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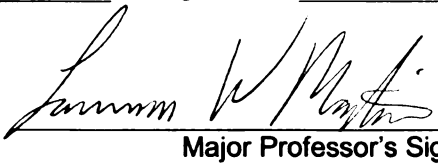

Major Professor's Signature

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THREE ESSAYS ON THE ECONOMICS OF RELIGION AND POLITICS

By

Ayman Reda

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ABSTRACT

THREE ESSAYS ON THE ECONOMICS OF RELIGION AND POLITICS

By

Ayman Reda

This dissertation contains three essays on the economics of religion and politics.

In the first essay, we model both the religious competition among denominations and the political competition among parties. The model's propositions provide the first formal economic explanation for the 'Culture Wars' thesis. In particular, the model seeks to explain the reason why liberal or less strict denominations tend to favor higher government taxes, higher government spending and 'bigger' governments, while conservative or stricter denominations tend to favor lower government taxes, lower government spending and 'smaller' governments. This is due to the fact that conservative denominations demand high levels of commitment from their adherents in the form of monetary and time contributions and as such their adherents will be less willing to allocate resources to the government in the form of taxes. Liberal denominations on the other hand demand lower levels of commitment from their adherents which means that their adherents are more willing to allocate resources to the government. We show that any change in the objectives of the denominations will have an impact on their religious teachings, which in turn will affect the behavior of their adherents in the political and economic arenas.

In the second essay, we formally examine the relationship between religious nonprofits and the public sector with the primary aim of studying the impact of this relationship on religion in society. The model introduces the first formal examination of the relationship

between *religious* nonprofits and the government. In the model, we provide a rationale for why the government may choose to award the funds to a *religious* charity. If a religious charity is awarded the exclusive right to provide the social service, it will seek to utilize this opportunity in order to proselytize its particular religious doctrine to non-adherents through several means. The model postulates that the utility of the religious clergy of the denomination(s) awarded the funds will increase, since they can now preach to a larger group of individuals. Based on the concept of compensating wage differentials, the clergy are therefore willing to reduce their supply price in order to get that extra utility. This active proselytizing alters the religious preferences of believers in the population and leads to a change in the relative powers of the different denominations and the religious nature of the society as a whole. The paper discusses the implications of these results with regards to recent policies such as the Faith-Based and Community Initiatives.

In the third essay, we empirically test the relationship between religious and economic preferences that we developed in the rational choice model of our first essay. We test using US state data, whether changes in states' religious composition over time influences states' tax rates. We use church membership rates and religious contributions by households as alternative measures of a state's religiosity level. We employ both a first-differencing and a fixed effects approach. Our paper does not report any significant relationship between government tax rates and the religiosity of the population. However, the results do not reject our hypothesis, but only fail to support it. As such, we attempt to explain the causes of our findings and suggest possible future methods to reexamine the issue more deeply and extend the analysis further.

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To my eternal friend and loving wife, Malāk, this achievement would not have been possible without you. After our marriage, this journey took a whole new meaning...a meaning that only we can understand. The pages of this dissertation bear witness to this reality. But alas, what can I say more to fully express my love and appreciation, other than to state the fact that the peak of expression is silence.

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INTRODUCTION

Although economics of religion is a relatively new field of inquiry within the economics discipline, economic analysis of religion can be traced back to Adam Smith in his seminal work, *Wealth of Nations*. According to Anderson (1988), Smith explained religious behavior using a supply and demand framework, and based on the assumption that religious agents are rational self-interested individuals. Smith also discussed the history of the Catholic Church from an economic perspective, labeling it as a type of 'corporate organization', assuming a monopoly role in the "market for religion" (Anderson, 1988). As such, he compared such a monopoly structure to one where religious competition prevails, arguing that it is in the interest of a state to encourage religious pluralism in order to loosen the moral and political grip of religious bodies on state affairs. Furthermore, this pluralism will lead to improved toleration between religious sects, as "the teachers of every little sect, finding themselves almost alone, would be obliged to respect those of almost every other sect" (Smith, 2000, pp.852).

One can infer from Smith's analysis of religion that he utilizes economics concepts and theories to explain the objectives of religious agents and the outcomes from interactions in religious markets. Smith portrays the objectives and actions of religious agents in similar fashion to economic actors in commodity markets. He also depicts religious institutions as corporations or businesses that compete against each other on political, economic and religious grounds. Furthermore, he evaluates this competition from a *classical* economics perspective, by arguing in favor of religious pluralism (or perfect competition in religious markets) and separation of church and state (or no government intervention in religious markets). In a competitive environment, each sect is "little" and

"alone" that it exerts only minor influence on the religious nature of society, and the secular operations of government. This effort by Smith to explain religion using economic theory as a set of analytical tools set the foundation for the emergence of economics of religion as a promising and 'legitimate' field in the economics discipline.

The essays in this dissertation continue in this tradition. The first essay models the relationship between religious denominations and political parties in order to explain the reason why liberal denominations favor higher government taxes and higher government spending, while conservative denominations favor lower government taxes and lower government spending. The model explains these outcomes as a result of a rational choice problem faced by believers when making normal budgetary decisions, and the corresponding competition between denominations and parties.

The second essay studies the relationship between religious nonprofits and the government, in order to give us an insight into the different motives of these institutions and the outcomes that arise as a result of their interaction. We study this relationship by investigating the impact of government funding on religious charities and believers in general. The paper offers important insights on government faith-initiatives.

In the final essay, we empirically test the hypotheses developed in the first essay. Specifically, we test using US state data, whether changes in states' religious composition over time, measured by church membership rates and religious contributions, influences states' tax rates. Using first-differencing and fixed effects methods, the results do not reject our hypothesis, but only fail to support it. As such, we attempt to explain the causes for our findings by reassessing the model's assumptions. We also suggest alternative methods to reexamine the issue more deeply and extend the analysis further.

Chapter 1

An Economic Explanation for the 'Culture Wars' Thesis

1.1 Introduction

In this paper, we explore the relationship between religion and politics in the framework of rational choice models. The paper models the relationship between religious denominations and political parties. We model both the intra-religious competition among denominations and the intra-political competition among parties.

The model seeks to explain the reason why liberal or more secular denominations tend to favor higher government taxes, higher government spending and 'bigger' governments, while conservative or more religious denominations tend to favor lower government taxes, lower government spending and 'smaller' governments. The model explains these real world tendencies as a result of a rational choice problem faced by believers when making normal budgetary decisions. Denominations who sincerely represent the religious interests of their adherents will seek to map these preferences into corresponding political and economic preferences. In particular, liberal denominations will induce their adherents to favor more government intervention and 'involvement' in the economic arena, while conservative denominations will induce their adherents to favor less government 'involvement'. Any change in the objectives of the denominations will have an impact on their religious teachings, which in turn will affect the behavior of their adherents in the political and economic arenas. Significant differences emerge in the outcome of the 'game' when we change the objectives of the parties or the denominations. Therefore, the issue of *objectives* and *intentions* will have a major role in

the results of the model. This is imperative since motives have played and still play a significant role in the overall performance of these two institutions, especially the religious institution.

Section 1.2 provides a review of the literature in the field of economic of religion that is related to the topic of this paper. In section 1.3 we discuss the structure of the model. In section 1.4, we examine the features of the utility function used. Section 1.5 develops the propositions of the model under different sets of assumptions. In section 1.6, we survey some of the empirical work done on religion and politics in order to observe any empirical evidence to support (or reject) our propositions and results. We conclude in section 1.7.

