number of lags determined using the Akaike Information Criterion (AIC). Asterisks indicate statistical significance at the following levels: ***=1%, **=5%, *=10%.				

Table 4.1 shows the results of all ADF Tests. From these results, we conclude that only one of the crime variables (homicide) is stationary in the 12-month difference form. The remaining crime series are nonstationary and, thus, will not provide valid causality results using the standard Granger-Sims methodology. The first difference of these nonstationary series is stationary (results provided in Table 4.1), so we may conduct our tests on this transformed data series (the first difference of the 12-month seasonally differenced series). Our Granger-Sims causality tests are conducted as follows:

$$VIOLENT_CRIME_{t,i} = \beta_i + \sum_{p=1}^P \beta_p VIOLENT_CRIME_{t-p,i} + \sum_{p=1}^P \beta_p GANG_MEMBERS_{t-p,j} + \delta_t \quad (4)$$

$$GANG_MEMBERS_{t,j} = \alpha_j + \sum_{p=1}^P \alpha_p GANG_MEMBERS_{t-p,j} + \sum_{p=1}^P \alpha_p VIOLENT_CRIME_{t-p,i} + \varepsilon_t \quad (5)$$

We set up the null hypotheses that: (a) $\alpha_p = 0$ and (b) $\beta_p = 0$, for all $p = 1$ to P . Again, the optimal lags are determined by using the AIC on the vector autoregressive equations. Using an F-test, we evaluate these null hypotheses for each gang (j) and crime (i) to determine if any causal relationship exists. Our Granger Causality results are presented in Table 4.2.⁴⁰

The first section at the top of Table 4.2 shows the results of the causality test for the relationship between homicide and gang membership. For all cases we cannot reject the hypothesis that homicide Granger causes gang membership, but we can reject the hypothesis that gang membership Granger causes homicide. Thus, for total gang membership, as well as all three major subcategories of gangs, the causality tests show that there is a one-directional causal relationship: homicide causes gang membership. In no case do we find that gang membership causes homicide. As the rate of homicide in Los Angeles increases, so does gang membership as a result, but not vice versa.

The middle section of Table 4.2 shows the results of the causality tests for the relationship between aggravated assault and gang membership. For aggravated assault the results are similar, with one exception. We can again not reject the hypothesis that aggravated assault causes gang membership (for total membership, and for the three gang categories). On the other hand, we can reject the hypothesis that gang membership causes aggravated assault in all but one of the cases (for Bloods). The overwhelming evidence here again points to the conclusion that an increase in violence, in this case aggravated assault, causes an increase in gang membership, but not vice versa.

⁴⁰ Additional test results for stationarity and serial correlation are provided in Appendix Tables A.16 and A.17.

Table 4.2
Gangs and Violent Crime Causality Tests

Homicide					
Gang	Model	Lags	H₀: Violence Granger-Causes Gangs (F-Statistic)	H₀: Gangs Granger-Cause Violence (F-Statistic)	Finding
Total Gang Members	Δ_{12}	2	1.2715	3.8722**	Homicide Granger-Causes Total Gang Membership
Hispanic	Δ_{12}	1	1.7529	3.2341**	Homicide Granger-Causes Hispanic Gang Membership
Crips	Δ_{12}	1	0.7456	4.4939**	Homicide Granger-Causes Crips Gang Membership
Bloods	$\Delta_1(\Delta_{12})$	3	1.0917	6.0406***	Homicide Granger-Causes Bloods Gang Membership
Aggravated Assault					
Gang	Model	Lags	H₀: Violence Granger-Causes Gangs (F-Statistic)	H₀: Gangs Granger-Cause Violence (F-Statistic)	Finding
Total Gang Members	$\Delta_1(\Delta_{12})$	2	0.4494	2.4984*	Aggravated Assault Granger-Causes Total Gang Membership
Hispanic	$\Delta_1(\Delta_{12})$	2	0.5383	2.2501	No causality
Crips	$\Delta_1(\Delta_{12})$	2	0.3652	2.6943*	Aggravated Assault Granger-Causes Crips Gang Membership
Bloods	$\Delta_1(\Delta_{12})$	2	0.4869	1.2787	No causality
Robbery					
Gang	Model	Lags	H₀: Violence Granger-Causes Gangs (F-Statistic)	H₀: Gangs Granger-Cause Violence (F-Statistic)	Finding
Total Gang Members	$\Delta_1(\Delta_{12})$	1	0.0713	0.4764	No causality
Hispanic	$\Delta_1(\Delta_{12})$	1	0.2691	0.3694	No causality
Crips	$\Delta_1(\Delta_{12})$	1	0.0021	0.3605	No causality
Bloods	$\Delta_1(\Delta_{12})$	1	1.1265	0.5362	No causality

Notes:

(1) All variables are twelfth-differenced in order to correctly deal with the seasonality present in the crime data. Additionally, some of the twelfth-differenced series had unit roots. To correct for this situation, those series were first-differenced. All resultant series are stationary.

(2) Lags for the Granger Causality Tests were determined using Akaike's Information Criterion.

4.7 Conclusion

The popular perception that gangs cause violent crime is based on tenuous casual observations. Although gangs and violence do seem to frequently coexist, such correlations do not imply causality. Our results show that violent crime causes an increase in gang membership, and not vice versa. Thus, areas with higher rates of violent crime should also experience higher rates of gang membership *as a result* of the increased violence.

We extend the models of government formation out of anarchy developed by Nozick (1974) and Buchanan (1975) and apply them to the relative anarchy of the life of inner city youths. Our analysis is based on the observation that government does not adequately protect the rights of individuals from violent crime committed by youths. Operating out of fear, based on past violence or perceived future violence, these youths seek protection by forming organizations to provide safety where government public safety agencies have failed.

Our results are important because they uncover a situation where public policy, implemented with the best possible intentions, may in fact be harming those it was intended to help. As we have shown, violent crime leads to an increase in gang membership, not vice versa. If policies are enacted to break up gangs, the resulting increased anarchy should in fact lead to more violence among youths. This is because the gangs serve as a net deterrent of violence. In addition, as theorized by Buchanan (1973) and later by Konrad (1999) and Skaperdas (2001), increased competition between gangs will lead to additional violence. Unless the already existing violence is mitigated, youths from the previous gangs will again form gangs. However, they will be more fragmented

and, thus, more contentious.

Certainly existing laws should be enforced that protect individuals from violent crime committed by youths. While law enforcement likely is active in many at-risk city neighborhoods, the emphasis may be too heavily focused on prosecuting those participating in the illicit drug trade, in lieu of more directly protecting public safety.

Finally, it may even be possible for existing gangs to be used as a resource in helping the legitimate government maintain order. If competition among gangs does increase violence, as exemplified by gang “turf battles”, then gang consolidation may actually lower violence. In fact, perhaps city governments could establish official gang territorial boundaries and provide gang members with outcomes-based compensation for reducing violence. Certainly such a setup would be a tough sell politically. However, unless government improves on the protection it provides to individuals, youths will continue to join gangs to purchase these missing services.

Chapter 5

Summary and Conclusions

The fields of sociology, psychology, and political science, are social science relatives of economics. However, until recently, economists strayed from researching subjects thought to belong to these three areas. Pioneering works by Gary Becker, James Buchanan, and Gordon Tullock, among others, helped to open the door for the economic model to be used to analyze topics in the other social sciences. This dissertation has followed in the paths of these pioneers, although a bit more humbly, with the hope of building bridges across the artificial boundaries dividing the social sciences.

Economic research on religion started in 1975 with the seminal work of Azzi and Ehrenberg. The authors used a dynamic model that included not only future earthly consumption, but also consumption in an afterlife. Although the authors found some interesting results, only a handful of articles on religion emerged in the economics literature for the next 15 years. In the 1990s, research on economics and religion began in earnest, with a number of enlightening new economic explanations for individual religious behavior, all based on the rational and self-interested Economic Man. These papers not only uncovered the role of tangible economic values, like forgone wages, in religious behavior, but also less tangible values like religious capital and club membership.

The model of Economic Man relies on the assumption that individuals operate entirely out of self-interest. So, the fact that so many individuals contribute their scarce resources (both in cash and volunteer time) to strangers may at first seem to contradict the economic model. However, the recent economic literature on charitable giving has

provided strong empirical support to self-interest explanations for why individuals take part in charitable giving of their time and money. Prominent explanations include Harbaugh's Prestige Motive Theory and Andreoni's Theory of Warm Glow Giving, both explaining charitable giving as an activity that promotes the utility of the giver even though it seems only to help the recipient.

The belief that gangs create violence is widespread across the perceptions of both the general public and even academic scholars. While most reasonable people will agree that gangs do use violence at least occasionally, seldom have researchers conducted anything other than simple cross-sectional studies. The sociological and criminological literatures contain numerous articles discussing the violent nature of youth gangs. However, none have ever ventured to test whether the existing atmosphere of violence could have actually brought on the formation of inner-city gangs (and may continue to lead youths to join such gangs).

As presented above, the existing economic research on religion, charitable giving, and government evolution is impressive. However, each new piece of knowledge in these areas seems to uncover other areas that need to be studied further. The previous chapters intend to answer the following three general questions: (1) What roles, if any, do risk tolerance and time preference play in the formation of an individual's level of religious belief? (2) Do substitutes exist for religious ideological goods? (3) When legitimate government does not adequately protect individuals from violence and coercion, do individuals form pseudo-governmental units of their own for purposes of self-protection?

