THESIS

ADDRESSING THE RELIGIOUS FREE-RIDER PROBLEM VIA RELIGIOUS

CONSUMPTION SIGNALING AND RELIGIOUS CAPITAL ACCUMULATION

Submitted by

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In partial fulfillment of the requirements

For the Degree of Master of Arts

Colorado State University

Fort Collins, Colorado

Fall 2012

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ABSTRACT

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The aim of this paper is to investigate and illustrate the religious free-rider problem within church congregations while investigating religious consumption signaling patterns and the ability, or lack thereof, to form religious capital. From an institutional perspective, this paper will address stigma-screening processes via three economic models in an effort to understand and evaluate the overall effectiveness of institutional responses towards free-riding members. In addition, this paper will explore incentives behind perverse consumption signaling as a method of communicating membership, as well as the overall impact of restricting religious capital accumulation for both members and free-riders alike.

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Introduction

Attempting to solve free-rider problems is nothing new. The free-rider dilemma has perplexed the likes of environmentalists, public administrators, and economists for centuries, but only recently has its effects on church congregations intrigued those within academia. This is not to say free-riders have never infiltrated faith-based organizations, but until recently the problem has not been studied within this context. In properly outlining the issue, religious organizations provide public goods to the community at large which include the Sunday sermon, the worship experience, even food and clothing donation programs, and various other community outreach programs. However, in providing these public goods to the community, there are obviously an array of costs that must be taken into consideration—thus the need for adequate revenue to fund and permit the continuance of such goods. Many religious organizations request of the members a monthly tithe as the primary form of their revenue, however seldom do members oblige to such a commitment.[1] As we will later see, the lack of tithing on behalf of a congregation's members has serious implications on such elements of future growth as congregation size as well as marginal costs per member; however its effects vary depending upon the congregational conditions of the religious institution. In this paper, I will attempt to examine the issue through three theoretical models that take into consideration two important elements within the context of religious organizations: religious capital accumulation and religious consumption signaling.

Religious capital—the investment an individual makes in his or her religious faith and likewise an important determinant of one's ability to produce and appreciate religious commodities— is the reason for church attendance and membership (Iannaccone 1990: 299). Certainly the café bar and childcare, often a norm in many American churches, are much desired perks but it is this religious capital that churches offer and is what society seeks in religious

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[1] A tithe, as I define in my paper, is 10% of one's annual income.

goods due to their ability to further one's own spiritual growth and development. Seeing as it is this element that is so highly valued, I will analyze the ability of church congregations to restrict religious capital as a means of reducing free-ridership. On the contrary and in response to religious capital restriction, I will examine the free-rider's ability to disguise his or her beliefs via consumption signals and thus allowing the possibility of being mistakenly identified as a church member.[2]

Dating back several centuries, religious institutions have used stigma-screening processes, or institutionally identifiable practices that serve in assessing a member's specific level of commitment, just as members have used consumption behavior patterns to communicate and establish a specific degree of piety. It is these two elements combined that I hope to further elaborate upon within three specific scenarios: a traditional stigma-screening model, a "maxed" threshold model, and a "relaxed" threshold model. Within these three models, I will build upon the work of two papers—McBride (2007) and Galvez and Simpson (2012)—in order to illustrate and analyze the interaction between two important concepts within the economics of religion discourse and free-ridership literature: religious consumption signaling and religious capital accumulation. From these three models I provide a basis for evaluating the overall effectiveness of religious institutional responses to the free-rider problem, its resulting effects on growth, and a method for addressing the religious free-rider problem given congregational size/type limitations.

Within this context, it is my aim to capture the game-like process that occurs in free-riders seeking to signal appropriate commitment levels while aiming to acquire religious capital and the consequent religious institutional responses that aim, in most cases, to reduce religious free-ridership. In addition, I will address the various growth implications of free-ridership on

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[2] Though the issue of transparency may differ across religious institutions, in the analyses made here we assume there is little to no observable transparency among church congregants, their tithing efforts, and their respective religious institution.

religious institutions with regard to three specific church demographic scenarios. As we will see below, there is a vast array of responses and counter-responses worth investigating that occurs between religious institutions and free-riders which, having identified and explored in this paper, will hopefully shed light into an issue that has intrigued theologians and economists alike for centuries.

Section 2 reviews the relevant empirical and theoretical literature surrounding the economics of religion, the free-rider phenomenon, consumption signaling as a communicative tool, and religious capital accumulation. Section 3 defines the free-rider problem and further investigates its effects on congregations as a whole. Section 4 reviews the methodology of consumption signaling as a tool to communicate, honestly or dishonestly, one's overall commitment and devotion to a particular religious faith. Section 5 details the importance of religious capital accumulation and the church's ability to restrict or permit the free flow of religious capital depending upon the existence of stigma-screening measures. Section 6 outlines the three models of interest to include a traditional stigma-screening model where the commitment threshold is first introduced, a free-rider exclusion model where the commitment threshold is fully "maxed", and a "seeker-friendly" model that relaxes the commitment threshold entirely. Section 7 presents the main findings in addition to concluding remarks and possible areas of further research.

Literature Review

Economics of Religion

Prior to exploring the more detailed analysis of religious free-riding and stigma-screening, it is critical to first explore and present a brief summary of the economics of religion as a discourse. The study of the macro- and micro- level effects of religion on human behavior and productivity is far from considered a new concept. Adam Smith ([1776] 2002), considered by many to be the father of classical economics, sees religious competition and the inter-connected relationship between church and state as a market phenomenon that, if left unregulated, created an environment for a plurality of religious faiths where churches were forced to behave as competitive firms and congregants as rational consumers of religious goods. In addition, Max Weber ([1930] 2002), considered by many to be the forefather of sociology, took Smith's analysis one step further and employs a rational choice model that seeks to explain individual ethics, demonstration of character, and overall valuation of one's responsibilities as a direct result of the values and morals taught by one's religion of choice.[3] It is the combination of these two influential works that have paved the way for future academic inquiry and is the original motivation and origination of interest for the work provided in this paper.

To continue the extension of Smith's work, Barro (2004) and Barro and McCleary (2003) seek to explore just how compatible the spirit of capitalism is with religion via macroeconomic analysis. They empirically test the influence of religion as a determinant of economic growth by using an array of instrumental variable estimations to establish causality and find that economic growth responds positively to religious beliefs, particularly beliefs in heaven and hell. Furthermore, Iannaccone (1998) provides an introductory though detailed inquiry of the field of

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[3] Weber's analysis specifically investigates the effects of Protestantism and anticipates signaling mechanisms with specific regard to Calvinism and the need to communicate one's believed predetermined fate.

the economics of religion with several statistical illustrations of the heterogeneous religious demographic within the United States. He addresses the continuing importance of religion, the economic consequences of religion, the economic analyses of religion (e.g. religious household production, religious human capital, religious groups and institutions, and the religious market), in addition to various policy issues. Iannaccone's aim is to present a systematic overview of the economics of religion and present it as a discourse that has grown into a sizeable and ongoing body of research. Lastly, the work of Azzi and Ehrenberg (1975) is notable as they are the original pioneers in presenting a theoretical framework for religious valuation. That is, they are the first to analyze the determinants of individuals' participation in religious activities by creating a multi-period utility-maximizing model of household behavior. By analyzing one's valuation of his or her faith and anticipated afterlife journey, the authors are able to create an economic behavioral model that attempts to maximize the returns on present and future investments in an effort to explain household behavior (e.g. daily prayer, bible studies, weekly church attendance, worship, etc.).

Free-Riding and Congregation Size

In an effort to understand the beginnings of the free-rider problem, Olson (1965) is one of the first to analyze the role of selfish behavior within group dynamics. Contrary to popular belief, collective action does not necessarily always occur within a group sharing common interests. Olson argues within pure public goods (i.e. non-excludable & non-rivalrous) collective action is unlikely to occur without incentives to motivate participation. Thus there is an incentive to free ride on the efforts of other group members. However, he argues individuals will not free ride in groups which provide benefits only to active participating members. In an effort to curb the

overwhelming deleterious effects of free-riding within religious organizations, Iannaccone (1994; 1992: 271) proposes a model of sacrifice and stigma that aims to explain the importance of stigma-screening in identifying free-riders. He claims that overall member utility is dependent upon both the individual's inputs as well as the inputs of others. Two potential problems arise from this analysis: First, those with lower participation rates are tempted to free-ride off those with higher levels of participation (or higher religious capital), and second "opportunistic behavior leads to an inefficient equilibrium with suboptimal participation, since individuals maximize personal welfare by ignoring the external benefits of their participation". In addition, Iannaccone develops an intricate model that details member utility dependent upon the presence of free-riders and stigma-screening processes. He argues that strict demands strengthen a church by raising overall levels of commitment, increasing average rates of participation and thus average accumulation of religious capital, while enhancing net benefits of membership. He concludes unproductive costs, or sacrifices, and stigma-screening processes can ultimately overcome free-rider problems and therefore improving the religious good for all.