1.2 Literature Review

The field of economics of religion is a relatively new field in economics. The beginning is generally attributed to Azzi and Ehrenberg (1975) in their paper about how households allocate resources between religious and 'secular' consumption[1]. Ianaccone (1998) defines economics of religion as "the line of research that interprets religious behavior from an economic perspective, applying microeconomic theory and techniques to explain patterns of religious behavior among individuals, groups, and cultures." Therefore, the attempt made by economists in this field is to extend the tools of neoclassical economics to the religious sphere. It is important to note that even such an attempt is not expected to gain wide approval by both economists and theologians.

[1] Our model can be viewed as one where rational adherents allocate resources between 'religious investment' and taxes to the government. However, the denominations and parties make the actual or final choice by taking the preferences of all adherents as given and operating in a competitive environment according to specified objectives.

Although this can be observed in any new intellectual 'adventure' that economists decide to embark upon, it would arguably raise the most controversy in the field of religion.

Barros and Garoupa (2002) classify the economic theories of religion developed so far into two groups, 'demand-side' and 'supply-side' theories. They refer to the works of Iannaccone (1990, 1995) and Durkin and Greeley (1991) as examples of 'demand-side' theories. Barros and Garoupa (2002) state that both works above have utilized Becker's theory of human capital to explain religious consumption patterns as an addictive behavior. On the 'supply-side', they discuss one approach used by Anderson *et al.* (1992), Davidson and Ekelund (1997) and Ekelund *et al.* (1989, 1992, 1996) that treat religious denominations or sects[2] as firms that aim to maximize their 'profit' as they compete against each other. Another 'supply-side' approach discussed by Barros and Garoupa (2002) is one where religious authorities seek to maximize the welfare of their followers. They mention Iannaccone (1988, 1992), Montgomery (1996) and Zaleski and Zech (1992) as examples of this approach, where the religious denomination is treated as a club that employs agents and aims to maximize group welfare subject to various constraints.

In the area of 'supply-side' theories of the religious economy, Zaleski and Zech (1995) emphasize the pioneering works of Finke and Stark, especially their seminal work, "The Churching of America, 1776-1990: Winners and Losers in the Religious Economy" (1993). They note the importance that Finke and Stark give to the dynamics of supply-side forces over the relative stability of demand-side forces.

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[2] The use of sect here is to refer to *any* religious denomination within a particular religion. Thus, it is different from the normal usage in economic theory where it is distinguished from a church. The church-sect classification is not relevant in this paper.

In his important survey of the literature, Iannaccone (1998) argues that the old notion that religion is gradually disappearing from the social, economic and political life of people has been proved false. He states that, "as survey, census, and historical data have piled up, the continuing vitality of religion has become apparent ..." (Iannaccone, 1998). In this work, Ianaccone surveys all the important empirical work that has been done in this field. Many of the empirical work in the field of economics of religion have been to test the propositions of the developed theories and to test old and new beliefs about religion.

A substantial portion of the work done in the field of economics of religion has taken the form of an axiomatic approach. The methodology has utilized the concepts of economic theory to derive propositions and predictions. But these studies, although of great value, fall short of employing formal economic modeling. The standard and often rigorous techniques of economic modeling were not used. In a promising work that is forthcoming, titled "The Political Origins of Religious Liberty", Anthony Gill utilizes this axiomatic approach to study the dynamics of religious liberty in the framework of religious and political competition. Gill studies the concept of religious liberty in the framework of a rational choice problem in which religion and politics interact in a competitive environment. Specifically, Gill models religious liberty using the concept of opportunity cost. He defines religious liberty as the "degree a government regulates the religious marketplace". Gill argues that in their effort to secure political legitimacy, governments weigh the benefits and costs of regulating religion and this choice problem determines the regulatory decisions implemented. In our paper, we are not studying the notion of religious liberty specifically. The model we develop is aimed at explaining the

dynamic relationship between religious and political institutions in all areas of the political and religious spheres that pose potential conflict or cooperation between these institutions. We formally derive results and propositions that describe the religious and political decisions of denominations and parties. The paper specifically explains the motives behind specific religious positions taken by denominations and specific political-economic decisions taken by parties. Furthermore, it explains the origins of political-economic decisions taken by religious authorities.

A model developed by Roemer (1998) is also worth considering because of its relation to the topic of this paper. Roemer (1998) studies a model of two parties, Left and Right in a two-dimensional structure of uncertainty with citizens having preferences on tax rate and religious position of government. Roemer (1998) examines the political competition between the two parties on the issue of the tax rate and argues that if religion is of no significance in the society, the parties take extreme positions on the tax rate spectrum. However, if religion is of significance in the society, then the positions of the parties on the tax rate will differ. For example, the Left party will propose a tax rate far less than the extreme (which is 1). Roemer (1998) argues that the portion of citizens that have religious preferences close to the median constitute the set of swing voters. Thus, any policy by parties on the tax rate issue is critically related to the tax rate preferences of this portion of the population. If this group of voters has high average wealth, they naturally prefer low taxes and this induces *both* parties to be biased in favor of low taxes to secure winning the elections. The interesting issue here is thus the tendency of both parties of opposing views to favor one view because of religious preferences in the population. Roemer (1998) concludes that given this result, we may argue that parties can

intentionally inflate the importance of religion in order to ensure that a particular economic policy is enacted.

In terms of the assumptions used, our paper is technically using a one-dimensional approach in an environment of full information. Roemer (1998) specifically assumes "that wealth and religious views are not independently distributed". Therefore, the model implicitly assumes the relationship between wealth and religion and goes on to study how this relationship influences the decisions of parties. The preferences are therefore exogenous. In our model, we *derive* the political and economic preferences from the religious preferences of individuals. In other words, the politico-economic preferences are endogenous. We assume that wealth is the same for all believers, and therefore a person's preferences regarding the tax rate are independent of his income level. It is determined primarily by their religious preferences and their denominational affiliation. *Religion shapes a believer's political perspectives.* A believer, who prefers a religious life of low commitment, flexible rules, and minimal spirituality and favors a materialistic way of life, will likely be in favor of a policy of more taxes or at least not opposed to it. In contrast, a believer who prefers strict rules, high commitment and religious piety, will likely favor more spending on religion and thus less taxes. On the issue of income and religiosity, Iannaccone (1994) comments that, "income correlates weakly with most dimensions of religious commitment". Regardless of the presence of any correlation, our model takes a different approach altogether. Also, the religious preferences in our model are regarding 'religious investment' or religiosity while Roemer (1998) defines religious preferences as a function of the religious stance of the government.

Furthermore, our model examines a situation with denominations and parties engaged in competition. The dependence and independence between these 'grand' institutions is studied. The model describes the reasons behind the different positions they take under different scenarios with different assumptions. The issue of *objectives* and *intentions* plays a significant role.

1.3 The Model

In this model, we use a structure that is characteristic of contemporary politics and religion. The political structure is one of political parties that are competing against each other in an election. The 'secular' parties are at some stage declaring their platform or positions on the various issues that interest the voters. The voters respond to this political competition by voting for their preferred candidate. Thus, this structure may not be applicable to many periods in history, where the forms of political activity differ substantially. Also, we construct the religious world as one where denominations take the religious preferences of all the individuals in the society as given and given some specific objective, locate optimally on that spectrum of religious preferences. We will also examine cases where the denominations 'ignore' the preferences of believers and instead seek specific policy objectives driven by a commitment to a doctrine or scripture. The religious authorities may have their own religious agenda that is independent of their adherents' preferences.

As is the case with reductionistic methods of analysis, we are compressing the real world into a far less complicated structure and substituting harmony for chaos and consistency for unpredictability. In reality, preferences are not *given* to denominations to act upon and denominations may not have *consistent* objectives over time and may even

have multiple objectives at a specific point in time. Nevertheless, we believe that the structure that is employed in this paper does lead to some useful insights that will help explain the behavior of parties and denominations as they engage in religious and political competition.