To answer the first question, I set up a model with variables to measure religious belief (by way of church attendance), risk tolerance, and time preference. The variables of interest are gathered from the 1970 to 1972 waves of the Panel Study of Income Dynamics. Employing ordered choice models, due to the nature of the dependent variable, I find that individuals engaging in more risk-averse behaviors tend to have stronger religious beliefs. My results also indicate that individuals who discount the future less are also likely to expend more current resources on religious activities in exchange for a more certain attainment of an afterlife.

Following the natural experiments on taxation and labor supply of the public finance literature, I consider the second question using a natural experiment approach. Using data on publicized incidents of sexual abuse in the Catholic Church, I investigate how such incidents affected charitable giving to organizations that are ideological substitutes for the Church. Confirming basic economic reasoning, individuals increased contributions to the substitute organizations when the quality of the Church (in terms of its prestige or warm glow generating value) decreased. This is a significant finding because it confirms that substitute goods always exist, even for religious ideological goods.

While there is a strong theoretical literature regarding government evolution from anarchy, there are few empirical papers providing support for the theory. To answer the third question, the primary author, Russ Sobel, and I look into gangs and violence in the city of Los Angeles, California. Using data on gang membership and violent crime, we employ Granger Causality Tests to determine whether gangs truly cause crime or actually evolve based on the level of violence individuals encountered prior to joining the gang.

Our results indicate that violence actually promotes the formation of gangs. So, instead of focusing law enforcement efforts on breaking up gangs, such efforts are better directed towards protecting the rights of inner-city youths. According to our findings, pursuing the current course of action will only help inner-city violence to persist.

The above chapters provide analyses into areas formerly reserved for the fields of psychology, sociology, and political science. Applying standard economic reasoning to these questions, I have secured some interesting findings. My results confirm that individuals still behave in a self-interested manner even when the rewards they seek – an uncertain afterlife, prestige and “warm fuzziness”, and individual security – are much less tangible than widgets, gadgets, guns, or butter. However, there are continually new avenues of research that need to be addressed in these areas. As I have undertaken in this dissertation, my intended research agenda will focus on applying the economic model to study these less tangible areas.

Appendix

Table A.1
The Derivation of the PSID Risk Avoidance Indicator

Household Response	Points
The condition of the car in best shape is: Good, excellent, very good, fairly good.	1
All cars are insured.	1
The family owns no cars or trucks. (Neutralizes non-car owners.)	2
The driver has his/her seat belt fastened part of the time while driving.	1
The driver has his/her seat belt fastened all the time while driving.	2
The head is either (1) covered by some hospital or medical insurance like Blue Cross or (2) can get free hospital or medical care as a veteran, through medicaid, or some other way.	1
Head smokes less than one pack a day.	1
The current year's family reserve fund position either (1) is equal to or greater than two months' income, (2) is less than two months' income, but has exceeded that amount in the past five years, or (3) is some positive amount less than two months' income, but has not recently exceeded that amount.	1
The current year's family reserve fund position is equal to or greater than two months' income.	1

Source: 1970 - 1972 Panel Studies of Income Dynamics.

PSID published the risk avoidance figure as between zero and eight. To generate a risk preference figure (RISKY), the author inverted the scores so individuals with a risk avoidance of eight have a risk preference of zero and vice versa.

Table A.2
Descriptive Statistics for Chapter 2 Econometric Model Data

Variable	Mean	Std.Dev.	Minimum	Maximum	Obs.
Church Attendance ¹	1.81	1.18	0	3	10,959
Condition of Best Automobile ²	1.72	0.54	0	2	8,053
Insurance Coverage of Automobile ³	1.77	0.61	0	2	8,041
Frequency of Seat Belt Usage ⁴	0.69	0.75	0	2	6,463
Cigarette Expenditures per Year (\$)	106.18	149.27	0	999	10,959
Access to Free Medical Services ⁵	1.60	0.69	0	2	10,786
Covered by Medical Insurance*	0.75	0.43	0	1	10,938
Number of Months of Income in Savings	2.24	1.70	0	4	10,907
African American*	0.36	0.48	0	1	10,959
Age (years)	45.18	15.52	17	96	10,959
Catholic*	0.19	0.40	0	1	10,959
Attends a Club ⁶	0.80	1.19	0	5	10,817
Catholic Adherents / Church	1,552.88	1,091.26	0	3,585	10,959
Catholic Churches / 1000 Square Miles	19.71	40.71	0	161	10,959
Family Members are Near*	0.48	0.50	0	1	10,884
Education Level ⁷	3.62	1.91	0	8	10,859
Previous Year's Work Hours	1,987.40	791.52	2	5,710	9,086
Number of Neighbors Known ⁸	6.35	2.23	0	8	10,877
Male*	0.72	0.45	0	1	10,959
Married*	0.64	0.48	0	1	10,959
Protestant Adherents / Church	598.36	1,046.96	0	4,743	10,959
Protestant Churches / 1000 Square Miles	78.21	77.63	0	275	10,959
Labor Union Membership Dues (\$)	91.06	214.47	1	9,999	2,467

Notes:

- (1) Frequency of attendance at religious services: 0 = Never, 1 = Less than once a month, 2 = Once a month, 3 = Once a week or more.
- (2) Condition of car in best shape: 0 = Poor, 1 = Fair, 2 = Good.
- (3) Automobile insurance coverage: 0 = No insured car(s), 1 = Some car(s) insured, some car(s) uninsured, 2 = All cars insured.
- (4) Frequency of seat belt usage while driving: 0 = Practically none of the time, 1 = Part of the time, 2 = All the
- (5) Medical Coverage: 0 = No access to medical coverage (free or otherwise), 1 = Access to free medical coverage, 2 = Covered by medical insurance.
- (6) Frequency of attendance at social clubs or organizations: 0 = Never, 1 = A few times per year, 2 = Once or twice per month, 3 = Once a week, 4 = More than once a week, 5 = Four days a week or more.
- (7) Grades of school finished: 0 = Cannot read or write, 1 = 0 to 5 grades, 2 = 6 to 8 grades, 3 = 9 to 11 grades, 4 = 12 grades, 5 = 12 grades plus non-academic training, 6 = Some college, 7 = College degree, 8 = Advanced college or professional degree.
- (8) Number of people in neighborhood known by name: 0 = None, 1 = One, 2 = Two, 3 = Three, 4 = Four, 5 = Five, 6 = Six to Nine, 7 = Ten to Nineteen, 8 = Twenty or more.

*Binary (dummy) variables.

Table A.3
Random Effects Econometric Results – Model IIA
Dependent Variable: Church Attendance

Variable	Ordered Probit	Ordered Logit
Characteristics of Individual:		
Insurance Coverage on Automobiles	0.24093 *** (0.07379)	0.43288 *** (0.13026)
Age	0.02319 *** (0.00615)	0.04056 *** (0.01085)
African American	0.70655 *** (0.18358)	1.27130 *** (0.3197)
Married	-0.04339 (0.1809)	-0.06230 (0.33634)
Education Level	0.13703 *** (0.04922)	0.25157 *** (0.08659)
Male	-0.12690 (0.34705)	-0.26189 (0.60749)
Prior-Year Work Hours	0.00013 (0.00008)	0.19474 (0.00015)
Member of Union	-0.00028 (0.00026)	0.00049 (0.00048)
Social Club Attendance	0.04447 (0.03669)	0.08063 (0.0664)
Family Members Nearby	0.01196 (0.08948)	0.03142 (0.16202)
Number of Neighbors Known	0.01646 (0.02056)	0.02723 (0.03724)
Characteristics of Individual's Religious Denomination:		
Catholic	0.98919 *** (0.16538)	1.85374 *** (0.29331)
Average Catholic Congregation Size	-0.00005 (0.00008)	-0.00009 (0.00015)
Average Protestant Congregation Size	0.00009 (0.00009)	0.00017 (0.00017)
Catholic Churches per 1000 Square Miles	0.00169 (0.00302)	0.00242 (0.0053)
Protestant Churches per 1000 Square Miles	0.00043 (0.00144)	-0.00021 (0.00253)
Constant	-0.7465 (0.55892)	-1.30344 (0.97522)
Sigma	1.79800 *** (0.08579)	3.19311 *** (0.15832)
Chi ² Statistic (d.f. = 1)	23645.63 ***	23647.77 ***

Notes:

Results are reported as coefficient (t-statistic); N=3653 Observations; T=3 Periods.

Asterisks indicate the coefficient is statistically significant at the following levels: ***=1%, **=5%, *=10%.

Table A.4
Random Effects Econometric Results – Model IIB
Dependent Variable: Church Attendance

Variable	Ordered Probit	Ordered Logit
Characteristics of Individual:		
Frequency of Seat Belt Use	0.24395 *** (0.08082)	0.44523 *** (0.14331)
Age	0.02318 *** (0.00661)	0.03926 *** (0.01173)
African American	0.57372 *** (0.19781)	1.04372 *** (0.35058)
Married	-0.20280 (0.21734)	-0.33085 (0.40681)
Education Level	0.10315 * (0.05331)	0.18477 * (0.09505)
Male	0.28815 (0.37701)	0.45414 (0.67261)
Prior-Year Work Hours	0.00017 * (0.00009)	0.00027 (0.00017)
Member of Union	-0.00149 ** (0.00059)	-0.00245 ** (0.00109)
Social Club Attendance	0.02387 (0.04098)	0.05306 (0.07294)
Family Members Nearby	-0.08048 (0.10127)	-0.14521 (0.18534)
Number of Neighbors Known	0.02338 (0.02218)	0.03917 (0.04019)
Characteristics of Individual's Religious Denomination:		
Catholic	0.90499 *** (0.17940)	1.63292 *** (0.3191)
Average Catholic Congregation Size	-0.00013 (0.00009)	-0.00021 (0.00016)
Average Protestant Congregation Size	0.00007 (0.0001)	0.00014 (0.00018)
Catholic Churches per 1000 Square Miles	0.00319 (0.00329)	0.00442 (0.00584)
Protestant Churches per 1000 Square Miles	-0.00031 (0.00155)	0.00039 (0.00277)
Constant	-0.33962 (0.60019)	-0.51634 (1.06099)
Sigma	1.80103 *** (0.09554)	3.23118 *** (0.17802)
Chi ² Statistic (d.f. = 1)	24356.72 ***	24355.91 ***

Notes:

Results are reported as coefficient (t-statistic); N=3653 Observations; T=3 Periods.