Olson and Perl (2001; 2005) test Iannaccone's claim of strictness having an increasing effect on commitment and confirm his hypothesis. That is, strictness is found to be strongly positively correlated with member commitment levels across denominations but not within denominations. However, they also measure the presence and effects of free/cheap riding in strict and conservative churches. Their endogenous variable measures the level of positive skewness of a congregation's monetary contributions, or the extent to which the minority contributes significantly more than the mean amount and the majority contributes significantly less. They find, interestingly, a combination of strict rules and/or conservative theology appears to systematically limit the proportion of free/cheap riding members giving below the mean and

consequently increase the proportion giving at or above the mean. This is explained in terms of other members believing their money is more valued when it is not spent on non-contributing members.

Another area of concern is the degree to which church size influences the presence of free-riders. Witham (2010: 90) investigates the issue of church size and claims the bigger the church body, the more likely members are to free-ride; whereas higher levels of commitment are generally found in smaller congregations—both standard findings. However, it is important to note the increased presence of free-riders in larger congregations is, in part, due to the incentives to shirk when there is a widespread belief that very few members, in fact, give in tithes and offerings. Stonebraker (1993) takes this analysis one step further and argues if firm size affects efficiency and profitability in manufacturing, then the same analysis ought to apply to church congregations. He empirically tests the significance of church size with member costs and member donations, and discovers larger congregations have lower revenues and lower marginal member costs. In addition, he concludes increased size lowers marginal member costs faster than free-rider effects lower unit revenues. With member marginal costs increasing at a slower rate comparable to the influence of free-riders on total revenue, it is easy to understand the widespread successes and overall popularity of the megachurch boom of the 1990's. On the contrary, smaller congregations have larger marginal member costs and are thus more apt to address the issue of free-ridership by means of stigma-screening processes.

In order to illustrate the severity of the free-rider problem in church congregations, Glubish (2003) empirically investigates the free-rider problem using an individual case study of a Pentecostal Assembly of Canada church, while highlighting the disproportionate growth in members and revenue. By calculating the average wage of men and women within the region, as

well as an approximation of the total number of church members and attendees, he is able to

calculate the difference between expected revenues and actual revenues—the total cost of the

free-rider—which sums to a total loss of $2.5 million a year.[4] He concludes there will always be

a free-rider problem within the church and the only way to mitigate the overwhelming costs of

free-riders is to accommodate people from a wide variety of ages, races, ethnicities, etc. as

possible, so as to include a wide array of individuals from differing socioeconomic statuses;

there will always be individuals who will not tithe due to a dislike in the music, the teachings, etc.

thus making it crucial to understand the individual needs and desires of the congregation in an

effort to represent everyone's tastes and needs. Hull and Lipford (2010) empirically analyze the

free-rider effect, similar to Glubish (2003), while using South Carolina Baptist congregations as

a case study. They find competition between Baptist congregations reduces per member

donations while competition with non-Baptist congregations increases per member donations. In

addition, they too discover free-riding increases as congregation size increases but claim this

effect can be mitigated with an increase in offered member services.

Consumption Signaling

Coşgel and Minkler (2004) are the primary motivation behind using religious

consumption as a communicative tool in order to signal to others one's religious affiliation. This

communicative tool can be used to foster cooperation amongst others but can also serve as a test

or symbol of one's devoutness to his or her faith. In this sense they argue expressive utility is

gained simply by communicating one's identity to others. Within the given context of this paper,

such expressive utility is consistent with consumption patterns of the public. Park and Baker

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[4] The author's calculations are based upon a congregation size of 1126 people and a total expected yearly tithe (10%) of $3.5 million. The free-rider cost is calculated by the expected tithes at 10% of wage base minus actual tithes received.

(2007) identify various consumption trends of religious goods and their ability to overlap into multiple spheres of daily living, to include: identity formation/maintenance (via signaling mechanisms), participation in religious tradition and customs, and entertainment. Dharmapala and McAdams (2005) incorporate a signaling model that illustrates the dynamics of hate speech in relation to an individual's level of racism. They use the concept of expressive utility to characterize differences between perceived belief (or communicated belief) and exhibited expression as a cost in the payoff function; it is this outward form of expressive utility that is characterized in religious consumption behavior. These psychic and effort costs enter in the form of detectable or observable inconsistencies between one's perceived beliefs and actual beliefs. Within the context of hate speech, the authors use the example of expressing one's distaste for a particular race while simultaneously attempting to avoid appearing a racist and analyzing the impact of one's beliefs on taking further actions via hate crimes. The authors also utilize the concept of formal and informal sanctions to provide motivation for individual behavior for a given level of perceived beliefs. In other words, they model the tradeoff of one's expressive utility from communicating their true beliefs against the costs imposed by these formal and informal sanctions on hate speech. These sanctions provide valuable insight in characterizing various rewards, in our models below, to members and free-riders alike who signal appropriate consumption patterns. Spence (1973) is the first to popularize the theoretical framework of signaling as an economic phenomenon and is the original motivation behind the desire to characterize one's consumption behavior as an outward expression of utility and communication. His previous work in job market signaling is applicable to signaling mechanisms used with consumption patterns in order to convey various messages of devoutness within church circles.

Horst (2009) utilizes a model that seeks to characterize the rewards for one's community and self, both in the present world and in the afterlife, of being a suicidal terrorist. They expand upon Azzi and Ehrenberg's (1975) model of afterlife consumption to illustrate payoffs for the individual in terms of expected utility of sacrificing one's life for an ideological purpose. These models of afterlife consumption and expected utility assist in helping understand the importance and valuation of one's decisions and returns in the present life versus returns in the afterlife.

The research of Galvez and Simpson (2012) incorporates valuable findings in religious consumption signaling within various models to explain the free-rider effect. I expand upon their model to illustrate various religious capital accumulation phenomena and their overall influence on church congregation dynamics. The authors develop a model to illustrate the various payoffs and utility maximization choices for religious and insufficiently religious individuals alike, faced with the decision to consume religious goods in order to receive formal rewards from the church community. The models presented in this paper are an extension of the original model presented in Galvez and Simpson (2012).

Religious Capital Accumulation

McBride (2007) notes despite the stigma-screening process, skewness of contributions is still present within strict churches indicating free riders still exist. McBride also divides free riders into three categories: those who actively consume church goods and services and contribute little financially to the production of religious goods, those who are active in the church and are benefitting from church goods and services but are ill-equipped to contribute, and lastly children who contribute no time or money back to the church but still reap the rewards of church attendance. One of the key assertions of his paper is the ability of religious capital to

influence the incentive to free ride; an increase in religious capital decreases the incentive to free ride. However, the ultimate paradox is such: to produce high quality religious goods and services churches must limit free riding and its destructive effects, but to develop consistently strong contributors necessary for producing high quality products churches must allow free riding at least temporarily. In other words, members must be permitted to sample the religious goods and services offered before they buy in. Therefore, McBride develops three models to test the effectiveness of stigma screening, religious production, and free rider exclusion for religious capital accumulation. It is these three models, in conjunction with the Galvez and Simpson (2012) paper, which I synthesize to address the free-rider problem within the constraints of consumption signaling and capital accumulation.

Von der Ruhr and Daniels (2008) detail a model of membership investment within the scope of megachurches and illustrate the different levels of individual and socially optimal levels of investment. Noting the obvious gap between the two levels of investment, rather than suggesting an increased level of commitment as Iannaccone (1994) argues, they argue megachurches can subsidize the investment of members via product differentiation and targeted potential member groups, therefore fostering a higher level of commitment and investment. By targeting various demographic groups and offering a wide range of religious goods and services, megachurches are able to offset the aggregate costs of free-ridership via increased marginal commitment levels. In addition, Von der Ruhr and Daniels (2008) empirically test the presence of various small groups in megachurches versus non-megachurches and find that megachurches generally do offer more small groups and entry ways to finding community than their counterparts. They also test five variables of expected participation and find that megachurches do have statistically significant higher expectations of home and personal practices (e.g. daily

devotions, regular prayer time, community outreaches, etc.). Lastly, they test the degree of emotional attachment of members to their churches and find megachurches have statistically significant higher levels in comparison to non-megachurches. They conclude, through direct subsidization of individual investment of religious capital, individuals' participation and religious capital both increase.

Iannaccone (1990) develops and tests a model of religious participation as a function of human capital in an effort to explain patterns of denominational mobility, religious intermarriage, conversion ages, the relationship between church attendance and contributions, and the influence of family life on levels of religious participation. He concludes religious capital has an overwhelming impact on determining the outcomes, for example, of religious intermarriage, contribution levels, and religious mobility. With regard to free-riding and contributing, he argues:

> Applied to religion the concept of input substitution yields a uniquely economic
> prediction: people with high monetary values of time will conserve on their time
> by engaging in money-intensive religious practices. In particular, their money
> contributions will be high relative to their rates of attendance and vice versa.
> People with low monetary values of time will adopt more time-intensive practices
> and so do the opposite. These predictions provide a strong test of the proposed
> model since they have no precedent within traditional models of religious
> participation (309-310).