The main contribution that this paper presents is its effort to explain the behavior of political parties and religious denominations explicitly. As evident in the review of literature on the economics of religion, the behaviors of parties and denominations have not been jointly studied in a framework that explains both their *independence* and their *interdependence*. The model explains the behavior of religious denominations in the religious domain and the behavior of political parties in the political-economic domain. There is an element of *independence* between these domains and also an element of *interdependence* or *dependence*. Previous work did not study both denominations and parties in a unified structure. This paper tries to fill that gap.

Building on that previous point, the paper seeks to explain the reasons that induce denominations and parties to act the way they do. In particular, the paper gives an explanation for the religious decisions taken by denominations and also an explanation for the political and economic positions that they adopt. The model evolves as a situation where religious decisions of denominations *directly* or *indirectly* influence the political and economic decisions of adherents and as such, affect government policies through the political competition process. The paper explains the religious and political decisions of denominations as driven mainly by two forces. The *economic* and *political reality* of the world forces the denominations to make decisions in conformity with this reality. The denominations however are also driven by *intentions* or *objectives*. The interplay of these

two forces affects the ultimate behavior of denominations. In other words, denominations act in both a pragmatic and an idealist[3]manner with varying degrees of emphasis under different circumstances.

A unique feature of the model is the timeline of events it presents. In the pre-game stage, the preferences of individuals are given. Denominations or parties cannot influence these. In the game stages, we model the denominations as the first players. Their decisions precede those of the parties. We believe that this formulation is both realistic and insightful. To a great extent, religion arrives at home earlier than politics. Young individuals are exposed to religion at an earlier stage in their life than they are to politics. Religion arrives via the parents, relatives, and friends and more importantly for us, the *church*. Smith et al (1998) explain the influence of parents on their children in the area of religion as an "investment in a child's religious human capital". They argue that this investment by parents serves as the driving force for continuing interest in religion in the later stages of a child's life (Smith et al 1998). As such, our structure assumes that the religious institution in general influences individuals before they become exposed to the world of politics. Religious institutions fuel this perpetuating influence over generations of new children through their impact on parents, who represent the main vehicles of religious learning and investment.

With their own preferences given beforehand, the denominations compete and attract adherents and then impose conformity to a standard that they choose. These standards that represent the teachings of the denomination, will direct the political and economic decisions of the adherents. In other words, the religious teachings will lead to political

[3] This means in accordance with religious principles.

and economic orientations. This is the critical issue in the model. That religious doctrine directs political-economic perspectives and actions forms the crucial concept that underlines the model in general. In more concrete terms, the model presents a structure where political and economic decisions are endogenized and this endogeneity is due to religious doctrine. The model is thus presenting religion as a central force in the lives of individuals, both on the private and public levels. It is our opinion that religion is the main driving force for individuals in their political and economic decision-making processes, and this paper is an attempt to study this driving force in the framework of rational choice models.

We categorize the methods by which religion (via denominations) affects the political and economic aspects of society into two types, *direct* and *indirect*. The *indirect* method is when denominations aim to achieve a defined *religious objective* and fulfill that objective either by sincerely representing the preferences of their adherents in the religious competition stage and this representation is translated into a religious position and a corresponding politico-economic position, or by imposing a specific pre-defined religious standard on their adherents. The objective of the denomination is *not* a specific economic or political policy, but a specific religious policy. In contrast, the *direct* method comprises of some explicit political or economic policy objective for the denomination. We can probably say that in the *indirect* method, religion drives politics while in the *direct* method politics drives religion. There is a significant difference between these *objectives* or *intentions*.

The methodology we employ in this model is based on concepts in the fields of economic theory and political science. The paper makes use of the framework of spatial

location models. We follow, to some extent, the procedure of Barros and Garoupa (2002) in which they use a spatial location model to formulate a theory of church strictness. In particular, they use a modified Hotelling model. The games of strategic interaction in this model utilize the tools of game theory and in particular, the concept of 'backward induction', to derive the sub-game perfect equilibrium results. Similar to Barros and Garoupa (2002), we study a situation where believers locate on the 'religious spectrum' and choose that denomination that maximizes their utility. This follows the Hotelling model of consumers grouping near different sellers, according to their preferences. The denominations provide a local public good[4]. Believers each have an ideal position on the 'religious' spectrum.

From political science, we adopt the methodology used by Grossman and Helpman (2001) in their book, *Special Interest Politics*, where they examine the political economy of special interest groups. Specifically, we use their methodology on voting, 'pliable' policies and 'fixed' policies.

Hence, we employ a 2-party and 2-denomination structure. Although in the real world there are numerous denominations, we can identify two main types of religious denominations, the 'liberal' and the 'conservative' denominations. Also in the U.S, there are two main parties, Republican and Democratic. Even in other contexts, we can categorize them as 'ruling' party and 'opposition' party. The structure of the model is divided up into 5 stages. The stages are as follows: -

Stage 1: - All individuals in the population have an ideal preference regarding the 'amount of religious investment' they are willing to undertake in their religious life. This

[4] We do not include the religious good in the model since it does not contribute any significant insight or result.

religious investment may refer to the preferred amount of money each individual is willing to contribute to religious institutions, or the amount of time the person prefers to contribute in assisting in the social and religious activities of the religious institution he/she belongs to[5]. This parameter describes the level of religion preferred by individuals in terms of measurable variables such as monetary contributions or voluntary assistance in church activities. Thus, we can safely assume that these variables serve as proxies for the religiosity of individuals[6]. We are therefore using economic variables to represent religious preferences. Iannaccone (1994) lists religious inputs as consisting of time used in involvement in religious practices such as praying, meditating, reading scriptures, and religious goods as financial contributions, offerings and travel expenditures. We will regard all these types of activities as inputs into the religious production process and as representing 'religious investment' in general. These preferences are *given* at the beginning of the 'game'. We assume the preferences to be located on a 'religious investment' spectrum that includes all members of the population[7].

The ideal preferences of an individual i is given by: a_i.

Stage 2: - In this stage that we call the *religious competition stage*, the denominations take the religious preferences of individuals as given and compete against each other. We initially regard the denominations as benevolent players whose objective is to maximize the expected welfare of *their* adherents by choosing an optimal position on the 'religious

[5] The 'value' of time may be in the form of the opportunity cost in terms of profitable secular activities such as working, studying, etc.

[6] See appendix A, pp. 136.

[7] Atheists and agnostics can be located on the extreme left of the spectrum or to the left of the zero point. To avoid the problem associated with individuals who have no religious preferences, we can simply restrict the spectrum to those that do have religious preferences regarding investment in religion. This is also due to the fact that we want to normalize the spectrum to include all values between 0 and 1, since atheists and 'secular fundamentalists' may have *negative* preferences regarding 'religious investment'.

investment' spectrum[8]. Therefore, the denomination's objective in this case follows the *indirect* method. Denominations do not have a prior position on 'religious investment'. Instead, they sincerely represent the preferences of their adherents. Individuals automatically join the denomination that is closest to their ideal position on the spectrum. All members of the population must join a denomination.

Stage 3: - After locating in a specific denomination, believers seek to maximize their politico-economic utility. In this *transition stage*, each individual belongs to a particular denomination and as such, is obligated to conform to the teachings and rules of that denomination. Initially, each individual had his/her ideal position on religious investment. But in stage 3, every individual who joins denomination *1* is restricted to behave according to the optimal position chosen by denomination *1* in stage 2.

The same is the case for all adherents of denomination *2*. Thus all members of denomination *1* have to invest the amount specified by denomination *1*. This happens regardless of the nature of the denomination's *objectives* or *intentions*. Whether the denomination is *benevolent* or *dictatorial*, the individual joins the denomination that is closest to his/her ideal position on 'religious investment'. This is a clear illustration of how religion is 'produced' by religious institutions. A key issue in religious doctrine is conformity and submission to the teachings and standards of the religious scriptures. In the case of *benevolence*, the preference of a single individual will be considered equally like all others and therefore the influence of one particular individual is confined to his weight in the total of adherents. All adherents carry equal weight. This illustrates a main teaching present in many religious traditions, namely, equality in the 'eyes' of the

[8] We will examine other objectives in the paper also. These differences in objectives form a key role in the results and insights of the model.