Asterisks indicate the coefficient is statistically significant at the following levels: ***=1%, **=5%, *=10%.

Table A.5
Random Effects Econometric Results – Model IIC
Dependent Variable: Church Attendance

Variable	Ordered Probit	Ordered Logit
Characteristics of Individual:		
Annual Cigarette Expenditures	-0.00196 *** (0.00025)	-0.00348 (0.00045)
Age	0.02798 *** (0.00535)	0.04997 *** (0.00948)
African American	0.53468 *** (0.15645)	0.95438 *** (0.27606)
Married	-0.00998 (0.16190)	-0.001916 (0.29450)
Education Level	0.11128 ** (0.04348)	0.21166 *** (0.07672)
Male	-0.14275 (0.25591)	-0.35538 (0.4553)
Prior-Year Work Hours	0.00017 ** (0.00008)	0.00025 * (0.00013)
Member of Union	-0.00018 (0.00028)	-0.00031 (0.00049)
Social Club Attendance	0.06437 ** (0.03275)	0.11595 ** (0.05886)
Family Members Nearby	0.07311 (0.08489)	0.15859 (0.15262)
Number of Neighbors Known	0.01431 (0.01808)	0.02229 (0.03245)
Characteristics of Individual's Religious Denomination:		
Catholic	1.03525 *** (0.14766)	1.88626 *** (0.26288)
Average Catholic Congregation Size	-0.00007 (0.00008)	-0.00015 (0.00014)
Average Protestant Congregation Size	0.00012 (0.00009)	0.00020 (0.15328)
Catholic Churches per 1000 Square Miles	0.00376 (0.00264)	0.00661 (0.00466)
Protestant Churches per 1000 Square Miles	-0.00158 (0.00128)	-0.00266 (0.00226)
Constant	-0.22734 (0.46251)	-0.29951 (0.81582)
Sigma	1.67936 *** (0.07319)	2.98144 *** (0.13604)
Chi ² Statistic (d.f. = 1)	22543.6 ***	22534.33 ***

Notes:

Results are reported as coefficient (t-statistic); N=3653 Observations; T=3 Periods.

Asterisks indicate the coefficient is statistically significant at the following levels: ***=1%, **=5%, *=10%.

Table A.6
Random Effects Econometric Results – Model IID
Dependent Variable: Church Attendance

Variable	Ordered Probit	Ordered Logit
Characteristics of Individual:		
Months of Income in Savings	0.07469 ** (0.02950)	0.13488 ** (0.05287)
Age	0.02639 *** (0.00555)	0.04633 *** (0.00977)
African American	0.64535 *** (0.16231)	1.16595 *** (0.28454)
Married	-0.07392 (0.16673)	-0.08352 (0.30481)
Education Level	0.11874 *** (0.00447)	0.22241 *** (0.07889)
Male	-0.20248 (0.26311)	-0.35262 (0.46300)
Prior-Year Work Hours	0.00014 ** (0.00007)	0.00022 * (0.00013)
Member of Union	-0.00021 (0.00025)	-0.00036 (0.00047)
Social Club Attendance	0.05089 (0.03384)	0.09516 (0.06090)
Family Members Nearby	0.09562 (0.08535)	0.18838 (0.15347)
Number of Neighbors Known	0.01769 (0.01828)	0.02578 (0.03261)
Characteristics of Individual's Religious Denomination:		
Catholic	0.94766 *** (0.15109)	1.74080 *** (0.26676)
Average Catholic Congregation Size	-0.00008 (0.00008)	-0.00013 (0.00014)
Average Protestant Congregation Size	0.00011 (0.00009)	0.00018 (0.00015)
Catholic Churches per 1000 Square Miles	0.00374 (0.00272)	0.00654 (0.00477)
Protestant Churches per 1000 Square Miles	-0.01590 (0.00132)	-0.00264 (0.00232)
Constant	-0.52239 (0.47380)	-0.92886 (0.83261)
Sigma	1.74174 *** (0.07659)	3.08161 *** (0.14087)
Chi ² Statistic (d.f. = 1)	22929.08 ***	22931.16 ***

Notes:

Results are reported as coefficient (t-statistic); N=3653 Observations; T=3 Periods.

Asterisks indicate the coefficient is statistically significant at the following levels: ***=1%, **=5%, *=10%.

Table A.7
Marginal Effects for Model IIA
Dependent Variable: Church Attendance

Variable	Never	Less Than Once Per Month	Once Per Month	Once Per Week or More
Ordered Probit				
Insurance Coverage on Automobiles***	-0.0319	-0.0141	0.0008	0.0452
Age***	-0.0031	-0.0014	0.0001	0.0043
African American***	-0.0875	-0.0447	-0.0018	0.1340
Education Level***	-0.0181	-0.0080	0.0005	0.0257
Catholic***	-0.1177	-0.0645	-0.0058	0.1880
Ordered Logit				
Insurance Coverage on Automobiles***	-0.0259	-0.0061	-0.0005	0.0316
Age***	-0.0024	-0.0006	0.0000	0.0030
African American***	-0.0733	-0.0197	-0.0005	0.0936
Education Level***	-0.0151	-0.0036	0.0003	0.0184
Catholic***	-0.1042	-0.0301	-0.0023	0.1366

Notes: Marginal effects are only reported for statistically significant variables. Asterisks indicate the coefficient is statistically significant at the following levels: ***=1%, **=5%, *=10%.

Table A.8
Marginal Effects for Model IIB
Dependent Variable: Church Attendance

Variable	Never	Less Than Once Per Month	Once Per Month	Once Per Week or More
Ordered Probit				
Frequency of Seat Belt Use***	-0.0314	-0.0149	0.0005	0.0458
Age***	-0.0030	-0.0014	0.0000	0.0044
African American***	-0.0696	-0.0374	-0.0019	0.1089
Education Level*	-0.0133	-0.0063	0.0002	0.0194
Prior-Year Work Hours*	0.0000	0.0000	0.0000	0.0000
Union Member**	0.0002	0.0001	0.0000	-0.0003
Catholic***	-0.1060	-0.0606	-0.0059	0.1720
Ordered Logit				
Frequency of Seat Belt Use***	-0.0260	-0.0065	0.0002	0.0323
Age***	-0.0023	-0.0006	0.0000	0.0028
African American***	-0.0589	-0.0166	-0.0008	0.0762
Education Level*	-0.0108	-0.0027	0.0001	0.0134
Union Member**	0.0001	0.0000	0.0000	-0.0002
Catholic***	-0.0900	-0.0270	-0.0024	0.1193

Notes: Marginal effects are only reported for statistically significant variables. Asterisks indicate the coefficient is statistically significant at the following levels: ***=1%, **=5%, *=10%.

Table A.9
Marginal Effects for Model IIC
Dependent Variable: Church Attendance

Variable	Never	Less Than Once Per Month	Once Per Month	Once Per Week or More
Ordered Probit				
Annual Cigarette Expenditures***	0.0003	0.0001	0.0000	-0.0004
Age***	-0.0038	-0.0018	0.0001	0.0055
African American***	-0.0702	-0.0358	0.0004	0.1056
Education Level**	-0.0152	-0.0072	0.0005	0.0218
Social Club Attendance**	-0.0088	-0.0041	0.0003	0.0126
Catholic***	-0.1240	-0.0743	-0.0078	0.2065
Ordered Logit				
Annual Cigarette Expenditures***	0.0002	0.0001	0.0000	-0.0003
Age***	-0.0031	-0.0008	0.0001	0.0039
African American***	-0.0586	-0.0160	0.0004	0.0742
Education Level**	-0.0133	-0.0034	0.0003	0.0164
Social Club Attendance**	-0.0073	-0.0019	0.0002	0.0090
Prior-Year Work Hours*	0.0000	0.0000	0.0000	0.0000
Catholic***	-0.1100	-0.0347	-0.0032	0.1480

Notes: Marginal effects are only reported for statistically significant variables. Asterisks indicate the coefficient is statistically significant at the following levels: ***=1%, **=5%, *=10%.