The idea that money and time substitute for one another in the production of religious commodities may shed light on the free-riding problem and help explain the lack of contribution efforts on behalf of congregants.[56] An interesting observation Iannaccone makes with regard to

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[5] Iannaccone, Laurence. "Religious Practice: A Human Capital Approach." *Journal for the Scientific   Study of Religion* 29.3 (1990): 297-314. Print.

contributing one's time versus contributing one's finances is the seemingly transferable tradeoff between the two contribution efforts. Regardless, access to human capital is instrumental in fostering spiritual growth and maturity, resulting in deeper understanding and purpose to one's faith. Its restriction may or may not affect member commitments and/or contributions—a possible solution to addressing the free-rider problem.

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[6] McCleary, Rachel. "Religion and Economic Development: The Advantage of Moderation." *Policy Review* 148 (2008): 1-13. Print

Defining the Free-Rider Problem

Statistics on charitable and faith-based giving are staggering. According to the *Giving USA 2011* report, a public service initiative of The Giving Institute, total contributions in America in 2010 summed to $290.89 billion, whereas faith-based giving summed to $100.63 billion or 35% of the overall giving.[7] Furthermore, the report found although faith-based giving received the largest share of charitable dollars, houses of worship, across denominations, witnessed very slow growth in 2010 of charitable donations from congregants compared to previous years. However, our analysis must also investigate individual giving trends. According to The Barna Group, a self-described visionary research and resource company widely interested in the research of faith and culture, in 2007 only 5% of American adult churchgoers tithed—giving 10% of their household income to the church—and that number is widely believed to be smaller in 2012.[8] Since 2000, the percentage of American adults who tithed ranged from 5% to 7% with very little variation. In addition, in 2007, the study found nearly 84% of American adults donated some amount of money to churches or non-profit organizations with the median amount of money donated to faith-based organizations totaling $400, and the mean amount totaling $1308. It is widely known that Christians, in general and in comparison with non-Christians, tend to be the most generous givers; however when only 5% of American adult churchgoers are regularly giving 10% of their household income, long-term growth seems unattainable— assuming religious institutions desire to grow.[9]

The concept of tithing—which literally means 'one-tenth'—is first found in the Old Testament of the Holy Bible and was a widely practiced Jewish tradition as a tax that the

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[7] http://big.assets.huffingtonpost.com/GivingUSA_2011_ExecSummary_Print-1.pdf

[8] http://www.barna.org/barna-update/article/18-congregations/41-new-study-shows-trends-in-tithing-and-donating

[9] The Barna Group, in 2007, estimated Americans associated with non-Christian faiths and atheists/agnostics gave away a mean of $905 and $467, respectively, to all non-profit entities whereas Christians gave away a mean of $1426.

Israelites paid from the harvests of their land to support the local priests and congregations.[10] This tradition has continued and was adopted as a Christian practice in order to support one's congregation in a similar fashion to that demonstrated in the Old Testament. As faith-based organizations do not receive any local, state, or federal funding, their only support is from member donations and is thus imperative members tithe regularly in order to support and continue the work of the church ministries.

Effects of Free-Riding

The effects of free-riding are certainly apparent and widely felt throughout the church community in its entirety as identifying free-riders within a given church congregation is seemingly impossible. Assuming a lack of transparency, members are often given the ability to donate their money through a passed collection plate, therefore making it difficult to identify who gives, who doesn't give, and who gives regularly by way of tithing. In addition, from all the collected monetary donations, it is still extremely difficult to identify if one is giving 10% of one's earned income. Thus through this opaque veil of anonymity, the incentive to free-ride presents itself.[11]

A problematic result of free-riding is its ability to drive more committed members away from the church. In applying the same game theoretical concepts demonstrated above, if there is an incentive to shirk then those who are considered to be regular contributors and donors will have an incentive to stop their donations and shirk as well, or simply move to another church. In other words, we assume church members want to see their contributions have an impact within

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[10] Holy Bible: Leviticus 27:30, Deuteronomy 14:22, Numbers 18:26.
[11] The issue of detecting free-riders is less difficult under Iannaccone's analysis of input substitution. That is, it's easier to observe a congregant's time/effort contributions. However, the analysis of this paper is with specific regard to monetary free-riding.

the church community and, consequently, would not want their contributions to be wasted on other members who they themselves do not contribute.

Lastly, and perhaps most costly, is the ability of free-riders to drain current resources which might better be used elsewhere. For example, if a church offers a coffee bar during its Sunday services as a public good intended to welcome newcomers, but the coffee is consumed instead by free-riders who don't tithe and thus are not helping to financially replenish or pay for the coffee, newcomers are unable to enjoy the coffee due to its rapid depletion and unsuccessful replenishment. When resources are considered scarce, free-riders tend to exhaust resources without contributing or assisting in replenishing those resources. When free-riders are present, the church is unable to fully and appropriately help those who are most in need due to a depleted supply. This not only has the ability to make the church an ineffective presence throughout the community, but can also destroy a church if input cannot compensate output. Although this may appear to be an extreme scenario as many congregations take into consideration the costs of free-riding, it is nonetheless crucial to understand the varying degree of severity its ramifications can have on future output and overall efficiency.[12]

Combating Free-Riding

Combating the issue of religious free-riding is quite difficult due to the primary output of faith-based organizations and institutions being public goods. A public good, in and of itself, is defined as a good that is both non-excludable and non-rivalrous. In other words, one cannot exclude others (as in club goods) and the good cannot be rivalrous (as in common goods). By definition, public goods will have free-riders. So the dilemma remains: how does one protect the

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[12] Although there are occasional norms that accept the inability for *everyone* to contribute, the end goal in striving for optimal efficiency is simply *reducing* free-ridership, rather than complete eradication.

church from free-riders, while still enabling the proper output of public goods (i.e. non-excludable and non-rivalrous goods) for the community? One of the more common methods, and which will be further explored in this paper, is the ability to implement strict rules to create de facto membership costs. Such rules assist in establishing one's overall devoutness to an organization and can be used to identify members from non-members. In other words, churches can establish a threshold which allows those who meet or exceed the threshold to reap the rewards of being considered a member. Furthermore, a strategy used by church congregations and coined by Olson and Perl (2005) is that of "particularistic certainty", or the ability to claim one's own specific doctrine, dogma, and teachings to be superior to others'. By this method, rules established to help screen free-riders have a supernatural justification and are thus widely accepted. In the ensuing sections, I will further explore the ability of church congregations to establish various member-commitment thresholds as a method to reduce free-riding and its subsequent impact on religious capital accumulation and future growth. Although I will be focusing primarily on the monetary needs of religious institutions, it is important to note that monetary free-riding is one facet considered among many with the understanding there are tradeoffs between contributing one's time versus contributing one's finances.

Religious Consumption Signaling

The concept of religious consumption signaling lies behind the ability of both church members and non-members alike to communicate a particular level of commitment based on their consumption patterns. Throughout history various clothing styles, eating behaviors, and attitudinal displays were used as instruments to convey a certain degree of piousness or separation from mainstream culture and beliefs (Iannaccone 1992:273). We seek to incorporate this signaling tool as a possible method of identifying and excluding free-riders. If the costs of signaling a devout commitment to one's religion exceed the benefits of free-riding, then perhaps one is able to use outward displays of religious consumption signaling as a method of avoiding such costs. Park and Baker (2007) surveyed the American public in an effort to learn more about the American market for religious goods and products and illustrated their findings in the two graphs below.
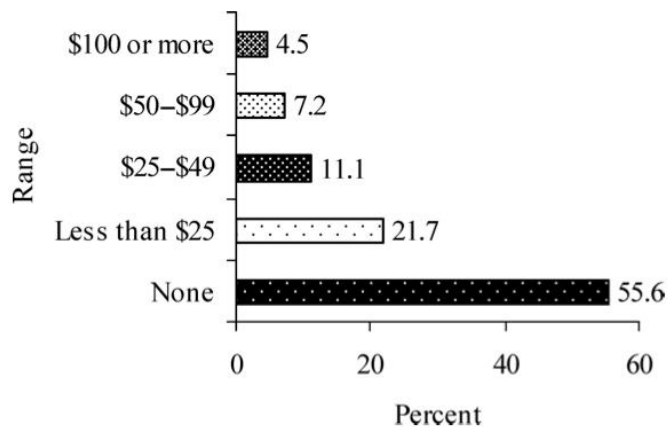