Creator. It reflects the *justice* of the Creator as practiced or implemented by religious authorities that 'represent' Him[9]. Also, the fact that one optimal position among this spectrum of adherents' positions will be chosen and adopted reflects the *communal nature* of religions where all individuals regard the group's welfare as superior to their own private welfare. As such, adherents are willing to *sacrifice* their interests for the good of the whole and in obeying the doctrine that they have 'willingly' chosen to abide by.

Therefore, in this stage, given the fact that they now have to behave in conjunction with the denomination's teachings, each individual pursues his interests in the politico-economic sphere.

Stage 4: - In this stage that we call the *political competition stage*, the political parties have as given, the positions of the denominations in stage 2 and the ideal politico-economic positions of the adherents of both denominations from stage 3. Given the fact that the religious preference is characterized as 'religious investment', we define the politico-economic parameter to be the 'tax rate', in particular, a head tax[10]. This means that with their final positions on religious investment decided by denominations, adherents now develop their politico-economic positions or their preferences regarding the tax rate in stage 3. Parties then seek to *maximize their probability of winning a majority* of votes by choosing a position (tax rate) among this 'new' distribution of ideal tax rate positions[11].

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[9] The choice of gender here is in specific reference to the three main monotheistic religions, Islam, Christianity and Judaism.

[10] This is analogous to the 'religious investment' preference in the sense that the tax rate represents the preferred 'contribution' of each adherent to the government.

[11] This is one of several objectives of parties that will be examined.

Stage 5: - In this stage, which we term the *voting stage*, voters decide which party to vote for based on the platforms of both parties from stage 4. They vote for the party that gives them the highest politico-economic utility.

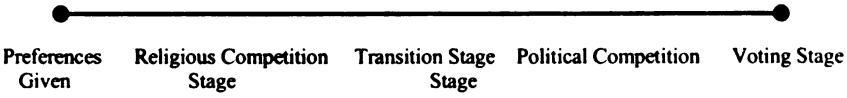

Figure 1.1: Stages of the Game

Before proceeding to solving the stages in detail, it is useful to examine the structure of the utility function that we will use in this model as it forms the foundation for the model in general.

1.4 Utility Function

The first part of the utility function represents the *religious utility* while the second part represents the *politico-economic utility*.

i) *Religious Utility*

The religious utility is given by:

$$\beta\{R - s\,(x_j - a_i)^2\}$$

In the function above, R is the religious 'club' good that is exogenously provided. β represents the weight placed on religion in the population in general. It is the same for all individuals[12]. We can regard it as an indicator of the 'power' of religious institutions or religion in the society, as evidenced by its effect on the utility function of all individuals. This power may represent the prominence of religious institutions or their history. This parameter is not related to the individual-specific preference on 'religious investment'.

[12] We can have β vary by individual, although this will not affect the results of the model. However, a value of 0 may indicate no preference for religious utility which may indicate that the individual is an atheist or an agnostic. This could be a way of structuring the preferences of these groups in the population.

The variable a_i represents the ideal position of individual i on 'religious investment'[13] and x_j corresponds to the level of religious investment chosen by denomination j in stage 2. We denote the transportation cost incurred by individuals as a result of their obligation to conform to the teachings or rules of the denomination, by s. It is the 'price' of sacrifice. This value is the same for all individuals in the society.

From the form of this utility, we observe that the individual derives utility from his/her input into the religious good production as given by $\{- s (x_j - a_i)^2\}$[14]. The individual loses utility as a result of conformism to the denomination's rules, but also gets utility from giving his/her preferred investment level. As such, the total effect from this is given in the quadratic form $\{- s (x_j - a_i)^2\}$.

ii) <u>*Politico-economic Utility*</u>

$$(1- \beta)\{Uijk (Z, c_i) + v_{ik}\}$$

In the politico-economic utility above, Z is the public good produced by the party that assumes office after the elections. $(1- \beta)$ this refers to the weight that society places on political and economic issues in general. Also, it may refer to the 'power' of these political and economic institutions in the society. c_i denotes the private consumption of individual i after investing in religion and paying taxes. Whatever is left after religious investment and government taxes is used for private consumption. Also, v_{ik} is the fixed

[13] In practice, a_i will usually have a range of small values such as [0, 0.2], since contributions to denominations do not constitute high percentages of individuals' incomes. Similarly is the case for the tax rate. Private consumption is usually the largest component of income spending. The nature of the model and its primary interest in the religious and political components makes them seem to command very big portions of income.

[14] This is reasonable because in the religious domain, individuals feel spiritually satisfied by the act of *giving* to the denomination as well as *receiving* from it.

position of individual i towards party k. This position is independent of the tax rate or the religious preference. It refers to the bias of individual i towards party k regardless of the positions of party k in the elections, thus the term 'fixed'. This variable could be positive as well as negative. A positive v_{ik} means that the individual has a positive bias towards party k.

Hence, $U_{ijk}(\ Z,\ c_i\ )$ represents the politico-economic utility of individual i. The individual derives utility from the public good provided by the government (winning party) and from private consumption. This function is maximized in the transition stage.

The composite utility function is therefore:

$$U_{ij} = \beta\{R - s(x_j - a_i)^2\} + (1-\beta)\{\ U_{ijk}(\ Z,\ c_i\ ) + v_{ik}\} \qquad (1)$$

We now examine the workings of the model under different assumptions about the religious and political environments.

1.5 The Scenarios

1.5a. Benevolent Denominations and Election-Seeking Parties

In this case, we consider a situation of two benevolent denominations whose objective is to maximize the sum of expected welfare of their adherents and two parties whose sole objective is winning the elections. The parties have no policy- related objective. It is an instance of the *indirect* approach to politics by religious institutions, since the denominations care exclusively about the interests of their adherents. Their influence on politics and economics is a by-product of their religious teachings.

We proceed to solve the problem using the method of backward induction. This means that each player in a particular stage will choose his decision optimally based on the outcome of the following stage. Even though we use this procedure, we will observe that

in some cases the decision of one stage doesn't explicitly depend on that of the one coming after. This is due to the structure of the assumptions in that particular case. With other assumptions or cases, the outcome shows impact of one stage on another. For example, the assumption of benevolence of the denominations is 'fixed' and this means that the decision of parties in the last stage does not influence the decisions of denominations in the first stage. This is an assumption that we are imposing on the model so as to illustrate the impact of *intentions* and *doctrine*. As we said before, this case is one where religion drives politics and not vice versa. The nature of the denomination's objectives 'forces' it to regard the interests of its adherents as superior to all other considerations. As such, the denomination assumes a democratic, egalitarian and populist mode.

But before we start solving the problem, it is useful to examine the decision that is made in stage 3, the *transition stage*. As we stated previously, individuals maximize their politico-economic utility, given that they now belong to a particular denomination. In general, each individual solves the following problem :-

$$\underset{\{T_i\}}{Max}\ U_{ijk}(Z_i, c_i) \quad s.t \quad Y-x_j-T_i = c_i \ , \ Z_i = T_iN$$

, where T_i: tax rate[15].
N: population.
Y: income.

Substituting in the constraints, we have :

$$\underset{\{T_i\}}{Max}\ U_{ijk}(T_iN, Y-x_j-T_i)$$

$$F.O.C:- \ (dU_{ijk} / dZ_i)(dZ_i / d\,T_i) + (dU_{ijk} / dc_i)(dc_i / d\,T_i)=0$$

We can then derive the optimal tax rate for i, (T_i^*) from the above result.