Table A.10
Marginal Effects for Model IID
Dependent Variable: Church Attendance

Variable	Never	Less Than Once Per Month	Once Per Month	Once Per Week or More
Ordered Probit				
Months of Income in Savings**	-0.0101	-0.0045	-0.0003	0.0143
Age***	-0.0036	-0.0016	0.0001	0.0051
African American***	-0.0837	-0.0407	-0.0001	0.1244
Education Level***	-0.0161	-0.0071	0.0005	0.0227
Prior-Year Work Hours*	0.0000	0.0000	0.0000	0.0000
Catholic***	-0.1149	-0.0636	-0.0058	0.1843
Ordered Logit				
Months of Income in Savings**	-0.0083	-0.0020	0.0002	0.0102
Age***	-0.0029	-0.0007	0.0001	0.0035
African American***	-0.0701	-0.0183	0.0002	0.0882
Education Level***	-0.0137	-0.0033	0.0003	0.0167
Prior-Year Work Hours*	0.0000	0.0000	0.0000	0.0000
Catholic***	-0.1005	-0.0296	-0.0024	0.1325

Notes: Marginal effects are only reported for statistically significant variables. Asterisks indicate the coefficient is statistically significant at the following levels: ***=1%, **=5%, *=10%.

Table A.11 (1 of 4)
Publicized Abuse Incidents per Year by Catholic Diocese

#	Diocese	State	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Total
1	Anchorage	AK	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Fairbanks	AK	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Juneau	AK	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Birmingham	AL	0	0	1	0	0	0	0	0	0	0	0	0	1
5	Mobile	AL	0	0	0	0	0	0	0	0	0	0	0	0	0
6	LittleRock	AR	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Phoenix	AZ	0	0	1	0	0	0	0	0	0	0	0	0	1
8	Tucson	AZ	0	0	0	0	0	0	0	0	0	0	1	0	1
9	Fresno	CA	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Los Angeles	CA	0	0	0	0	1	0	0	1	0	0	1	0	3
11	Monterrey	CA	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Oakland	CA	0	0	0	0	0	0	0	0	0	0	0	0	0
13	Orange	CA	0	0	0	2	0	0	0	0	0	0	0	1	3
14	Sacramento	CA	0	0	2	0	0	0	0	0	0	0	0	0	2
15	San Bernardino	CA	0	0	0	0	3	1	0	0	1	0	0	1	6
16	San Diego	CA	0	0	1	0	0	0	0	0	0	0	0	0	1
17	San Francisco	CA	0	0	0	0	2	0	0	0	1	0	0	1	4
18	San Jose	CA	0	0	1	0	0	0	0	0	0	0	0	0	1
19	Santa Rosa	CA	0	0	0	0	0	0	0	0	0	0	1	0	1
20	Stockton	CA	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Colorado Springs	CO	0	0	1	0	0	0	0	0	0	0	0	0	1
22	Denver	CO	0	0	0	4	0	0	0	0	0	0	0	0	4
23	Pueblo	CO	0	0	0	0	1	0	0	0	0	0	0	0	1
24	Bridgeport	CT	0	0	0	0	1	1	0	0	0	1	0	1	4
25	Hartford	CT	0	0	0	2	0	1	0	0	2	1	1	0	7
26	Norwich	CT	0	0	0	1	0	0	0	0	0	0	0	0	1
27	Washington	DC	0	0	0	1	0	4	1	0	1	0	0	0	7
28	Wilmington	DE	0	0	0	0	0	0	0	0	0	0	0	0	0
29	Miami	FL	0	0	0	0	0	0	0	0	1	0	0	0	1
30	Orlando	FL	0	0	0	0	0	1	0	0	2	0	0	0	3
31	Palm Beach	FL	0	0	0	0	0	0	0	0	1	0	0	0	1
32	Pensacola	FL	0	0	0	0	0	0	0	1	1	0	0	0	2
33	SaintAugustine	FL	0	0	0	0	0	0	0	0	0	0	0	0	0
34	SaintPetersburg	FL	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Venice	FL	0	0	0	0	0	0	0	0	0	1	0	0	1
36	Atlanta	GA	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Savannah	GA	0	0	0	0	0	0	0	0	0	0	0	0	0
38	Honolulu	HI	0	0	1	0	0	0	0	0	0	0	0	0	1
39	Davenport	IA	0	0	0	0	0	0	0	0	0	0	0	0	0
40	DesMoines	IA	0	0	0	0	0	0	0	0	0	0	0	0	0
41	Dubuque	IA	0	0	0	0	0	0	0	0	0	1	0	0	1
42	Sioux City	IA	0	0	0	0	0	1	0	0	0	0	0	0	1
43	Boise	ID	0	0	0	0	0	0	0	0	0	0	0	0	0
44	Belleville	IL	0	0	0	3	1	1	0	0	0	0	0	0	5

Table A.11 (2 of 4)
Publicized Abuse Incidents per Year by Catholic Diocese

#	Diocese	State	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Total
45	Chicago	IL	0	0	4	2	1	1	0	0	0	1	2	0	11
46	Joliet	IL	0	0	1	0	0	2	0	0	0	0	0	0	3
47	Peoria	IL	0	0	0	0	0	0	0	0	0	1	0	0	1
48	Rockford	IL	0	0	0	0	0	0	0	0	0	0	0	0	0
49	Springfield	IL	0	0	0	0	0	1	1	0	0	2	0	0	4
50	Evansville	IN	0	0	0	0	0	0	0	1	0	0	0	0	1
51	Fort Wayne	IN	0	1	2	0	0	0	0	0	0	0	0	0	3
52	Gary	IN	0	0	0	0	0	0	0	0	0	0	0	0	0
53	Indianapolis	IN	0	0	0	0	0	0	0	0	0	0	0	0	0
54	Lafayette-in-Indiana	IN	0	0	0	0	0	0	0	0	0	0	0	0	0
55	DodgeCity	KS	0	0	0	0	0	0	0	0	0	0	0	0	0
56	Kansas City	KS	0	0	0	0	0	0	0	2	0	0	0	0	2
57	Salina	KS	0	0	0	0	0	0	0	0	0	0	0	0	0
58	Wichita	KS	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Covington	KY	0	0	0	0	0	0	0	0	0	0	0	0	0
60	Lexington	KY	0	0	0	0	0	0	0	0	0	0	0	0	0
61	Louisville	KY	0	0	0	0	0	0	0	0	0	0	0	0	0
62	Owensboro	KY	0	0	0	0	0	0	0	0	0	0	0	0	0
63	BatonRouge	LA	0	0	0	0	0	0	0	0	0	0	0	0	0
64	Houma-Thibodaux	LA	0	0	0	0	0	0	1	0	0	0	1	0	2
65	Lafayette	LA	0	0	0	0	1	0	0	5	0	0	0	0	6
66	LakeCharles	LA	0	0	0	0	0	0	0	0	0	0	0	0	0
67	New Orleans	LA	0	1	0	1	0	0	0	0	1	0	0	0	3
68	Shreveport	LA	0	0	0	0	0	0	0	0	0	0	0	0	0
69	Boston	MA	0	0	2	0	0	0	0	1	0	0	0	5	8
70	Fall River	MA	0	0	0	1	0	1	0	0	0	0	0	0	2
71	Springfield	MA	0	0	1	0	0	0	1	0	0	0	0	0	2
72	Worcester	MA	0	0	0	4	0	1	0	0	0	0	0	0	5
73	Baltimore	MD	0	0	0	0	0	0	1	0	0	0	0	0	1
74	Portland	ME	0	0	0	0	0	0	0	1	1	0	0	0	2
75	Detroit	MI	1	0	0	0	0	2	0	0	0	0	0	1	4
76	Gaylord	MI	0	0	0	0	0	0	0	0	0	0	0	0	0
77	GrandRapids	MI	0	0	0	0	0	0	0	0	0	0	0	0	0
78	Kalamazoo	MI	0	0	0	0	0	0	0	0	0	0	0	0	0
79	Lansing	MI	0	0	0	0	0	0	0	0	0	0	0	0	0
80	Marquette	MI	0	0	0	0	0	0	0	0	0	0	0	0	0
81	Saginaw	MI	0	0	0	0	0	0	0	0	0	0	0	0	0
82	Superior	MI	0	0	0	0	0	0	0	0	0	0	0	0	0
83	Crookston	MN	0	0	0	0	0	0	0	0	0	0	0	0	0
84	Duluth	MN	0	0	0	0	0	0	0	0	0	0	1	0	1
85	New Ulm	MN	0	0	0	0	1	0	0	0	0	0	0	0	1
86	St. Cloud	MN	0	0	2	1	0	1	0	0	0	0	0	0	4
87	St. Paul and Minneapolis	MN	2	2	1	0	0	1	0	0	0	0	0	0	6
88	Winona	MN	0	0	0	0	0	1	0	0	0	0	0	0	1