Figure 1: Amount Spent on Religious Material Goods and Products in the Past Month
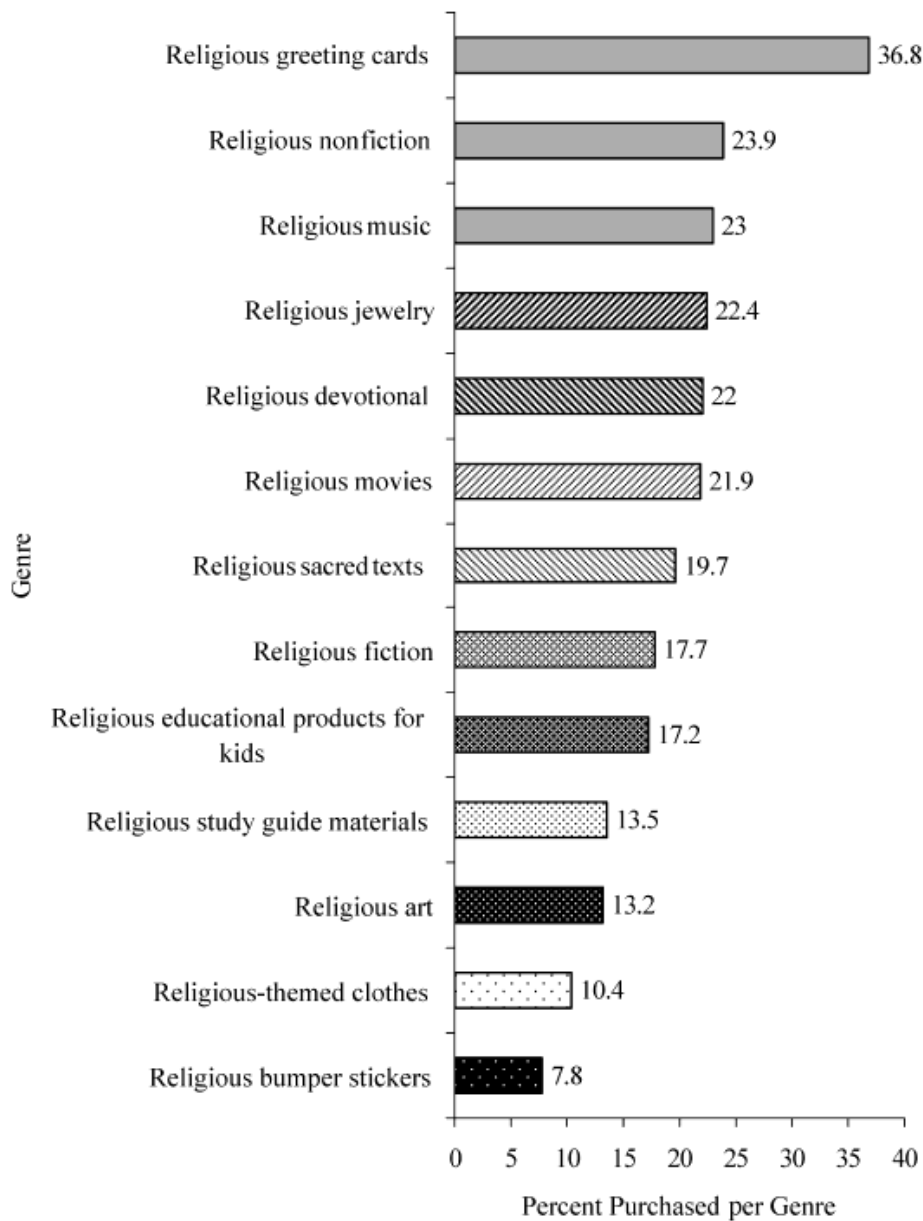
Figure 2: Religious Consumption by Genre

Although the large majority of those surveyed did not consume religious goods and products, there is still an apparent market for such goods that is worth further investigation. Though some of the products listed in the second graph are most likely for personal spiritual growth, there are products that can and are used to signal one's beliefs (e.g. religious greeting cards, religious jewelry, religious art, religious-themed clothes, and religious bumper stickers).

The goal remains to explore and illustrate the concept of expressive utility within a microeconomic framework using consumption of religious goods as a signaling mechanism of one's own beliefs towards an institution and one's peers. By this motive, we can develop and implement a religiosity spectrum, expanding upon the research in Galvez and Simpson (2012), where an individual's beliefs, x_i , are captured in a space between [0,1]; 0 is considered a lack of religiosity and 1 is considered extreme religiosity. Therefore, higher values of x_i represent individuals with higher religiosity, $x_i \in [0,1]$. We can therefore illustrate this spectrum below with an institutional threshold dividing the space and those below the threshold are identified as insufficiently religious individuals and those above the threshold are identified as religious individuals.
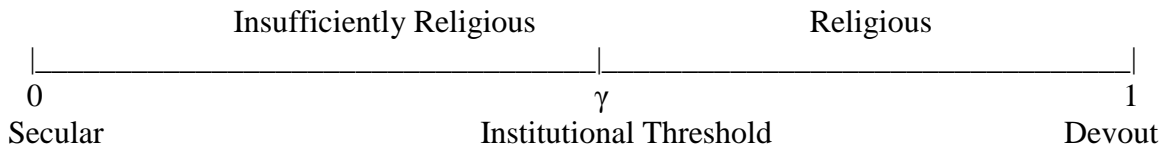
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        Insufficiently Religious                    Religious
 |_____|_____|
 0                                γ                                       1
 Secular                  Institutional Threshold                     Devout
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Figure 3: Religiosity Spectrum

Furthermore, we introduce a variable v_i which measures the communicated signal of one's commitment within the model. Thus the respective payoff for each individual can be characterized as a utility function where

$$U = B_f(v_i) + B_i(\mu(v_i, v_{-i})) - (v_i - x_i)^2 \tag{1}$$

$B_f(v_i)$ represents the formal benefits received from one's institution or church, dependent upon one's communicated commitment level v_i. In addition, we introduce a parameter to capture informal benefits, $B_i(\mu(v_i, v_{-i}))$, or those benefits received from one's peers which is dependent upon one's own communicated beliefs and their peers communicated beliefs,

v_i and v_{-i} respectively. Informal rewards are dependent upon μ which is $Pr(x_i > \gamma \mid v_i, v_{-i})$. In other words, religious members within one's community will grant informal rewards (e.g. social networking, acts of charity from one member to another, etc.) to an individual as long as they believe the individual's commitment level is above the threshold that is needed for him or her to be considered a "religious" member. For simplicity, B_i is realized as long as $\mu = 1$, and the values of both B_f and B_i are exogenously determined. The last term in the utility function, $(v_i - x_i)^2$, enters as a cost and expresses an individual's loss due to the inconsistent expression of one's beliefs; simply, it measures the cost of signaling something different than one's true beliefs.

Once the initial parameters and assumptions are declared, a game theoretic approach is used to model the various equilibria. The game develops as follows: the religious institution announces the value of the formal benefits, B_f, and the individuals learn the nature of the informal benefits via their peers, B_i. Noting one's true beliefs, x_i, are unobservable, the individual then chooses a value v_i to signal. Finally, the individual obtains the formal and informal benefits, B_f and B_i respectively, or lack thereof. Equilibrium is achieved with a profile of signals and beliefs such that

$$v_i^* = \arg\max U = B_f(v_i) + B_i\big(\mu(v_i, v_{-i})\big) - (v_i - x_i)^2$$
$$\mu = 1 \text{ iff } x_i \geq \gamma$$
$$\mu = 0 \text{ otherwise.}$$

(2)

Having summarized much of the research that was already conducted in Galvez and Simpson (2012), there are three important scenarios the authors illustrate which will prove beneficial in further developing the models presented below. That is, they calculate equilibrium for four signaling games in which there are: 1) no formal or informal rewards from religion; 2) only

formal rewards from religion; 3) only informal rewards from religion; and 4) both formal and informal rewards from religion. However, what is most relevant to the models developed below and which will be the foundation for the analysis provided henceforth are the graphical results that arise from the authors' analysis. The graph below illustrates the effect of establishing a medium commitment level threshold, γ, where those to the left of the threshold are identified as 'insufficiently religious' individuals who have no interest in religion, $x_i = 0$, and thus experience an increasing disutility as they move closer to γ, and those to the right are either 'religious' individuals who experience increasing utility, $x_i = 1$, as they increase their signal v_i, or are 'insufficiently religious' individuals who send incorrect signals in an effort to gain the formal benefits, $x_i = \gamma$, i.e. free-riders. In the case of insufficiently religious individuals whose actual beliefs x_i are equal to the γ threshold, the individual experiences decreasing returns to scale with regard to their utility due to the undesirable action of moving closer to 1 on the religiosity spectrum as illustrated below.
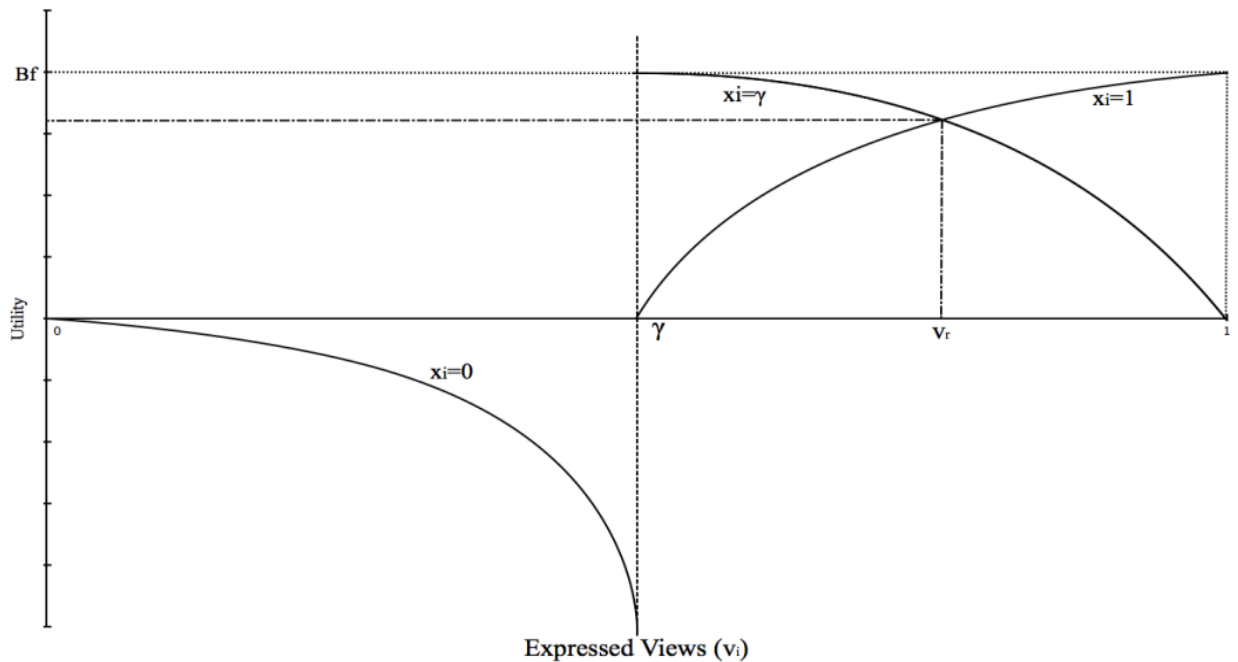