[15] We obtain similar results with an income tax instead of a flat tax.

Example: Let us consider the following utility function for simplicity and in order to get results that can be readily interpreted.

$$U_{ijk}(Z, c) = b\ln Z + (1-b)\ln c_i$$

$$U_{ijk}(Z, c) = b\ln(T_i N) + (1-b)\ln(Y-x_j-T_i)$$

F.O.C[16]:-

$$b / T_i + (1-b) / (Y-x_j-T_i).-1 = 0$$

$$T_i^* = b(Y-x_j) \qquad (2)$$

This result describes the optimal politico-economic position of the believers or adherents. It states the optimal tax rate of each follower of a denomination. Thus the indirect utility of each believer would be as follows:-

$$V(T_i) = b\ln(b(Y-x_j)N) + (1-b)\ln(Y-x_j- b(Y-x_j))$$

---

[16] In the case of heterogeneous income Y_i, we have $T_i^* = b\,(Y_i-x_j)$. This means that as income increases, the preferred tax rate increases and decreases as income decreases. We should note that due to the model's construction, religious preferences are not influenced by income levels but primarily by 'exogenous' doctrine and denominational competition. However, we can observe that if income levels increase, say for conservatives, this would induce them to favor more taxes than before, and thus become moderate on economic issues. Also, if incomes fall for religious liberals, this would induce them to favor less taxes than before and thus moderate on economic issues such as taxes and government spending. However this does not provide us with the complete picture, because one should instead consider that adherents that are on the receiving-side of government welfare may behave differently than if they were on the giving-side. In other words, religiously conservative believers may favor more taxes and government spending if they are net receivers of government assistance and less taxes and government spending if they are net givers. Similarly, religiously liberal believers may favor less taxes and government spending if they are net givers. The empirical observation by Manza and Brooks (1997) that Catholics have become more Republican over time may be explained by the fact that their income levels has increased over time and assuming that they are religiously conservative, they have gradually become net givers instead of net receivers. In other words, the Catholics are moving towards their 'religious-economic' equilibrium. Furthermore, this might explain Leege's (1993) observation that liberal Protestants have become more in favor of the Democratic Party over time. Leege (1993) states that they have become less affluent than before. As a result, since they are now potential net receivers, they would tend to be in favor of more taxes and government spending. Their previous economic affluence relative to other denominations induced them to favor Republican policies, even though they are religiously liberal. As they have become more equated with other denominations on the income scale, they have become more economically liberal as a result.

In *(2)*, Y is the same for all individuals in the economy, as well as b. The variable x_j will take two values corresponding to the two denominations *1* and *2*. The problem facing parties in the *political competition stage*, is to choose the tax rate that maximizes their chances of winning the elections and assuming office. In *(2)*, it is clear that in every denomination, T_i^* is the same for all members in that denomination, and that the tax rate preferred by members of denomination *1* will differ from that preferred by members of denomination *2* and this difference is mainly due to the positions chosen by the denominations on the 'religious investment' spectrum. This means that since there is conformity to a uniform religious standard for all members of a denomination, likewise, they will conform to a uniform standard on political and economic matters. The denomination is therefore imposing a religious doctrine that in turn imposes a corresponding doctrine of rules and directives on political and economic issues. The adherents were differentiated on the issue of 'religious investment' (we assumed this to mean religiosity), and this differentiation introduced further differentiation on the political and economic issues. The parties when deciding their election platforms will take all this into account. We now solve this case of *1.5a* stage by stage.

The Voting Stage

In this stage, voters will decide which parties to vote for after the parties have announced their platforms on the tax rate issue. Each voter in this stage belongs to a particular denomination.

Specifically, voter i of denomination *1* will vote for party A if and only if[17]:-

[17] This methodology is developed by Grossman and Helpman (2001) in *Special Interest Politics*.

$$V_{i1}(T_A) + v_{i1A} > V_{i1}(T_B) + v_{i1B} \quad (3)$$

Note:- v_{i1A} & v_{i1B} are the 'fixed' preferences of i for each party, A & B[18].

We have $v_i = v_{iB} - v_{iA}$, following a uniform distribution given by:-

$U_i \sim U\{(-1+2c)/2f, (1+2c)/2f\}$

From *(3)*, we have: $v_i = v_{iB} - v_{iA} < V_{i1}(T_A) - V_{i1}(T_B)$ *(3')*

From above, *(3')* is the voting rule for individual i.

Given *(3')*, the share of votes for party A among voters with preferences v_i is given by:

$S_{i1} = 1/2 - c + f[V_{i1}(T_A) - V_{i1}(T_B)]$

Summing across all different S_{i1}, and weighing by the number of votes for each particular v_i,

$S_1 = 1/2 - c + f[V_1(T_A) - V_1(T_B)]$

The Political Competition Stage

From the distribution stated above, the share of votes for party A among members of denominations *1* and *2* are as follows:

$S_1 = 1/2 - c + f[V_1(T_A) - V_1(T_B)]$, $V_1(T_A)$: average of $V(T_A)$ in denomination *1*.

$V_1(T_B)$: average of $V(T_B)$ in denomination *1*.

$S_2 = 1/2 - c + f[V_2(T_A) - V_2(T_B)]$, $V_2(T_A)$: average of $V(T_A)$ in denomination *2*.

$V_2(T_B)$: average of $V(T_B)$ in denomination *2*.

[18] We assume that the distribution of positions on the 'fixed' policy issues is identical in each denomination. Thus, $(v_{i1B} - v_{i1A}) = (v_{i2B} - v_{i2A})$ follow the same distribution.

Total share of votes :-

$S = 1/2 - c + f[V_T(T_A) - V_T(T_B)]$, $V_T(T_A)$: average of $V(T_A)$ in population.

$V_T(T_B)$: average of $V(T_B)$ in population.

The objective of party A is to maximize the probability of winning (to get a majority) :-

i.e. to solve : $Max\ S > 1/2$

Or $c < f[V_T(T_A) - V_T(T_B)]$

Thus A maximizes $V_T(T_A)$, and B maximizes $V_T(T_B)$.

To solve this more explicitly, we use the form of the utility function introduced above.

$U_{ijk}(Z, c) = bln(T_iN) + (1-b)ln(Y-x_j-T_i)$

Party A will seek to maximize: $\underset{\{T_A\}}{Max}\ \{bln(T_AN) + (1-b)ln(Y-X-T_A)\}$. (4)

where: $X = \omega x_1 + (1-\omega)x_2$, (4')

ω = share of population that are adherents of denomination *1*. This value of ω will be obtained from the *religious competition* stage.

The solution to this problem is: $T_A^* = b(Y-X)$ (5)

Similarly, the solution to B's problem is : $T_B^* = b(Y-X)$ (6)

Politico-economic equilibrium: In this stage, both parties will converge to the same position in equilibrium. This should be expected since all the parties care about is winning. The equilibrium tax rate will depend on the *average* of the optimal positions on 'religious investment' chosen by the denominations. Also, it will depend on the share of the adherent population that each denomination holds. The final winner of the competition will depend on the distribution of the fixed positions v_i. If party A commands

more popularity on the 'fixed' policy issue, then it will win the elections and similarly the case for party *B*. If both have same popularity, then a coin is flipped to determine the winner. Given this equilibrium result, we now turn to the preceding stages to derive the strategic decisions made there.

The Transition Stage

We have seen that in this stage, believers take their denomination's policy as given and derive their optimal tax rate. Their optimal or preferred tax rates are influenced primarily by the denomination's positions on the 'religious investment' issue. This is the tax rate that they would prefer to see implemented and it is driven by their religious convictions. This will form the main idea of the model and we will elaborate on it in more detail in working out the details of the *religious competition* stage.