Table A.11 (3 of 4)
Publicized Abuse Incidents per Year by Catholic Diocese

#	Diocese	State	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Total
89	JeffersonCity	MO	0	0	0	0	0	0	0	0	0	0	0	0	0
90	Kansas City-St. Joseph	MO	0	0	0	0	1	0	0	0	0	0	0	0	1
91	Springfield-CapeGirardeau	MO	0	0	0	0	0	0	0	0	0	0	0	0	0
92	St. Louis	MO	1	0	1	0	0	0	0	0	0	0	1	0	3
93	Biloxi	MS	0	0	0	0	0	0	0	0	0	0	0	0	0
94	Jackson	MS	0	0	0	0	0	0	0	0	0	0	0	0	0
95	GreatFalls-Billings	MT	0	0	0	0	0	0	0	0	0	0	0	0	0
96	Helena	MT	0	0	0	1	0	0	0	0	0	0	0	0	1
97	Charlotte	NC	0	0	0	0	0	0	0	0	1	0	0	0	1
98	Raleigh	NC	0	0	0	0	0	0	0	0	0	0	0	0	0
99	Bismarck	ND	0	1	0	0	0	0	0	0	0	0	0	0	1
100	Fargo	ND	0	0	1	0	0	0	0	0	0	0	0	0	1
101	GrandIsland	NE	0	0	0	0	0	0	0	0	0	0	0	0	0
102	Lincoln	NE	0	0	0	0	0	0	0	0	0	0	0	0	0
103	Omaha	NE	0	0	0	0	0	0	0	0	0	2	0	0	2
104	Manchester	NH	0	0	0	0	0	0	0	0	1	0	0	0	1
105	Camden	NJ	0	0	0	0	2	0	0	0	0	2	0	0	4
106	Metuchen	NJ	0	0	0	0	0	0	0	0	0	0	0	0	0
107	Newark	NJ	0	0	0	0	0	1	0	0	0	1	0	0	2
108	Paterson	NJ	0	0	0	0	1	0	0	0	0	0	0	0	1
109	Trenton	NJ	0	0	0	0	2	0	0	0	0	0	0	0	2
110	Gallup	NM	0	0	0	0	0	0	0	0	0	0	0	0	0
111	LasCruces	NM	0	0	0	0	0	0	0	0	0	0	0	0	0
112	Santa Fe	NM	0	0	0	0	2	2	1	1	7	0	1	0	14
113	LasVegas	NV	0	0	0	0	0	0	0	0	0	0	0	0	0
114	Reno	NV	0	0	0	0	0	0	0	0	0	0	0	0	0
115	Albany	NY	0	0	0	0	0	0	0	0	0	0	0	0	0
116	Brooklyn	NY	0	0	0	0	0	0	0	0	0	0	1	0	1
117	Buffalo	NY	0	0	0	1	0	0	1	0	0	0	0	0	2
118	New York	NY	0	0	0	0	0	1	1	0	0	1	0	1	4
119	Ogdensburg	NY	0	0	0	0	0	0	0	0	0	0	0	0	0
120	Rochester	NY	0	0	0	0	0	0	0	0	0	1	0	0	1
121	Rockville Centre	NY	0	0	0	0	0	1	0	0	0	0	0	1	2
122	Syracuse	NY	0	0	0	0	0	0	0	0	0	0	0	0	0
123	Cincinnati	OH	1	0	0	0	0	1	0	0	0	0	0	1	3
124	Cleveland	OH	0	0	0	0	0	0	0	0	0	0	0	0	0
125	Columbus	OH	0	0	0	2	0	0	1	0	0	0	0	0	3
126	Steubenville	OH	0	0	0	0	0	0	0	0	0	0	0	0	0
127	Toledo	OH	0	0	0	0	0	0	0	0	0	0	0	0	0
128	Youngstown	OH	0	0	0	0	0	0	0	0	0	0	0	0	0
129	Oklahoma City	OK	0	0	0	0	0	0	0	0	1	0	0	0	1
130	Tulsa	OK	0	0	0	0	0	0	0	0	0	0	0	0	0
131	Baker	OR	0	0	0	0	0	0	0	0	0	0	0	0	0
132	Portland	OR	0	0	0	0	0	0	0	0	0	1	0	0	1

Table A.11 (4 of 4)
Publicized Abuse Incidents per Year by Catholic Diocese

#	Diocese	State	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Total
133	Allentown	PA	0	0	0	0	0	0	0	0	1	0	0	0	1
134	Altoona-Johnstown	PA	0	0	0	0	0	0	0	0	0	0	0	0	0
135	Erie	PA	0	0	0	0	0	0	0	1	0	0	0	0	1
136	Greensburg	PA	0	0	0	0	0	0	0	0	0	0	0	0	0
137	Harrisburg	PA	0	0	0	0	0	0	0	0	0	0	0	0	0
138	Philadelphia	PA	0	0	0	0	0	0	0	0	0	0	0	0	0
139	Pittsburgh	PA	0	0	0	1	0	1	0	0	0	0	0	1	3
140	Scranton	PA	0	0	1	0	0	0	0	0	0	0	0	0	1
141	Providence	RI	0	0	0	0	1	2	0	1	0	1	0	3	8
142	Charleston	SC	0	0	1	1	0	0	0	0	0	0	0	0	2
143	RapidCity	SD	0	0	0	0	0	0	0	0	0	0	0	0	0
144	SiouxFalls	SD	0	0	0	0	0	0	0	0	0	0	0	0	0
145	Knoxville	TN	0	0	0	0	0	0	0	0	0	0	0	0	0
146	Memphis	TN	0	0	0	0	0	0	0	0	0	0	0	0	0
147	Nashville	TN	0	0	0	0	0	0	0	0	0	0	2	0	2
148	Amarillo	TX	0	0	0	0	0	0	0	0	0	0	0	0	0
149	Austin	TX	0	0	0	0	1	0	0	0	0	0	0	0	1
150	Beaumont	TX	0	0	0	0	0	0	0	0	0	0	0	0	0
151	Brownsville	TX	0	0	0	0	0	0	0	0	0	0	0	0	0
152	Corpus Christi	TX	0	0	1	0	0	1	0	1	0	0	0	0	3
153	Dallas	TX	0	0	0	0	0	0	0	2	2	1	0	0	5
154	El Paso	TX	0	0	1	0	0	0	0	0	0	0	0	0	1
155	FortWorth	TX	0	0	0	0	0	0	0	0	0	0	0	0	0
156	Galveston-Houston	TX	0	0	0	0	0	0	0	1	0	0	1	0	2
157	Laredo	TX	0	0	0	0	0	0	0	0	0	0	0	0	0
158	Lubbock	TX	0	0	0	0	0	0	0	0	0	0	0	0	0
159	San Antonio	TX	0	0	0	0	1	1	0	0	1	0	0	0	3
160	SanAngelo	TX	0	0	0	0	0	0	0	0	0	0	0	0	0
161	Tyler	TX	0	0	0	0	0	0	0	0	0	0	0	0	0
162	Victoria	TX	0	0	0	0	0	0	0	0	0	0	0	0	0
163	SaltLakeCity	UT	0	0	0	0	0	0	0	0	0	0	0	0	0
164	Alexandria	VA	0	0	0	0	0	0	0	0	0	0	0	0	0
165	Arlington	VA	0	0	0	0	0	0	0	0	0	0	0	0	0
166	Richmond	VA	0	0	0	1	1	0	0	0	0	0	0	0	2
167	Burlington	VT	0	0	0	0	0	0	0	0	0	0	0	0	0
168	Seattle	WA	0	0	0	0	0	0	0	0	0	0	0	0	0
169	Spokane	WA	0	0	0	0	0	0	0	0	0	0	0	0	0
170	Yakima	WA	0	0	0	0	0	0	0	0	0	0	0	0	0
171	GreenBay	WI	0	0	0	0	0	0	0	0	0	0	0	0	0
172	La Crosse	WI	0	1	0	0	0	0	0	0	0	0	0	0	1
173	Madison	WI	0	0	0	1	0	1	0	0	0	0	0	0	2
174	Milwaukee	WI	0	0	0	2	0	0	1	3	0	0	0	0	6
175	Wheeling-Charleston	WV	0	0	1	0	0	0	0	0	0	0	0	0	1
176	Cheyenne	WY	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A.12
Descriptive Statistics for Chapter 3 Econometric Model Data

Variable	Mean	Std.Dev.	Minimum	Maximum	Obs.
Contributions (\$)	169,079	219,206	982	1,240,920	34,999
Per Capita Personal Income (\$)	25,481	7,684	8,097	83,478	28,159
Tax Rate (%)	37.7	3.8	28.0	39.6	34,999
Organization Age (Years)	17.8	16.1	0.0	101.0	35,409
County Catholic Concentration (%)	2.5%	3.8%	0.1%	57.5%	34,825

Notes:

- (1) Contributions and Per Capita Personal Income are in 2000 constant dollars.
(2) Data set consists of an unbalanced panel of 7288 unique organizations over 12 years (1990 to 2001).

Table A.13
Los Angeles Crime & Gang Membership Data, April 1998 – March 2004
Selected Statistics

Variable	Time Periods	Ljung-Box Q-Statistic
Aggravated Assault	57	20.389 ***
Homicide	57	12.829 ***
Robbery	57	33.890 ***
Total Gang Members	57	39.219 ***
Hispanic Gang Members	57	38.569 ***
Crips Gang Members	57	43.072 ***
Bloods Gang Members	57	45.731 ***
Source: Los Angeles Police Department Citywide Gang Crime Summary, 2002 Statistical All Ljung-Box Q-Statistics computed using 24 lags.		