Figure 4: Religious Consumption Signaling

As mentioned above, this model—originally presented in Galvez and Simpson (2012)—will be further explored and expanded upon in greater detail in the ensuing models as I will focus primarily on the *formal* rewards and costs of consumption signaling (ignoring *informal* rewards) while altering the placement of the γ threshold in response to various church sizes and types, in an effort to capture the polarizing effects of maxing out the γ threshold completely (i.e. setting γ to the right-most extreme) and then relaxing the γ threshold completely (i.e. setting γ to the left-most extreme). By altering the placement of the γ threshold, I hope to capture a broad spectrum of religious institutional scenarios that will shed light on the overall effectiveness of stigma-screening processes and institutional thresholds in reducing the presence of free-ridership.

Religious Capital Accumulation

Equation (2) pertains to how addressing the free-rider problem lies at the root of religious capital accumulation. As mentioned earlier, religious capital is the byproduct of experiencing, consuming, and attending religious services. As members will frequently build relationships with other church members while simultaneously learning church doctrines, norms, and traditions, they are forming religious capital and thus obtaining the means towards spiritual maturity and understanding. By this definition, it is religious capital members seek to accumulate and which religious institutions are capable of restricting as a measure to reduce the presence of free-riders. However, determining to what degree religious capital is widely available to non-members and members alike is a seemingly difficult task and could later prove to be detrimental to future growth in church attendance.

McBride (2007) presents three formal models that address free-riders via a theory of stigma-screening and religious capital accumulation which I will outline below and will build further upon in conjunction with the work of Galvez and Simpson's (2012) religious consumption signaling models. McBride defines religious capital and its capabilities as

> …a type of human and social capital that increases an individual's productivity and consumption value of religious goods. On the production (supply) side, an individual's experience and knowledge tied to a particular church increase her ability to produce religious goods associated with that church. A churchgoer who knows the hymns improves the quality of the hymn singing more than a churchgoer who does not know the hymns…Religious capital also influences consumption (demand) in that it directly increases the consumption value of the religious goods for the holder of the religious capital (11).

In realizing the full potential of religious capital, we are then faced with the following dilemma: in order to produce high quality religious goods and services, churches must limit free-riding (i.e. those who do not financially contribute), but if one desires to develop high contributors *necessary* for a high quality religious goods and services, then churches must permit free-riding. That is, free-riding must be initially permitted if churches seek to develop high quality religious goods; the hope is that free-riders will eventually become consistent contributors.

McBride develops three models, as alluded to above, to address various free-riding and religious capital formation scenarios. First, he considers a scenario where the religious good cannot be excluded from the general congregation and there is no membership cost to becoming a member. Under these conditions, he concludes if free-riders have sufficiently low capital, then their marginal returns to contributing are subsequently low and thus they will not contribute. His second model considers the ability to identify and consequently exclude free-riders. Within this model and its respective constraints, he concludes even if exclusion is costless to the church, allowing free-riding is necessary in order to both promote long term growth and foster high capital contributing members.[13] Lastly, he develops a religious capital formation model that incorporates the presence of stigma-screening processes and his conclusions are threefold. First, his model predicts strict churches with costly behavioral requirements will consequently have higher average contributions, in comparison with non-strict churches. Second, his model predicts the distribution of contributions in non-strict churches will be more skewed than in strict churches; in other words, members of non-strict churches will have more concentrated levels of contributions *below* the mean contribution level whereas more strict churches will have highly

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[13] McBride assumes the ability to transform identities—free-rider to committed member and vice versa—and thus posits that free-riders must first experience or enjoy the benefits of membership (religious capital) prior to becoming high capital contributing members themselves.

leptokurtic distributions of giving. Third, his model predicts free-riders of a certain type, or those most likely to contribute in the future, are welcomed in strict churches (26-27).

Stigma-screening practices and processes are of great concern to the models developed below and are what Iannaccone (1992) believed to be imperative in identifying those who are more committed, and hopefully more willing to contribute, from their less committed counterpart. Within the scope of religious capital accumulation and formation, stigma-screening processes act as a communicative tool—much like consumption signaling—which conveys a certain degree of willingness to commit. They act as formal method for institutions to identify those who are willing to bear the costs for an expected greater return. Such stigma-screening processes include obligatory religious practices as wearing a Jewish yarmulke, a Muslim veil (for women), or the modest and plain clothing choice of the Amish. It is important to note, however, that although stigma-screening processes are a communicative tool similar to that of consumption signaling, they differ in that consumption signaling can be used as a non-obligatory expression of faith whereas stigma-screening processes are often an obligatory expression of faith meant to convey a desired level of devotion.

Acknowledging religious capital formation as a vital process of one's spiritual maturity towards understanding is crucial in recognizing the various methods to which religious institutions can effectively limit and reduce free-ridership. In understanding the importance of religious capital accumulation for both institutions and individuals alike, I intend on demonstrating the effects of free-ridership on others' capital accumulation as well as the church's ability to implement capital restrictive counter-measures as a response to the congregants' ability to falsely signal his or her level of commitment.

Model Implications

To illustrate the graphical implications of religious consumption signaling and religious capital accumulation, I will introduce three unique models in an effort to capture the various responses from churches to combat the free-rider problem while combining the religious capital formation models in McBride (2007) with the consumption signaling models in Galvez and Simpson (2012). All three models are designed to measure member utility over time, given a commitment threshold parameter. k_i will represent individual i's religious capital, $c_{i,t} \in \{0, 1\}$ will represent a given contribution level in period t by individual i who contributes fully (1) or not at all (0), n will represent the total population, and M_t will represent those individuals who decide to join the religion in time t bounded by the inequality $0 \leq M_t \leq 2n$, with n committed members, n free-riders, and therefore a total of *2n* members of the group. The religious good has a base value in time t of: $f(\frac{1}{M_t}\sum_{j \in M_t} c_{j,t})$ which simply is a function that measures the average of all members' contributions in time t. We will assume individual i is born with capital $k_1 \geq 0$, where all who consume religious goods in time t will increase $k_2 \geq k_1$.

Within the consumption signaling models, v_i will represent individual i's communicated level of commitment whereas x_i will represent their actual belief. B_f will represent the formal rewards acquired for those who surpass γ with a beginning utility function of

$$U = B_f - (v_i - x_i)^2 \tag{3}$$

Traditional Stigma-Screening Model

The first model worth exploring is the traditional stigma-screening model where a religious institution, or church, establishes a stigma or commitment threshold, γ, which is designed to deter those who are less committed (free-riders) and entice those who are most committed and will thus contribute with their time and money. This model is designed to

represent the average religious institution who seeks to maximize its returns on member

investments while attempting to distinguish its own members from the rest of society. Our

analysis will first inquire into the effects of religious capital accumulation within the given

model. Recall that a religious good (or institution) has a base value in time t of: $f\left(\frac{1}{M_t}\sum_{j \in M_t} c_{j,t}\right)$.

If we begin the analysis with M_t individuals joining the religion and an unknown number of

individuals within M_t identified as free-riders, then our capital-pursuing committed member will

contribute, assuming they are willing and able to meet the requirements established within the γ

threshold, if

$$kf\left(\frac{1}{2}\right) - 1 \geq 0 \tag{4}$$

$$k \geq \frac{1}{f\left(\frac{1}{2}\right)}. \tag{5}$$

In other words, any rationale committed person will contribute, or *continue* contributing, as long

as the capital k one is receiving is greater than or equal to $\frac{1}{f\left(\frac{1}{2}\right)}$ where the religious institution is

valued with exactly half of its members identified as committed and contributing. Consequently,

any committed member will not desire to continue contributing if they know more than half of

the congregation are free-riders and will most likely desire to switch congregations where he or

she feels their money is most valued or will elect to free-ride themselves.