The Religious Competition Stage

As previously stated, the denominations act as benevolent players who sincerely seek to maximize the sum of the 'religious welfare' of their adherents. They also compete in a Nash environment. Each denomination chooses the best response strategy to its competitor[19].

The denominations seek to solve the following problem (for all i in their denomination):-

$$\underset{\{x_j\}}{Max}\ \{R - s(x_j - a_i)^2\}$$

a_i: this represents the preferences of individual i on 'religious investment' and follows a uniform distribution, $g(a)$.

[19] This methodology is similar to the application of Hotelling's Model by Barros and Garoupa (2002).

Denomination 1:

$$\underset{\{x_1\}}{Max} \int_0^t \{R - s(x_1 - a_i)^2\} g(a)da \qquad (7)$$

F.O.C:

$$-2s \int_0^t (x_1 - a_i)\, da = 0$$

We assume $g(a)$ to follow a uniform distribution of density[20] 1.

The solution is given by: $x_1^* = t/2$ *(7a)*

Denomination 2:

$$\underset{\{x_1\}}{Max} \int_t^1 \{R - s(x_2 - a_i)^2\} g(a)da \qquad (8)$$

F.O.C:

$$-2s \int_t^1 (x_2 - a_i)\, .\, da = 0$$

The solution is given by: $x_2^* = 1/2 + t/2$ *(8a)*

Religious Equilibrium: Both denominations will locate *equidistant* from the end points. The denomination locating on the left will be labeled the *liberal* denomination while that on the right labeled the *conservative* denomination[21]. This differentiation is partly caused by the benevolent or democratic nature of the denomination's objectives.

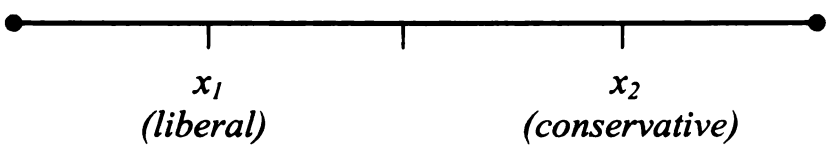

Figure 1.2: Religious Equilibrium

[20] As discussed in footnote 13, the range of a_i over which people have preferences is usually that of small percentages of income. Our integral from t to 1 is just for simplicity. It could be normalized over a set of smaller values, say 0 to 0.1.

[21] See *Empirical Evidence*, (i), pp. 51.

Proposition 1:

In equilibrium, the liberal denomination will induce its members to favor a high tax rate while the conservative denomination will induce its members to favor a low tax rate.

Proof:

The proof is straightforward, since we just need to restate some of our results formally. From the *religious competition stage*, we find that the religious equilibrium will have both denominations locating equidistant from the end points, under some conditions. As a result, we have a *liberal* and a *conservative* denomination. The denomination locating on the left favors low religious contributions and voluntary services. This means that its members favor low religiosity levels and thus it is *liberal*. The one on the right favors high contributions and voluntary services, or high religiosity. Thus, it is the *conservative* denomination. The main reason for this result is because the denominations sincerely represent the preferences of their adherents and thus act benevolently. This creates the differentiation in final positions between the two denominations. By choosing these positions, the denominations have imposed on their adherents a uniform level of religious investment that all adherents must conform to. This forces the adherents to adjust their *budget choices* accordingly. By the religious differentiation between denominations, they have imposed on adherents a politico-economic differentiation. Liberal adherents now favor higher tax rates while conservative adherents favor low taxes.

This is given by the following equations:

$T_1^* = b(Y-x_1)$, for all *i* belonging to denomination *1*.

$T_2^* = b(Y-x_2)$, for all *i* belonging to denomination *2*.

It follows that since $x_1 < x_2$, then $T_1^* > T_2^*$.

Furthermore, $Y\text{-}x_1\text{-}T_A=c_1$ and $Y\text{-}x_2\text{-}\ T_A=c_2$. (Note: $T_A=\ T_B$ in equilibrium).

This means that in the final outcome of the game, adherents of denomination *1* will exercise more private consumption than those of denomination *2*, $(c_1 > c_2)$.

However, although denominations do induce their members to be '*liberal*' or '*conservative*' regarding the political and economic issues, in the framework of our model, they end up paying the same tax rate $T_A=\ T_B$[22], which is the case in real life since governments impose taxes uniformly (at least the head tax) on all adherents of denominations. Also, by law, governments cannot discriminate among denominations in the imposition and collection of taxes. The question may still arise, that if the final tax rate is the same regardless of the winning party, why induce members to favor different politico-economic positions? We have noted that the objective of the denomination in this case directs their behavior. The party positions have no influence on the religious decisions of denominations. Also, although the tax rate is the same, it is however influenced by the religious positions of both denominations as given by the following result:

$$T_B^*=T_A^* = b(Y\text{-}X) \text{ where } X = \omega x_1 + (1\text{-}\ \omega)x_2.$$

Thus, the final tax rate is influenced by both x_1 and x_2. Furthermore, it is influenced by ω. Any deviation by a denomination from their Nash equilibrium position will cause the

[22] We should note that for this result to hold in the framework of the example above, a few assumptions should be made regarding the parameters. In denominations *1 & 2*, after the *religious competition stage* is over, the adherents are left with $[Y\text{-}x_1]$ and $[Y\text{-}x_2]$ respectively. After paying the *same* taxes, what remain from their incomes are $[Y\text{-}\ x_1\text{-}(Y\text{-}X)\ b]$ and $[Y\text{-}\ x_2\text{-}(Y\text{-}X)\ b]$ respectively. For the budget constraints of both types of adherents to be satisfied, we must have: $[Y\text{-}\ x_j\text{-}(Y\text{-}X)\ b] \geq 0$ for $j=1, 2$. This means that we have to make some assumptions regarding the range of (a_i), (refer to footnote 13, 20), or range of values that (b) can have. But these assumptions do not change the results or propositions that the paper produces.

other denomination to gather more adherents and also have their optimal policy be more influential in the final outcome of the game.

We can now state a further result obtained from the proof above.

Proposition 1'

Liberal adherents are more lavish in private consumption than conservative adherents.

Also, given that $T_1^* > T_2^*$, from $Z_i = T_i N$, it follows that $Z_1^* > Z_2^*$.

Corollary

Liberal denominations favor more government spending than conservative denominations[23]*. Thus, we can reasonably say that liberal denominations favor 'bigger' governments and conservative denominations favor 'smaller' governments*[24].

This corollary is insightful, since in real politics, we observe that liberal denominations are more closely affiliated with the Democratic Party and are thus proponents of 'bigger' governments, while the conservative denominations are more closely affiliated with the Republican Party and are thus proponents of 'smaller' governments.

These hold: $T_A^* = T_B^*$ *(convergence)*

$T_2^* < T_1^*$

$x_1^* < x_2^*$ *(equidistant)*

$c_1^* > c_2^*$

$Z_1^* > Z_2^*$

[23] See footnote 29, pp. 52.

[24] See *Empirical Evidence* (ii), pp.52.

1.5b. Benevolent Denominations and Policy-Seeking or Ideological Parties

In this section, we alter one main assumption of the previous case and that is election-seeking parties. In this case, we model the parties as having a specific policy preference. In other words, the parties have a particular tax rate or government spending level that they prefer prior to the start of the game. Ideology, party interests or candidate interests may drive this policy preference. This situation is of important historical and contemporary value, since we do witness that some political parties do have specific ideological positions on many political and economic issues. A political party may be driven by an ideology very different from that of the denominations. We can have an instance where the party's ideology, supports conservative economic policies or 'small' governments and this position may happen to coincide with the interests of religious denominations on those same issues[25]. Also, we may have situations where some *business interests* influence the preferences of the politicians and cause them to favor particular policies at given periods in time. We are thus departing from a case of neutral policy preference towards a specific policy bias. Hence, our assumption in this case is that parties have prior policy preferences for some unspecified reason and they hope to adopt that policy as best as they can. But the society is still controlled by the religious institution in the first stages, in the same way as we had in the previous case. In other words, even with the 'ideology' of the parties, the citizens still belong to one of the two denominations and conform to the teachings of that denomination.