Table A.14 (1 of 2)
Los Angeles Gang Membership Data, April 1998 – March 2004

Month:Year	Total Gang Membership	Hispanic Gang Membership	Crips Gang Membership	Bloods Gang Membership
1998.04	65,578	40,612	15,667	5,679
1998.05	65,836	40,771	15,721	5,712
1998.06	65,977	40,877	15,741	5,721
1998.07	66,086	40,943	15,761	5,740
1998.08	66,295	41,066	15,793	5,787
1998.09	66,302	41,068	15,795	5,790
1998.10	66,297	41,068	15,795	5,790
1998.11	56,805	34,717	13,790	5,618
1998.12	57,274	35,025	13,848	5,661
1999.01	57,606	35,247	13,924	5,672
1999.02	57,942	35,434	14,023	5,706
1999.03	57,274	35,025	13,848	5,661
1999.04	58,943	36,140	14,211	5,757
1999.05	65,836	40,771	15,721	5,712
1999.06	59,873	36,663	14,488	5,849
1999.07	60,310	36,929	14,588	5,900
1999.08	60,596	37,083	14,651	5,934
1999.09	61,406	37,637	14,857	5,963
1999.10	61,971	37,998	15,008	5,988
1999.11	62,319	38,360	15,062	6,030
1999.12	62,782	38,554	15,137	6,032
2000.01	63,106	38,783	15,175	6,065
2000.02	63,380	38,897	15,289	6,087
2000.03	63,653	39,010	15,402	6,108
2000.04	64,428	39,624	15,528	6,124
2000.05	64,771	39,816	15,635	6,152
2000.06	64,771	39,816	15,635	6,152
2000.07	55,630	34,930	12,977	5,208
2000.08	56,126	35,257	13,050	5,233
2000.09	56,508	35,478	13,146	5,269
2000.10	56,508	35,478	13,146	5,269
2000.11	57,004	35,826	13,174	5,350
2000.12	57,360	36,071	13,186	5,377
2001.01	55,578	34,965	12,767	5,195
2001.02	56,082	35,354	12,852	5,228
2001.03	56,471	35,575	12,965	5,264

Notes:

- (1) Source: Los Angeles Police Department website, <http://www.lapd.org>.
(2) Due to missing values, the February 2002 gang membership levels were computed by the authors using the average of the respective levels from the prior and following months.

Table A.14 (2 of 2)
Los Angeles Gang Membership Data, April 1998 – March 2004

Month:Year	Total Gang Membership	Hispanic Gang Membership	Crips Gang Membership	Bloods Gang Membership
2001.04	56,471	35,575	12,965	5,264
2001.05	57,406	36,037	13,247	5,366
2001.06	57,406	36,037	13,247	5,366
2001.07	57,406	36,037	13,247	5,366
2001.08	57,411	36,037	13,247	5,366
2001.09	57,670	36,093	13,098	5,344
2001.10	56,048	34,168	13,253	5,383
2001.11	56,265	34,314	13,293	5,393
2001.12	55,385	33,762	13,109	5,317
2002.01	55,760	33,971	13,218	5,340
2002.02	56,051	34,136	13,287	5,376
2002.03	56,432	34,389	13,383	5,386
2002.04	56,432	34,389	13,383	5,386
2002.05	55,025	33,551	13,006	5,218
2002.06	55,233	33,681	13,046	5,239
2002.07	53,126	32,309	12,588	5,025
2002.08	53,431	32,493	12,673	5,033
2002.09	53,768	32,646	12,789	5,060
2002.10	51,711	31,361	12,293	4,822
2002.11	52,240	31,680	12,419	4,853
2002.12	50,497	30,517	12,016	4,700
2003.01	51,047	30,864	12,113	4,777
2003.02	51,389	31,100	12,164	4,801
2003.03	50,034	30,116	11,952	4,704
2003.04	50,472	30,319	12,108	4,763
2003.05	50,748	30,440	12,210	4,785
2003.06	51,089	30,627	12,300	4,822
2003.07	51,108	30,797	12,384	4,862
2003.08	51,664	30,949	12,453	4,897
2003.09	50,141	29,988	12,123	4,767
2003.10	50,517	30,228	12,223	4,812
2003.11	48,452	28,983	11,650	4,631
2003.12	48,289	28,827	11,661	4,620
2004.01	46,795	27,910	11,345	4,479
2004.02	47,004	28,009	11,389	4,515
2004.03	47,199	28,074	11,460	4,567

Notes:

- (1) Source: Los Angeles Police Department website, <http://www.lapd.org>.
- (2) Due to missing values, the February 2002 gang membership levels were computed by the authors using the average of the respective levels from the prior and following months.

Figure A.1
Los Angeles Gang Membership Data, April 1998 – March 2004

Table A.15 (1 of 2)
Los Angeles Violent Crime Data, January 1997 - January 2002

Month:Year	Homicides	Aggravated	
		Assaults	Robberies
1997.01	45	118	2545
1997.02	48	98	2350
1997.03	62	94	3031
1997.04	43	93	2713
1997.05	37	134	3198
1997.06	33	121	2967
1997.07	60	126	3042
1997.08	47	152	3256
1997.09	51	133	3118
1997.10	58	126	2875
1997.11	43	118	2675
1997.12	39	92	2455
1998.01	38	110	2492
1998.02	31	125	2149
1998.03	40	108	2653
1998.04	23	117	2565
1998.05	23	124	2781
1998.06	36	107	2737
1998.07	38	123	3032
1998.08	50	116	3228
1998.09	30	98	2678
1998.10	34	105	2499
1998.11	31	107	2278
1998.12	45	98	2429
1999.01	33	105	2614
1999.02	30	102	2093
1999.03	37	88	2386
1999.04	25	88	2340
1999.05	35	96	2650
1999.06	29	86	2613
1999.07	41	95	2988
1999.08	50	105	2818
1999.09	30	118	2621
1999.10	41	123	2932
1999.11	34	86	2366
1999.12	35	76	2349

Notes:

(1) Source: Los Angeles Police Department website, <http://www.lapd.org>.

(2) Due to missing values, the February 2002 gang membership levels were computed by the authors using the average of the respective levels from the prior

Table A.15 (2 of 2)
Los Angeles Violent Crime Data, January 1997 - January 2002

Month:Year	Homicides	Aggravated	
		Assaults	Robberies
2000.01	41	114	2594
2000.02	23	92	2178
2000.03	25	108	2592
2000.04	46	111	2853
2000.05	54	132	3055
2000.06	60	140	2938
2000.07	56	115	3148
2000.08	46	145	3053
2000.09	44	99	2857
2000.10	53	99	2632
2000.11	42	85	2216
2000.12	54	102	2585
2001.01	44	86	2433
2001.02	35	70	2092
2001.03	33	96	2538
2001.04	48	90	2525
2001.05	35	119	2935
2001.06	49	140	3007
2001.07	58	121	3181
2001.08	56	129	3164
2001.09	68	119	3001
2001.10	69	118	2749
2001.11	53	88	2613
2001.12	43	93	2566
2002.01	69	100	2495
2002.02	31	99	2423
2002.03	55	99	2748
2002.04	59	88	2597
2002.05	49	110	2845
2002.06	53	104	2889
2002.07	58	102	3068
2002.08	63	118	2915
2002.09	62	92	2796
2002.10	43	93	2621
2002.11	64	97	2515
2002.12	41	116	2338

Notes:

(1) Source: Los Angeles Police Department website, <http://www.lapd.org>.

(2) Due to missing values, the February 2002 gang membership levels were computed by the authors using the average of the respective levels from the prior

Figure A.2

Los Angeles Violent Crime Data, January 1997 - January 2002

Table A.16
Unit Root and Serial Correlation Test Statistics

Variable	ADF Test: Δ_{12}	LM Test for Serial Corr: Δ_{12}	Lags	ADF Test: $\Delta(\Delta_{12})$	LM Test for Serial Corr: $\Delta(\Delta_{12})$	Lags
Aggravated Assault	-2.4005	1.5502	3	-5.9097 ***	3.0564	2
Homicide	-3.2696 **	0.2702	2	-7.5734 ***	2.1730	1
Robbery	-1.8818	0.9042	3	-4.7064 ***	0.8541	2
Total Gang Members	-3.1764 **	1.0268	3	-3.9016 ***	0.4888	2
Hispanic Gang Members	-3.0666 **	0.7050	3	-4.1909 ***	0.3548	2
Crips Gang Members	-2.9507 **	1.3301	3	-5.2163 ***	2.2328	1
Bloods Gang Members	-2.0283	0.0059	1	-5.1372 ***	0.3220	1
Notes: The number of lags determined using the Akaike Information Criterion (AIC). Asterisks indicate statistical significance at the following levels: ***=1%, **=5%. Significant ADF Test results indicate the ABSENCE of a unit root. Significant LM Tests indicate the PRESENCE of serial correlation.						

Table A.17
Serial Correlation Tests – Vector Autoregression Results

Ljung-Box Q-Statistics			
Variable	Lags	Homicide=>Gangs	Gangs=>Homicide
Total Gang Members	2	2.4527	0.5404
Hispanic Gang Members	1	0.1764	0.4183
Crips Gang Members	1	0.1993	0.2200
Bloods Gang Members	3	0.3372	3.2902
	Lags	Aggravated Assault =>Gangs	Gangs=> Aggravated Assault
Total Gang Members	2	0.8223	0.5539
Hispanic Gang Members	2	0.6489	0.4297
Crips Gang Members	2	1.0969	0.5541
Bloods Gang Members	2	1.2229	0.0679
	Lags	Robbery=>Gangs	Gangs=>Robbery
Total Gang Members	1	0.4941	0.3499
Hispanic Gang Members	1	0.5429	0.4330
Crips Gang Members	1	0.4229	0.1802
Bloods Gang Members	1	0.2248	0.0271

Notes: The number of lags was determined using the Akaike Information Criterion (AIC). All Ljung-Box Q-Statistics indicate the absence of any serial correlation in the Vector Autoregressions (VARs).