The free-rider, on the other hand, will acquire religious capital and thus continue to free-

ride if

$$kf\left(\frac{n+1}{2n}\right) - 1 < kf\left(\frac{1}{2}\right) \tag{6}$$

$$k < \frac{1}{f\left(\frac{n+1}{2n}\right) - f\left(\frac{1}{2}\right)}. \tag{7}$$

This expression captures the threshold of free-riders faced with the decision to contribute or not, where $f\left(\frac{n+1}{2n}\right)$ represents the value of the religious good with one additional member divided by the total number of members in the group. In other words, the free-rider will elect *not* to contribute if more than half of the members already contribute and are receiving religious capital. From an incentive perspective, if a free-rider can attend church and receive the formal benefits of doing so without having to contribute, because more than half of the members are already contributing to cover the costs, than there is no incentive for the free-rider to even start contributing. However, such dangers with this analysis lie in the ability of free-riders to quickly overwhelm and outnumber contributing church members. With the analysis above, it is possible for free-riders to drive away committed and contributing members if they are willing to meet the institutional requirements of the γ threshold. Such examples may include requiring members to dress a certain style that is representative of the church's beliefs or even modifying one's diet.

   After determining the religious capital accumulation thresholds and payoffs for free-riders and members alike, we examine next the ability of consumption signaling to communicate a particular level of commitment. Recall the graphical illustration above which maps the utility for three individuals: an insufficiently religious individual, a committed religious individual, and a free-rider who is interested in disguising his or her true beliefs in order to gain formal institutional rewards.
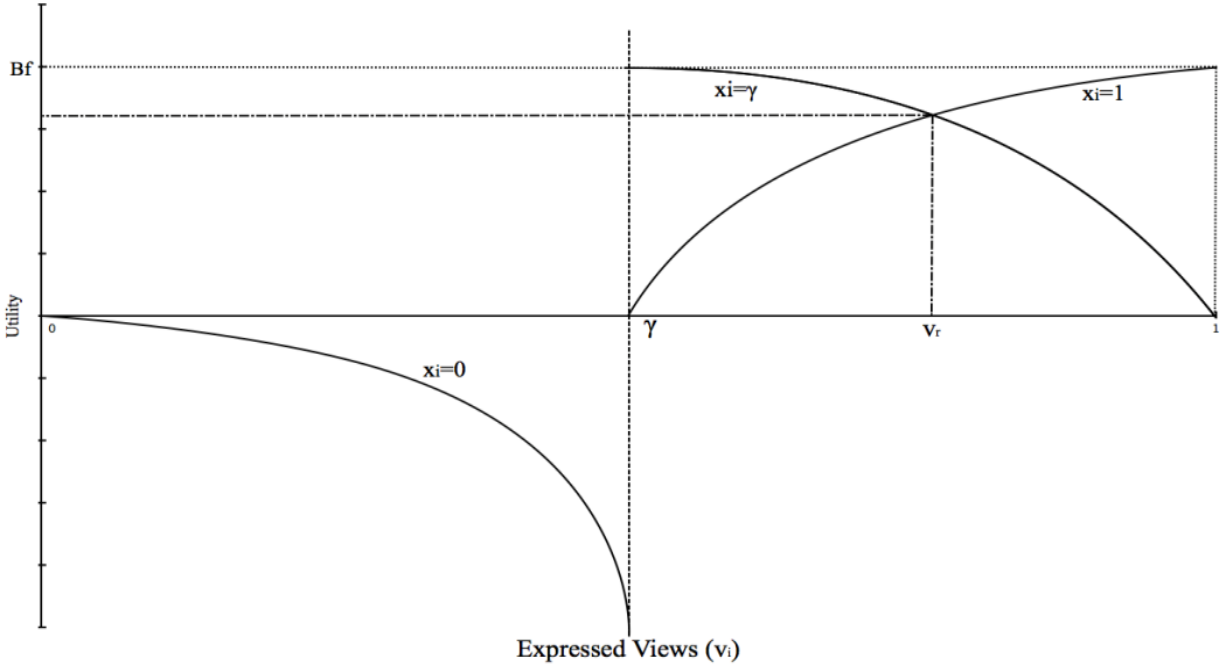
Figure 5: Traditional Stigma-Screening Model

The illustration maps one's overall utility [0,1] dependent upon one's expressed views. The left-most concave curve represents the utility of an insufficiently religious individual; $x_i = 0$. That is, the closer his or her expressed views are to γ, the more disutility they experience. Once the threshold γ is surpassed, we encounter two individual utility curves. The increasing concave curve represents the committed religious member where the closer their expressed views are to 1, the more utility he or she gains; $x_i = 1$. Lastly, the decreasing concave curve represents the free-rider who has disguised his or her actual beliefs in order to reach the formal rewards available to those who are willing and able to meet, or exceed, the commitment threshold; $x_i = γ$. In this example, the free-rider is solely interested in communicating an expressed view of γ and nothing more. Thus, the free-rider decreases their utility for all communicated levels of commitment that exceed γ but still receives all the formal benefits and rewards for being identified as a church member.

To address the utility payoffs, the insufficiently religious individual, in this model, receives a utility of

$$U = -(v_i - x_i)^2. \tag{8}$$

One obviously does not receive any formal rewards from church members, B_f, and maximizes their utility by communicating an expressed religious belief that is consistent with his or her actually held beliefs. The church member will receive a utility of

$$U = B_f - (v_i - x_i)^2 \tag{9}$$

$$B_f - (v_i - 1)^2. \tag{10}$$

The church member does receive the formal benefits of church membership and, assuming they aspires to maximize their beliefs where $x_i = 1$, disutility will only arise again from inconsistent expressed beliefs, v_i. Lastly, the free-rider will receive a utility payoff of

$$U = B_f - (v^* + e - x^*)^2 = B_f - (e)^2 \tag{11}$$

$$e \equiv \gamma - x^*. \tag{12}$$

From the free-rider's perspective, if one signals x* honestly he or she will not receive the formal benefits of church membership. On the contrary, if one "over signals" he or she will receive the formal rewards B_f at the cost of increasing their expressed views v^*. Therefore e represents the captured inconsistency between the free-riders's actual beliefs from the γ threshold established by religious institutions.

Free-Rider Exclusion Model

This next model assumes the ability of identifying free-riders immediately while only permitting fully committed individuals to church membership. Although this task may appear

impractical, its findings are nonetheless relevant to the academic inquiry of this paper. An example of this phenomenon might be found in smaller cult-like groups who require a lot of their members and do not easily permit membership to outsiders without first knowing their degree of commitment. In this model, we will maximize the γ threshold while observing the changes in religious capital accumulation and consumption signaling behavior.

Capital accumulation within the free-rider exclusion model is relatively straightforward. Utilizing the same capital accumulation equations defined above, the church member will contribute and thus receive capital if

$$kf(1) - 1 = 0 \tag{13}$$

$$k \geq \frac{1}{f(1)}. \tag{14}$$

In other words, the individual will only contribute if the religious good is valued at 1 with 100% of members already contributing. In addition, all committed members who contribute accordingly and thus meet the γ threshold will receive the formal rewards as well. The free-rider, due to their exclusion in this model, will simply have a capital accumulation of

$$k = 0.$$

If they desire to acquire religious capital, they must contribute at the same level of expectation as the rest of church members.

In analyzing the consumption signaling patterns, there is no need to differentiate between insufficiently religious individual, church member, and free-rider—as is done in the traditional stigma-screening model above—simply due to the uniqueness of the present model. Demonstrated in the illustration below, all free-riders experience an increasing disutility due to their exclusion. Since it is assumed all free-riders are identifiable and excludable, there is no incentive to disguise one's expressed views from one's actual views. On the contrary, all church