[25] Parties may have unique ideological orientations, such as Marxist, Socialist, Labor, Social Democrat or otherwise, and they happen to coincide with the preferences of religious denominations on specific issues.

Voting Stage

Voters vote for the platform that maximizes their politico-economic utility, according to:

$$v_i = v_{iB} - v_{iA} < V_{i1}(T_A) - V_{i1}(T_B) \qquad (3')$$

Political Competition Stage

This stage is where the new assumption affects the structure of the model. Each party now chooses its policy in order to maximize the following objective:-

$$\underset{\{T_k\}}{Max} -(T_k - \hat{T_k})^2$$

where $\hat{T_k}$: ideal or ideological position of party. (We note here that the values of possible $\hat{T_k}$ are assumed in such a way that the budget constraint is satisfied in general).

The parties are 'dictatorial' in the sense that they choose their ideological positions regardless of the behavior of all other players in the game. Roemer (2001, 81) labels such a behavior as "dogmatic". The parties do *not* care about winning and they would "brook no compromise" (Roemer 2001, 81). Whether their policy is chosen through elections does not affect their decision-making. This may seem strange, but we are making such assumptions in order to study a wide variety of scenarios.

Therefore from *F.O.C*, $T_A^* = \hat{T_A}$

$$T_B^* = \hat{T_B}$$

Politico-economic equilibrium: Each party chooses its ideal politico-economic position. No convergence occurs.

Transition Stage: This stage stays the same as before.

Religious Competition Stage

Since denominations are benevolent, and since we are considering *an indirect, religion-driven political position*, the result is similar as in the previous case.

The denominations locate equidistantly as follows :

Religious Equilibrium

$$x_1^* = t/2$$

$$x_2^* = 1/2 + t/2$$

The final tax rates are thus equal to the prior ideological positions of the parties. Depending on the positions of these tax rates, the winner of the election will be determined. Adherents of denomination *1* (liberal) will vote for the party with the higher 'ideal' tax rate and the adherents of denomination *2* (conservative) will vote for the party with the lower 'ideal' tax rate. But the voting process is also influenced by the distribution of the 'fixed' policy preferences, $v_i = v_{iB} - v_{iA}$. This means that if coincidentally, the positions of the parties are located equidistantly in the same way as that of the denomination, then this 'bias' distribution will determine the winner of the elections. If party *A* wins the elections (assuming $T_A^* < T_B^*$), then denomination *2* (conservative) is better off since the tax rate implemented by *A* is closer to the preferred tax rate for conservative believers than liberal ones. The liberal denomination is better off if *B* wins the elections.

In this scenario, we observe that the 'dictatorial' mode of political rule adopted by parties (or government), restricts the *indirect* influence that denominations had in case *5a*. In that case, we had as final policies:

$$T_A^* = b(Y-X)$$

$T_B^* = b(Y-X)$

where, $X = \omega x_1^* + (1-\omega)x_2^*$.

The denominations positions were represented in the decisions of the parties. In this case, the parties exclude the positions of denominations in choosing the policy *level*. We should note that the parties' ideological positions are determined *exogenously*. The denominations therefore have no part in 'constructing' government policies. The denominations however can still influence the result of the election through their adherents' voting. The denominations can affect the probability of the winning party position. If party *A*'s position is to the far right while B is closer to the middle, then more will vote for *B* and thus *B* wins. If T_A^*, T_B^* are located equidistantly, then denominations have *even less* influence since the winner is now determined by v_i. Knowing that they did not play a role in forming the party positions, the denominations can only hope to ask their adherents to vote for the policy that is closer to their ideal. This also depends on the fact that the denominations are constrained to being benevolent. If they had more flexible objectives or 'doctrine', then they may be in a better position to exercise influence over government policies. In short, denominations have little influence over government policy positions and they are 'constrained' by the obligation to be benevolent.

Proposition 2:

If parties become 'ideologically dictatorial', the ability of benevolent religious denominations to influence the political and economic policies (indirectly) is greatly reduced. The political and economic interests of the denominations is to a great extent determined by forces beyond their control.

This doesn't mean that denominations will necessarily be worse off under this scenario than the previous one. It may well be that due to the ideological positions of parties and the 'popularity' distributions for the parties, a denomination may end up *better* off than in the previous scenario. But the main issue is that the likelihood of this happening is to a great extent beyond the realm of the denomination's influence.

For example, let us have a situation as in figure 1.3: -

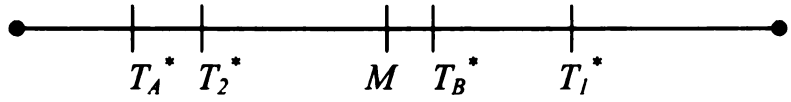

Figure 1.3 : Policy-Seeking or Ideological Parties

In the situation in figure 1.3, we have the two denominations locating equidistantly on the religious spectrum with the corresponding positions on the tax rate spectrum. The parties locate according to their ideological positions. The conservative denomination is closer to party *A*'s position and therefore *all* the adherents of denomination *2* will vote for A because of the conformity requirement. Individuals do have an ideal tax preference given by $T_i^* = b(Y-a_i)$, for all *i*. But the assumption of conformity requires that each adherent 'replace' his/her political preferences with that of the denomination. As a result, they choose their voting option based on the denomination's preference.

Corollary

If the parties' positions are different, we would now have a ' liberal' and a 'conservative' party. Liberal denominations tend to support 'liberal' parties and conservative denominations will tend to support 'conservative' parties[26].

[26] See *Empirical Evidence* (iii), pp. 56.

Regardless of the degree of conservatism of the party, the members of the conservative denomination always vote for that party. This argument also holds for the liberal party and denomination.

We should note that in this scenario, parties have equal number of votes corresponding to the locations of the denominations. If one party has more 'popularity' than another, it wins the elections. If for example *A* wins, the conservative denomination is better off, since the position that will be implemented is closer to the denomination's preferred level than it was in the first scenario, where the parties converged to the midpoint. If however *B* wins, then the conservative denomination is worse off.

These hold: $T_A^* = T_A^{\wedge}$

$T_B^* = T_B^{\wedge}$

$T_A^{\wedge} < T_B^{\wedge}$, $T_A^* < T_B^*$

$T_2^* < T_1^*$

$x_1^* < x_2^*$ *(equidistant)*

$c_1^* > c_2^*$

$Z_1^* > Z_2^*$

1.5c. 'Dictatorial' Denominations and Election-Seeking Parties

In this scenario, we change the *objectives* and *intentions* of denominations from benevolence or democratic religious representation, to an 'authoritarian', 'dictatorial' or 'dogmatic' religious authority. In other words, the denomination now has a specific, prior religious position that it seeks to implement. This position is determined exogenously from an unspecified doctrine. The denomination 'bypasses' the preferences of believers

and seeks a specific religious investment level. *It chooses the position on the 'religious investment' spectrum that would correspond to its preferred level.* It is thus 'dictating' its preferred doctrine to its members. It is also an example of indoctrination by the denominational authorities. Parties seek winning the elections only.

Voting Stage: Same as in case *1.5a*.

Political Competition Stage

Politico-economic equilibrium :

We follow the same procedure as in *1.5a* and the result is as follows :

$T_A^* = b(Y-X)$

$T_B^* = b(Y-X)$

The parties' political positions converge.

Transition Stage

Same as before.