References

- Andreoni, James, 1989. "Giving with Impure Altruism: Applications to Charity and Ricardian Equivalence," *The Journal of Political Economy*, 97:6, pp. 1447-1458.
- Andreoni, James, 1990. "Impure Altruism and Donations to Public Goods: A Theory of Warm-Glow Giving," *The Economic Journal*, 100:401, pp. 464-477.
- Andreoni, James, 1993. "An Experimental Test of the Public-Goods Crowding-Out Hypothesis," *The American Economic Review*, 83:5, pp. 1317-1327.
- Andreoni, James. 1995. "Warm-Glow versus Cold-Prickle: The Effects of Positive and Negative Framing on Cooperation in Experiments," *Quarterly Journal of Economics*, 110:1 (February), pp. 1-21.
- Andreoni, James and Ted Bergstrom, 1996. "Do Government Subsidies Increase the Private Supply of Public Goods?" *Public Choice*, 88:3/4, pp. 295-308.
- Anderson, Annelise. 1995. "Organised Crime, Mafia and Governments," in Gianluca Fiorentini and Sam Peltzman (eds.) *The Economics of Organised Crime*. Cambridge University Press: Cambridge, U.K.
- Auten, Gerald E., Holger Sieg, and Charles T. Clotfelter. 2002. "Charitable Giving, Income, and Taxes: An Analysis of Panel Data," *The American Economic Review*, 92:1 (March), pp. 371-382.
- Azzi, Corry and Ronald Ehrenberg. 1975. "Household Allocation of Time and Church Attendance," *The Journal of Political Economy*, 83:1, pp. 27-56.
- Barrett, Kevin Stanton, Anya M. McGuirk, and Richard Steinberg. 1997. "Further Evidence on the Dynamic Impact of Taxes on Charitable Giving," *National Tax Journal*, 50:2 (June), pp. 321-334.
- Barro, Robert J. and Rachel M. McCleary. 2002. "Religion and Political Economy in an International Panel," *NBER Working Paper #8931*, National Bureau of Economic Research: Cambridge, MA.
- Baumol, W. J. 1990. "Entrepreneurship: Productive, Unproductive, and Destructive," *The Journal of Political Economy*, 98:5, pp. 893-921.
- Becker, Gary S. 1968. "Crime and Punishment: An Economic Approach," *The Journal of Political Economy*, 76:2, pp. 169-217.
- Becker, Gary S. 1974. "A Theory of Social Interactions," *Journal of Political Economy*, 82 (Nov/Dec), pp. 1063-1093.

- Becker, Gary S., 1976. "Altruism, Egoism, and Genetic Fitness: Economics and Sociobiology," *Journal of Economic Literature*, 14:3, pp. 817-826.
- Benson, Bruce L. 1994. "Emerging from the Hobbesian Jungle: Might Takes and Makes Right," *Working Paper No. 94-03-03*, Florida State University, Department of Economics.
- Block, Carolyn Rebecca and Richard Block. 1993. "Street Gang Crime in Chicago," *Research in Brief*, National Institutes of Justice Research, December.
- Buchanan, James M. 1973. "A Defense of Organized Crime," in S. Rottemberg (ed.). *The Economics of Crime and Punishment*. Washington, DC: American Enterprise Institute for Public Policy Research, reprinted in R. Andreano and J. Sigfried (eds.), 1980. *The Economics of Crime*. Schenkman: Cambridge, MA.
- Buchanan, James M. 1975. *The Limits of Liberty: Between Anarchy and Leviathan*. University of Chicago Press: Chicago, IL.
- Carneiro, R. L. 1970. "A Theory of the Origin of the State," *Science*, 169:3947, pp. 733-8.
- Chiswick, Barry R., 1991. "An Economic Analysis of Philanthropy," in *Contemporary Jewish Philanthropy in America*, edited by Barry A. Kosmin and Paul Ritterband, Savage, MD: Rowman & Littlefield, pp. 3-15.
- Copeland, Cassandra and David N. Laband. 2002. "Expressiveness and Voting," *Public Choice*, 110:3-4 (March), pp. 351-63.
- Cornwall, Marie. 1989. "Faith Development of Men and Women over the Life Span," in *Aging and the Family*, edited by Stephen J. Bahr and Evan T. Peterson, 115-139. Lexington, MA: Lexington Books.
- Crane, Jonathan, Nino Boccara, and Keith Higdon. 2000. "The Dynamics of Street Gang Growth and Policy Response," *Journal of Policy Modeling*, 22:1, pp. 1-25.
- Curry, G. David, Richard A. Ball, and Robert J. Fox. 1994. "Gang Crime and Law Enforcement Recordkeeping," *Research in Brief*, National Institutes of Justice Research, August.
- Curry, G. David, Richard A. Ball, and Scott H. Decker. 1996. "Estimating the National Scope of Gang Crime from Law Enforcement Data," *Research in Brief*, National Institutes of Justice Research, August.
- Dickey, D.A. and Fuller, W.A. 1979. "Distribution of the Estimators for Autoregressive Time Series with a Unit Root," *Journal of the American Statistical Association*, 74:366, pp. 427-431.

- Dowd, Kevin. 1997. "Anarchy, Warfare, and Social Order: Comment on Hirshleifer," *The Journal of Political Economy*, 105:3, pp. 648-651.
- Enders, Walter. 1995. *Applied Econometric Time Series*. John Wiley & Sons, Inc: New York, NY.
- Finke, Roger. 1990. "Religious Deregulation: Origins and Consequences," *Journal of Church and State*, 32, pp. 609-626.
- Fiorentini, Gianluca and Sam Peltzman. 1995. "Introduction," in Gianluca Fiorentini and Sam Peltzman (eds.) *The Economics of Organised Crime*. Cambridge University Press: Cambridge, U.K.
- Freeman, Richard B. 1996. "Why Do So Many Young American Men Commit Crimes and What Might We Do About It?" *The Journal of Economic Perspectives*, 10:1 (Winter), pp. 23-42.
- Friedman, David. 1977. "A Theory of the Size and Shape of Nations," *The Journal of Political Economy*, 85:1, pp. 59-77.
- Friedman, James W. 1990. *Game Theory with Applications to Economics*, Oxford University Press: Oxford, U.K.
- Gambetta, D. 1993. *The Sicilian Mafia: The Business of Private Protection*. Harvard University Press: Cambridge, MA.
- Garfinkel, M. R. 1990. "Arming as a Strategic Investment in a Cooperative Equilibrium," *The American Economic Review*, 80:1, pp. 50-68.
- Gordon, Scott. 1976. "The New Contractarians," *Journal of Political Economy*, 84:3, pp. 573-590.
- Greeley, Andrew and William McManus. 1987. *Catholic Contributions: Sociology and Policy*, The Thomas More Press: Chicago.
- Greene, William H. 1997. *Econometric Analysis*. Prentice-Hall: Upper Saddle River, NJ.
- Grossbard-Shechtman, Amyra and Shoshana Neuman. 1986. "Economic Behavior, Marriage, and Religiosity," *Journal of Behavioral Economics*, 15:1/2, pp. 71-85.
- Grossman, Herschel. 1991. "A General Equilibrium Model of Insurrections," *The American Economic Review*, 81:4, pp. 912-921.

- Harbaugh, William T. 1998. "The Prestige Motive for Making Charitable Transfers," *The American Economic Review*, 88:2, pp. 277-282.
- Hirshleifer, Jack. 1988. "The Analytics of Continuing Conflict," *Synthese*, 76, pp. 201-233.
- Hirshleifer, Jack. 1989. "Conflict and Rent-Seeking Success Functions: Ratio vs. Difference Models of Relative Success," *Public Choice*, 63:2, pp. 101-112.
- Hirshleifer, Jack. 1991. "The Paradox of Power," *Economics and Politics*, 3:3, pp. 177-200.
- Hirshleifer, Jack. 1995. "Anarchy and its Breakdown," *The Journal of Political Economy*, 103:1, pp. 26-52.
- Holcombe, Randall G. 1994. *The Economic Foundations of Government*. New York University Press: New York, NY.
- Howell, James C. 1994. "Gangs," *Fact sheet*. Office of Juvenile Justice and Delinquency Prevention, April.
- Iannaccone, Laurence R. 1990. "Religious Practice: A Human Capital Approach," *Journal for the Scientific Study of Religion*, 29:3, pp. 297-314.
- Iannaccone, Laurence R. 1992. "Sacrifice and Stigma: Reducing Free-Riding in Cults, Communes, and Other Collectives," *The Journal of Political Economy*, 100:2, pp. 271-291.
- Iannaccone, Laurence R. 1994. "Progress in the Economics of Religion," *Journal of Institutional and Theoretical Economics*, 150:4, pp. 737-744.
- Iannaccone, Laurence R. 1995. "Risk, Rationality, and Religious Portfolios," *Economic Inquiry*, 33 (April), pp. 285-295.
- Iannaccone, Laurence R. 1997. "Skewness Explained: A Rational Choice Model of Religious Giving," *Journal for the Scientific Study of Religion*, 36:2 (June), pp. 141-157.
- Iannaccone, Laurence R., 1998. "Introduction to the Economics of Religion," *Journal of Economic Literature*, 36:3, pp. 1465-1495.
- Iannaccone, Laurence R., Roger Finke, and Rodney Stark. 1997. "Deregulating Religion: The Economics of Church and State," *Economic Inquiry*, 35:2, pp. 350-364.
- Jennings, W. P. 1984. "A Note on the Economics of Organized Crime," *Eastern Economic Journal*, 10:3, pp. 315-321.