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members have "maxed" out their utility due to their ability to meet the institution's γ threshold and thus reap the formal rewards offered by the institution.
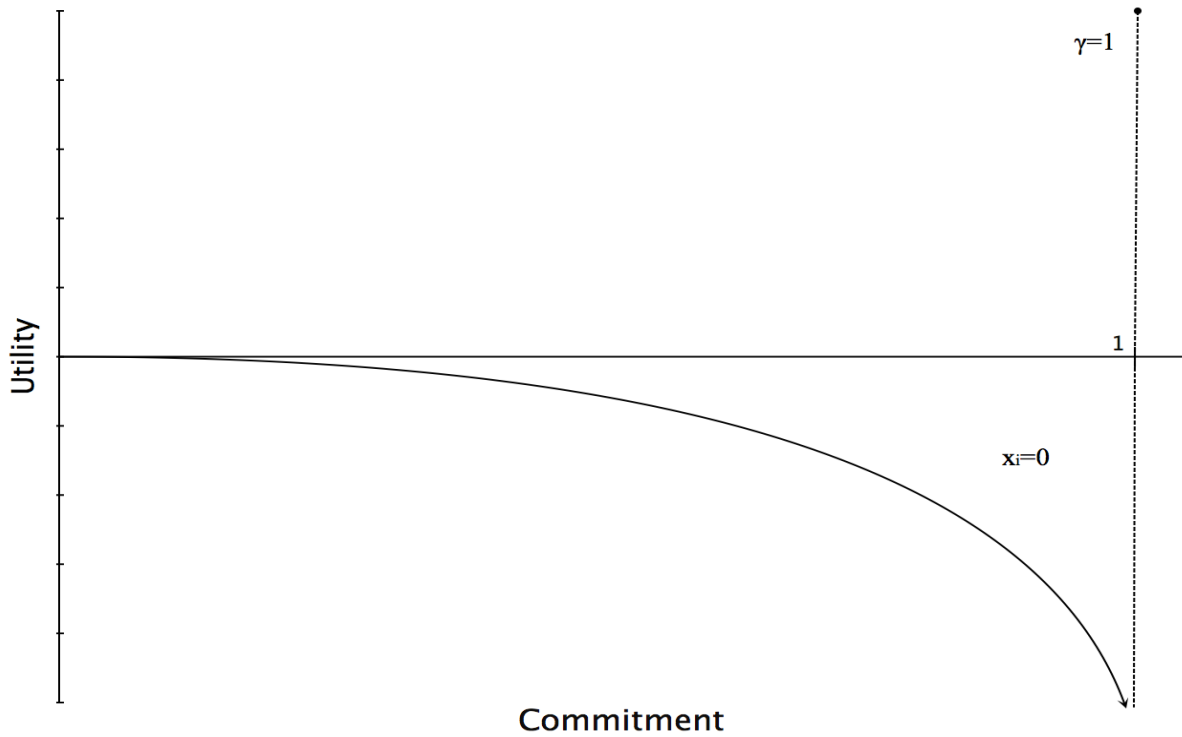

Figure 6: Free-Rider Exclusion Model

Consequently, the free-riders consumption signaling utility payoff is

$$U = -(v_i - x_i)^2 \text{ if } 0 \leq v_i \leq \gamma. \tag{15}$$

Seeing as there is no possibility for the free-rider to meet the γ threshold and thus earn the formal rewards of membership, the free-rider will only maximize his or her utility by signaling consistent beliefs with one's actually held beliefs. The church member who is successfully able to meet the γ threshold through extreme commitment will have a similar payoff but, of course, will *only* receive the formal rewards of membership. Their payoff therefore is

$$U = B_f - (v_i - x_i)^2 = B_f. \tag{16}$$

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Since the church member is unable to signal an expressed view that is inconsistent with is actual views, due to the church's strict γ threshold, one will only receive the formal rewards and thus maximize his or her utility.

Note in this model the return on church membership and member utility is the greatest; however there is very little room for outward growth due to the institution's exclusive nature.

"Seeker-Friendly" Model

The last model, and perhaps most interesting, is the "seeker-friendly" model where we completely relax the γ threshold. This model is intended to represent the megachurch phenomenon that has gained widespread popularity since the 1990's. Within the megachurch movement is created an entirely different church culture where institutions repeatedly invite members to "come as you are" and rarely stress the idea of commitment. Megachurches, by definition, are institutions with 2000+ members and are often trademarked by cutting-edge technology, complimentary coffee, concert-style worship music, and numerous other amenities (Twitchell 2004). Many megachurches will often have available bookstores, fitness clubs, and childcare to all who attend their services. Not only is there little commitment to contribute, but there are far more seemingly complimentary amenities to enjoy.

Beginning with religious capital accumulation, we again have only two types of people worth analyzing: the free-rider and the church member. We will assume both individuals begin forming religious capital upon entering the church. Seeing as there are no stigma-screening processes or other methods to distinguish free-riders from members, the church member will only contribute if half or more of the current congregation contributes and tithes. In other words, one is faced with a capital accumulation constraint of

$$kf\left(\frac{1}{2}\right) - 1 \geq kf\left(\frac{n-1}{2n}\right) \tag{17}$$

$$k \geq \frac{1}{f\left(\frac{1}{2}\right) - f\left(\frac{n-1}{2n}\right)}. \tag{18}$$

If the individual suspects more than half of the church congregation is free-riding, they too will free-ride or leave the church altogether. Similarly, the free-rider is faced with a constraint where he or she will not contribute if they know half of the congregation currently contributes by tithing. Their capital accumulation constraint is

$$kf\left(\frac{n+1}{2n}\right) - 1 < kf\left(\frac{1}{2}\right) \tag{19}$$

$$k < \frac{1}{f\left(\frac{n+1}{2n}\right) - f\left(\frac{1}{2}\right)}. \tag{20}$$

Note the free-rider's and church member's capital accumulation constraint are very similar due to the lack of stigma-screening and exclusionary measures. In addition, because both individuals join the church but not everyone contributes, a partial free-rider equilibrium exists.

Seeing as this is a unique model where no commitment (no γ threshold) is needed to enjoy the many benefits of church membership, there is no incentive to disguise one's intentions via consumption signaling. Recall both players are faced with the initial utility function of

$$U = B_f - (v_i - x_i)^2. \tag{21}$$

The free-rider, therefore, will have an actual held belief x_i of γ and thus has a utility payoff of

$$U = B_f - (v_i - \gamma)^2. \tag{22}$$

The free-rider maximizes his or her expressed views v_i at γ, therefore we can simplify their payoff

$$U = B_f - (v_i - 0)^2$$

$$= B_f - (v_i)^2. \tag{23}$$

The church member, on the other hand, will have a utility payoff of

$$U = B_f - (v_i - 1)^2. \tag{24}$$

Contrary to the free-rider, the church member will maximize their expressed views v_i at 1. These findings are illustrated in the graph below.
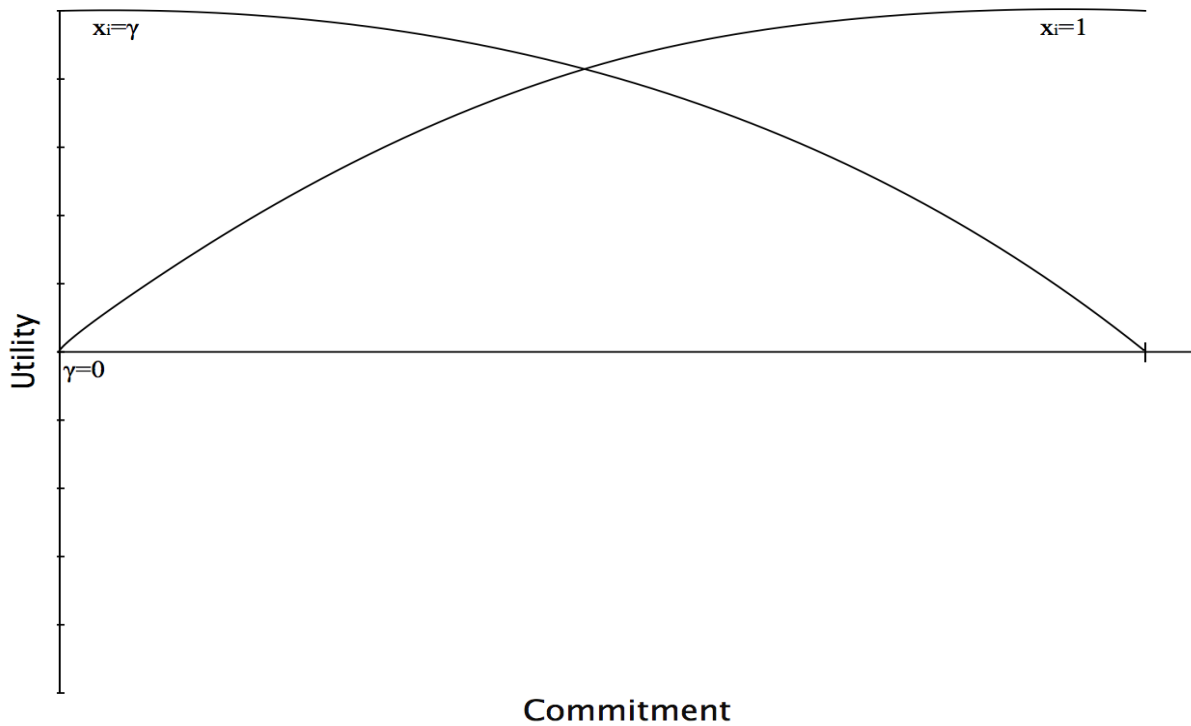

Figure 7: "Seeker-Friendly" Model

Similar to the other models, the downward sloping concave curve is the free-rider's utility payoff whereas the upward sloping concave curve is the church member's utility payoff.

Conclusions

In summary, the main findings from the three models are illustrated below.

Table 1: Summary of Findings

	Reduction of Free-Riders?	Self-limiting for future growth?[14]	Religious Capital Restrictive?	Consumption Signaling Necessary?
Traditional Model	To a Certain Extent	To a Certain Extent	To a Certain Extent	Yes
Free-Rider Exclusion Model	Yes	Yes	Yes	No
"Seeker-Friendly" Model	No	No	No	No

In the traditional model, presented first, there is a reduction of free-ridership due to the implementation of the γ threshold. However there is still an ability for free-riders to signal a commitment level that meets (or exceeds) the γ threshold, thus allowing free-riders to enjoy the formal rewards of a particular religious institution without any true commitment. Likewise, the traditional model, with the implementation of the γ threshold is religious capital restrictive as a formal means of dissuading free-riders. One of the considerable disadvantages to the traditional model, however, is its ability of a γ threshold to self-limit future growth. New members who are seeking to join a religious institution that operates under the traditional model must make an initial decision of whether or not they will contribute in order to receive the formal rewards of the church which, given particular circumstances, may be an unfair prerequisite.

In the free-rider exclusion model, we experiment with the seemingly extreme case of a religious institution's ability to accurately and immediately identify free-riders and therefore

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[14] The term "growth" is defined here to be reflective of church-size growth, as well as economic growth.

permanently exclude them from the formal rewards of its organization.[15] Within this model, there is a complete reduction of free-riders as well as a restriction of religious capital. However, perhaps most evident in the free-rider exclusion model is its ability to dissuade new members from joining due to the high commitment levels required for initial membership; within this model consumption signaling is completely unnecessary due to the high costs of membership. Yet, unlike the other models and unique to this model is the concentrated degree of formal rewards reserved for members.

Lastly, the "seeker-friendly" model illustrates the approach taken by many contemporary mega-churches with regard to free-ridership. As demonstrated above, there is no reduction of free-riders, no capital restrictive measures or γ threshold, no need for consumption signaling and thus open to endless possibilities concerning future growth. The interesting piece of the "seeker-friendly" model is the complete acceptance of free-ridership in hope of one day transforming free-riders to committed and contributing members; hence being "seeker-friendly".

In addressing the various findings of each model and the overall effectiveness of the stigma-screening processes, the growth implications—and subsequent reactionary measures to free-riders—are completely dependent upon the current church "type" in addition to future growth objectives. As demonstrated earlier, the "seeker-friendly" model—characteristic of typical megachurches—caters to a wide range of socioeconomic and demographic population and typically boasts member sizes upwards of 2000. When congregation sizes demonstrate such popularity, marginal member costs are much lower than witnessed in smaller congregations. Therefore, there is not an inherent need for stigma-screening processes (as demonstrated by a relaxed γ threshold in the "seeker-friendly" model) because even if not every member is

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[15] Assuming the free-rider has no desire to change his or her commitment level due to the high costs of membership.

faithfully tithing 10% of their income, they can still properly function due to marginal revenues exceeding marginal costs and thus diminishing the severity of the issue. Religious institutions that fall under this "seeker-friendly" model are often not concerned about economic growth so much as they are concerned about member growth—more members equates to more revenue at a minimal marginal cost. Consequently, because there are no stigma-screening processes or γ threshold to enforce, there is obviously no need to signal. Although we assume the inability to change commitment identities within the analyses of this paper, it is important to note that these mega churches provide a big group experience at a low marginal member cost but they encourage the spiritual growth of members through small group experiences. If a newcomer so desired to further their religious capital intake, joining a small group which allows for more intimate and meaningful community building/spiritual development is the next plausible step; it is within these small groups that members are spatially funneled to more concentrated levels of learning and commitment. Yet it is within these small groups that similar free-rider problems to those experienced by smaller churches are witnessed.

On the contrary, smaller congregations are much more dependent upon member tithes due to much larger marginal member costs. In these instances one witness more stringent stigma-screening processes and more monitoring eye on who precisely is contributing and who is free-riding (as demonstrated in the free-rider exclusion model). Oftentimes these congregations are seldom focused on continual member growth, so much as they are focused on retaining and building more faithfully committed members. Lastly, however, and perhaps most intriguing is the case of the medium sized congregations (traditional model) who, due to relatively high marginal costs and more frequent free-riders, are desiring to grow but are unable to do so because of the constraints offered by religious free-riders. Congregations under the traditional

model need to increase devotion but can only do so by: a) increasing stigma-screening processes in an effort to reduce free-ridership; or b) relaxing their stigma-screening processes and risking losing more committed members and the revenue they contributed in hopes of modeling the widespread popularity found in larger "seeker-friendly" churches. However, it is within these traditionally modeled churches where religious consumption signaling will be much more commonplace.

The assumption of a lack of transparency found in the theoretical models above allows for a consistent analysis of the religious free-rider problem while forcing the analytical focus on the overall effectiveness of religious institutions in addressing free-ridership. If one were to relax the assumption of transparency completely in the modeling above, it would certainly be interesting to investigate the various counter-measures religious institutions have at their disposal in addressing and reducing the presence of free-riders. As was seen in the free-rider exclusion model, the assumption of transparency is relaxed to allow for the immediate recognition of free-riders and their subsequent dismissal. However, relaxing the assumption of transparency and thus enabling the ability to identify all free-riders within a "seeker-friendly" context would certainly prove to be a cumbersome and difficult, if not impossible, task.

Lastly, and perhaps most importantly, the assumption of the inability to change religious identities allows for a very simple analysis of the religious free-rider problem. McBride (2007) ignores this assumption and finds, regardless of the situation (or economic model above), permitting free-ridership is necessary in hopes of maximizing future returns on present marginal costs. However, I claim that in ignoring such an assumption one must indirectly assume all religious organizations are risk seeking in their ability to discount present costs for future returns which, given religious organizations are non-profit institutions, I find to be highly unlikely.

My primary objective in this thesis was to investigate the various institutional and individual responses and counter-responses in addressing the religious free-rider problem. As demonstrated above, two particular tools—religious consumption signaling and religious capital accumulation—provide outlets worth further exploration in deconstructing and addressing the complexity of religious free-ridership. The motivation behind the work presented stems from a longing of deeper understanding and improved efficiency of religious institutions and non-profit faith-based organizations alike. From the research presented above, I have presented three theoretical models that address the varying degree of religious institutional responses through religious capital accumulation/restriction and the individual's subsequent response through consumption signaling which aimed to bring clarity and enlightenment to the ever-perplexing issues surrounding free-ridership. Though my intentions were never to completely "solve" the dilemma of religious free-riders, my research has nonetheless aimed at providing an avenue of academic understanding worth further investigating.

From the analyses completed above, each model holds its own conclusions worth expanding upon. As each model offers its own contributions and conclusions to the argument at large, how one addresses the religious free-rider problem will affect future growth. Establishing a stigma-screening process, as found in the traditional stigma-screening model, will certainly deter the presence of free-riders but will not eliminate the problem in its entirety so long as free-riders are willing to skew their communicated beliefs in hopes of obtaining the formal rewards and benefits offered by church membership. Furthermore, establishing such strict membership requirements may eradicate free-riders but will do so at the cost of growing one's church body. Within the free-rider exclusion model, the rewards are certainly the greatest amongst those willing to meet the γ threshold, as there are no free-riders, but such seemingly extreme practices

to identify and eliminate free-riders may prove disastrous for future membership or congregation growth. Lastly, the "seeker-friendly" model lends itself to rapid growth as no commitment is required and the formal rewards of church membership are offered to all. Seeing as churches under the seeker-friendly model continue to grow, committed members are increasing at an equal or faster rate than free-riders. If church membership growth is the end goal then this approach may be most desirable, but it still does not address the free-rider problem so much as it placates the issue.

A solution to the difficulties of dealing with religious free-riders proposed by McBride (2007) is to allow free-ridership in hopes of creating future members. In other words, once a free-rider sees and experiences the degree of religious capital within any given institution, he or she may desire to become a member and thus increasing their religious capital over time. Perhaps this may explain the widespread popularity megachurches and seeker-friendly churches have experienced within the last couple of decades. Again, however, such an approach does not solve the issue entirely.

From an institutional perspective, one must establish the end goal of one's ministry. If continual growth remains the end goal, then perhaps a relaxed γ threshold approach is best. However, if eliminating free-riders and dispersing the formal rewards offered to a select few is the end goal, then perhaps the maximized γ threshold approach is most desirable. Regardless, after a theoretical analysis of both religious capital accumulation and religious consumption signaling, it appears as though an all encompassing equilibrium solution is still far from being obtained.

An ideal situation, which was excluded from the analyses above, is the ability for individuals, free-riders and members alike, to transform their identity type. It would be mutually

beneficial for free-riders to *become* committed members over time, rather than exclude them entirely from church membership. Perhaps such ambitious thinking is the reason behind free-rider toleration. As mentioned above, oftentimes there are cultural norms that accept the inability of all members to tithe and thus permit, to a certain extent, the presence of free-riders. However, if one's actual beliefs (x_i) changed over time, then they would subsequently signal (v_i) closer to their beliefs—thus eliminating free-riders.

Opportunities for further research with regard to the religious free-rider problem would obviously include a production function analysis of the identity transformation process mentioned above, as well as an empirical examination of the models presented using various church case studies who use approaches similar to the models presented above in distinguishing and reducing the presence of free-riders. Another possible avenue of inquiry might include the various methods in which religious institutions signal their theological and doctrinal beliefs to future congregants, in an effort to build a larger member base. Lastly, it would be interesting to investigate the macro level effects of religious capital restriction on long run growth and development in the form of a case study. In other words, how might religious capital restriction alter the economic activity (i.e. GDP, population growth, secularization, etc.) of a particular city or region?

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