- Johnson, Claire, Webster, Barbara, and Edward Connors. 1995. "Prosecuting Gangs: A National Assessment," *Research in Brief*, National Institutes of Justice Research, February.
- Klein, M.W., and Maxson, C.L. 1996. Gang Structures, Crime Patterns, and Police Responses. *Unpublished final report*. Social Science Research Institute, University of Southern California: Los Angeles, CA.
- Konrad, Kai Andreas. 1999. "The Market for Protection and the Origin of the State," *Discussion Paper No. 2173*, June, Centre for Economic Policy Research: London, U.K.
- Konrad, Kai A. and Stergios Skaperdas. 1997. "Credible Threats in Extortion," *Journal of Economic Behavior and Organization*, 33:1, pp. 23-39.
- Konrad, Kai A. and Stergios Skaperdas. 1998. "Extortion," *Economica*, 65:260, pp. 461-477.
- Landes, William M., and Richard A. Posner, 1978. "Altruism in Law and Economics," *The American Economic Review*, 68:2, pp. 417-421.
- Lane, Frederic C. 1942. "The Economic Meaning of War and Protection," *Journal of Social Philosophy and Jurisprudence*, 7, pp. 257-259.
- Lane, Frederic C. 1958. "Economic Consequences of Organized Violence," *Journal of Economic History*, 18:4, pp. 401-417.
- Levitt, Steven D. 1999. "The Changing Relationship Between Income and Crime Victimization," *Federal Reserve Bank of New York Economic Policy Review*, 5:3, pp. 87-98.
- Levitt, Steven D. and Sudhir Alladi Venkatesh. 2000. "An Economic Analysis of a Drug-Selling Gang's Finances," *The Quarterly Journal of Economics*, 115:3, pp. 755-789.
- Marcoullier, Douglas and Leslie Young. 1995. "The Black Hole of Graft: The Predatory State and the Informal Economy," *The American Economic Review*, 85:3, pp. 630-646.
- Maxson, Cheryl L., 1995. "Street Gangs and Drug Sales in Two Suburban Cities," *Research in Brief*, National Institutes of Justice Research, September.
- Maxson, Cheryl L. 1997. "Gang Homicide," *Working Paper*, Social Science Research Institute, University of Southern California.

- Maxon, Cheryl L. 1998. "Gang Members on the Move," *Juvenile Justice Bulletin*, October, Office of Juvenile Justice and Delinquency Prevention, Office of Justice Programs, U. S. Department of Justice: Washington, DC.
- McGuire, Martin C. and Mancur Olson. 1996. "The Economics of Autocracy and Majority Rule: The Invisible Hand and the Use of Force," *Journal of Economic Literature*, 34:1, pp. 72-96.
- Mehlum, Halvor, Karl Ove Moene, and Ragnar Torvik. 2002. "Plunder & Protection, Inc.," *Journal of Peace Research*, 39:4, pp. 447-459.
- Miller, Alan S. 1992. "Conventional Religious Behavior in Modern Japan: A Service-Industry Perspective," *Journal for the Scientific Study of Religion*, 31:207-214.
- Miller, Alan S. and John P. Hoffman. 1995. "Risk and Religion: An Explanation of Gender Differences in Religiosity," *Journal for the Scientific Study of Religion*, 34(1): 63-75.
- Miller, Walter B. 2001. *The Growth of Youth Gang Problems in the United States: 1970-1998*. Washington, DC: U.S. Department of Justice, Office of Justice Problems, Office of Juvenile Justice and Delinquency Prevention, April.
- Moselle, Boaz and Ben Polak. 2001. "A Model of a Predatory State," *Journal of Law, Economics, and Organization*, 17:1, pp. 1-33.
- Neuman, Shoshana. 1982. "Time Devoted to Religious Activity -- Habit Formation and Age Effects," *Discussion Paper DE 8201*, Bar-Ilan University: Ramat-Gan, Israel.
- Neuman, Shoshana. 1986. "Religious Observance within a Human Capital Framework: Theory and Application," *Applied Economics*, 18:11, pp. 1193-1202.
- Neumayer, Eric. 2003. "Good Policy Can Lower Violent Crime: Evidence from a Cross-National Panel of Homicide Rates, 1980-97," *Journal of Peace Research*, 40:6, pp. 619-640.
- Nozick, Robert. 1974. *Anarchy, State, and Utopia*. Basic Books: New York, NY.
- Pickering, J. F., 1985. "Giving in the Church of England: An Econometric Analysis," *Applied Economics*, 17:4, pp. 619-632.
- Pollak, Thomas H. 1997. "A Profile of Religious Organizations in the IRS Business Master File and Return Transaction Files." *Paper presented at the 26th Annual Conference of the Association for Research on Nonprofit Organizations and Voluntary Action*, Indianapolis, Indiana, December 4-6.

- Rasmussen, David W., and Bruce L. Benson. 1994. *The Economic Anatomy of a Drug War: Criminal Justice in the Commons*. Rowman & Littlefield Publishers Inc.: Lanham, MD.
- Reece, W. S. 1979. "Charitable Contributions: New Evidence on Household Behavior," *The American Economic Review*, March, 69, 142-151.
- Reece, William S. and Zieschang, Kimberly. 1985. "Consistent Estimation of the Impact of Tax Deductibility on the Level of Charitable Contributions," *Econometrica*, March, pp. 261-294.
- Reece, William S. and Zieschang, Kimberly. 1989. "Evidence on Taxation and Charitable Giving from the 1983 U.S. Treasury Tax Model File," *Economics Letters*, 31, pp. 49-53.
- Reuter, P. 1983. *Disorganized Crime: The Economics of the Visible Hand*. MIT Press: Cambridge, MA.
- Samuelson, Paul A., 1993. "Altruism as a Problem Involving Group versus Individual Selection in Economics and Biology," *The American Economic Review*, 83:2, pp. 143-148.
- Schelling, T. C. 1963. *The Strategy of Conflict*. Harvard University Press: Cambridge, MA.
- Schelling, T.C. 1967. "Economics and Criminal Enterprise," *The Public Interest*, 7, pp. 61-78, reprinted in R. Andreano and J. Sigfried (eds.), 1980. *The Economics of Crime*. Schenkman: Cambridge, MA.
- Schotter, A. 1981. *The Economic Theory of Social Institutions*, Cambridge University Press: Cambridge, U.K.
- Sheley, Joseph F., Joshua Zhang, Charles J. Brody, and James D. Wright. 1995. "Gang Organization, Gang Criminal Activity, and Individual Gang Members' Criminal Behavior," *Social Science Quarterly*, 76:1, pp. 53-68.
- Simon, Herbert A., 1993. "Altruism and Economics," *The American Economic Review*, 83:2, pp. 156-161.
- Skaperdas, Stergios. 1992. "Cooperation, Conflict, and Power in the Absence of Property Rights," *The American Economic Review*, 82:4, pp. 720-739.
- Skaperdas, Stergios. 1996. "Contest Success Functions," *Economic Theory*, 7:2, pp. 283-290.

- Skaperdas, Stergios. 2001. "The Political Economy of Organized Crime: Providing Protection When the State Does Not," *Economics of Governance*, 2:3, pp. 173-202.
- Skaperdas, Stergios. 2002. "Warlord Competition," *Journal of Peace Research*, 39:4, pp. 435-446.
- Skaperdas, Stergios and Constantinos Syropoulos. 1995. "Gangs as Primitive States," in Gianluca Fiorentini and Sam Peltzman (eds.) *The Economics of Organised Crime*. Cambridge University Press: Cambridge, U.K.
- Skaperdas, Stergios and Constantinos Syropoulos. 2002. "Insecure Property and the Efficiency of Exchange," *The Economic Journal*, 112:476, pp. 133-146.
- Spiegel, Irving, David Curry, Ron Chance, Candice Kane, Ruth Ross, Alba Alexander, Edwina Simmons, Sandra Oh. 1996. "Gang Suppression and Intervention: Problem and Response," *OJJDP Summary*, Office of Juvenile Justice and Delinquency Prevention, Office of Justice Programs, U. S. Department of Justice, February.
- Spiegel, Irving, Ron Chance, Kenneth Ehrensaft, Thomas Regulus, Candice Kane, Robert Laseter, Alba Alexander, and Sandra Oh. 1996. "Gang Suppression and Intervention: Community Models," *OJJDP Summary*, Office of Juvenile Justice and Delinquency Prevention, Office of Justice Programs, U. S. Department of Justice, February.
- Stark, Rodney and William Bainbridge. 1985. *The Future of Religions*, Berkeley: University of California Press.
- Stark, Rodney and William Bainbridge. 1987. *A Theory of Religion*, New York: Peter Lang.
- Sullivan, Dennis H. 1985. "Simultaneous Determination of Church Contributions and Church Attendance," *Economic Inquiry*, 23 (April), pp. 309-320.
- Taylor, Michael. 1976. *Anarchy and Cooperation*. John Wiley & Sons: New York, NY.
- Tullock, Gordon. 1974. *The Social Dilemma: The Economics of War and Revolution*. The Center for the Study of Public Choice: Fairfax, VA.
- Ulbrich, Holley and Myles Wallace. 1983. "Church Attendance, Age, and Belief In the Afterlife: Some Additional Evidence," *Atlantic Economic Journal*, 11:2, pp. 44-51.

- Walker, Catherine M. 2002. "Altruism, Guilt, and the Feel-Good Factor – Why Do People Give to Charity?" in Walker and Pharoah, eds., *A Lot of Give: Trends in Charitable Giving for the 21st Century*, Hodder and Stoughton: London.
- Weisbrod, Burton. 1988. *The Nonprofit Economy*, Harvard University Press: Cambridge, MA.
- Zaleski, Peter A., and Charles E. Zech, 1994. "Economic and Attitudinal Factors in Catholic and Protestant Religious Giving," *Review of Religious Research*, 36:2, pp. 158-167.