Religious Competition Stage

Denominations seek to :

$$\underset{\{x_j\}}{Max} -(x_j - \hat{x_j})^2$$

The denomination seeks to implement $\hat{x_j}$. To achieve this objective, it would choose x_j to maximize the above objective.

$F.O.C.\ x_1^* = \hat{x_1}$

$x_2^* = \hat{x_2}$

Religious Equilibrium

Denominations choose the positions on the 'religious investment' spectrum corresponding to their given ideal positions.

Proposition 3:

If denominations are 'dictatorial', they will impose on adherents a level of 'religious investment' corresponding to the preferred level by the religious authority.

Corollary:

If denominations are dictatorial, the religious authorities do not sincerely represent the preferences of adherents. A liberal denomination and a conservative denomination would not emerge out of a sincere representation of religious preferences, but out of probable differences between the doctrines and preferences of religious authorities.

Therefore, in this scenario, any apparent difference between adherents of different denominations in terms of preferred tax rate, government spending or size of government, will be entirely due to the specific preferences of the religious authorities. Adherents 'blindly' follow the teachings of the denomination. Some adherents will find their ideal position close to the denomination's ideal position, but in terms of the total welfare of adherents, it will generally be less than if the denominations were benevolent.

Proposition 3':

Under a 'dictatorial' religious authority, the religious welfare of adherents is suboptimal.

By being benevolent, the denomination is minimizing the total religious transportation costs of all adherents and that gives the Pareto optimal result. Any other objective is suboptimal. From standard linear city models, we know that the locations that achieve a

social optimum correspond to ¼ and ¾ on a scale of 0 to 1, as in the case with benevolent denominations. Any other set of locations will be suboptimal.

This may not be the case if the denomination's preferences coincide with the optimal level. But that is of small probability.

These hold: $T_A^* = T_B^*$ *(convergence)*

$T_2^* < T_1^*$

$x_1\hat{} < x_2\hat{}$, $x_1^* < x_2^*$

$c_1^* > c_2^*$

$Z_1^* > Z_2^*$

1.5d. 'Dictatorial' Denominations and Policy-Seeking Parties

This scenario differs from the previous one with regard to the party objectives. We now have denominations that seek to impose their doctrine, and parties that seek to dictate their ideology or interests. This is probably the worst situation that may face the believers or citizens in a society, from their point of view. On the one hand, the citizens' religious views are not taken into consideration, and on the other hand, they are forced or coerced into accepting government policies that they may not agree with. Some believers may find themselves fortunate to have similar preferences to that of the religious authority and we do find this in authoritarian societies, but the majority of believers will feel alienated or disregarded. Also, citizens would feel that parties ignore their political and economic preferences and instead try to impose a single view on them.

The Voting Stage

Citizens 'vote' for the party platform that is closer to the policy preferred by their religious authorities[27]. When the citizens are now part of a specific denomination, the religious teachings of that denomination will induce them to favor particular economic and political policies.

Political Competition Stage

Since parties are 'dictatorial', they seek to impose their preferred policy. This is similar to case *1.5b*.

$$\underset{\{T_k\}}{Max} -(T_k - \hat{T_k})^2$$

The solution is : $T_A^* = \hat{T_A}$

$$T_B^* = \hat{T_B}$$

Politico-economic equilibrium: Each party chooses its ideal politico-economic position. No convergence occurs.

Transition Stage

This stage stays the same as before.

Religious Competition Stage

Denominations seek to :

$$\underset{\{x_j\}}{Max} -(x_j - \hat{x_j})^2$$

The denomination seeks to implement $\hat{x_j}$. To achieve this objective, it would choose x_j to maximize the above objective.

[27] The word vote here seems strange because the citizens are not choosing *their* preferences but that of others.

$F.O.C.\ x_1^* = \hat{x_1}$

$x_2^* = \hat{x_2}$

From our example, the tax rates that the adherents are directed to follow are:

$T_1^* = b(Y - \hat{x_1})$

$T_2^* = b(Y - \hat{x_2})$,

Proposition 4

With 'dictatorial' religious authorities, the ' religion' that the adherents subscribe to is primarily determined by the religious preferences of religious authorities.

Proposition 4'

Denominations with strict objectives and intentions are less capable of increasing their number of followers than denominations with more flexible objectives and intentions.

A benevolent denomination can continuously change the number of followers it has as circumstances change, while a 'dogmatic' denomination is always restricted to a strict doctrine.

Corollary

The decisions of the religious authorities and the party officials are completely independent.

In addition to the fact that the outcome is not socially optimal, any distinctively liberal or conservative denomination is completely due to the religious preferences of the religious authorities. Likewise, any distinctively liberal or conservative party is fully due to the politico-economic preferences of the respective parties.

We can therefore say that the adherents would 'vote' for the tax rate that their religious authority prefers. If the religious authority prefers high government spending, they would choose high government spending and if the religious authority favors 'small' governments, they would side with 'small' governments. This kind of 'blind' following of religious authority is not uncommon in the history of world religions. And even when they submit to these teachings, they may end up facing different political and economic policies that are driven by another authority with its own particular interests. However, one should note that the religious and party authorities are also strictly following given aims and objectives. A liberal denomination may find out that its given doctrine is unpopular among the adherent population. But the structure of its objectives forces it to maintain that position even if it ends up gathering fewer followers. There are many instances in history where denominations or sects have preferred to stick to their teachings and have refused to alter their rules because they believe it would be a violation of doctrine. These denominations have remained static, while those whose objectives are much more flexible can adjust their doctrine over time as circumstances change and thus assume a more dynamic course. Likewise, parties cannot adjust their preferred policies to get more votes and unless their ideology changes over time, they may end up losing the elections continuously.

Given all the above, we can have many values for x_1^*, x_2^*, T_1^*, T_2^*, c_1^*, c_2^*, T_A^*, T_B^*, Z_1^* and Z_2^*.

These hold: $T_A^* = T_A\hat{}$

$T_B^* = T_B\hat{}$

$T_A\hat{} < T_B\hat{}$, $T_A^* < T_B^*$

$$T_2^* < T_1^*$$

$$\hat{x_1} < \hat{x_2}, \; x_1^* < x_2^*$$

$$c_1^* > c_2^*$$

$$Z_1^* > Z_2^*$$

1.5e. Legitimacy and Endorsement

In the cases we have examined so far, the religious authorities have specific religious objectives. These objectives can range from a sincere representation of believers' religious preferences to an 'authoritarian' implementation of a particular preference held by the religious authorities. The denomination seeks to implement its religious objective regardless of the actions of political parties. That is, the position chosen by the denominations is not influenced by the positions chosen by the parties. These religious positions chosen by the denominations lead *indirectly* to political and economic preferences for the adherents. But this doesn't mean that the denominations have no interest in politics or economics. A denomination may choose a level of 'religious investment' because this level may lead to a particular tax rate or government spending level. But in the structure we used in our cases above, there is a difference between having a specific religious objective and a specific politico-economic objective. We have seen that if a denomination has a level of 'religious investment' or religiosity that it prefers, it would implement that level in a dictatorial manner. The denomination moves before the parties and therefore would just easily implement that particular level of 'religious investment'. But if the denomination has a politico-economic interest or objective, such as a specific tax rate, it wouldn't be able to implement it exactly as it is,

because parties determine the final tax rate in the political competition stage. This is the structure we have employed so far in this paper.

In this section, we will consider a slightly different set of assumptions, but with significant consequences on the results. Here, we assume that the religious authorities have a *direct* interest in politics and economics. This means that the religious authorities seek a specific type or level of politico-economic policy. This preference may be due to some 'secular' interest on the part of religious authorities in the form of 'rent-seeking', personal agendas or some alliance agreed upon between religious leaders and party officials. We call it *direct* simply because the objective will be defined in the form of politico-economic policy rather than religious doctrine. The main difference in this scenario is that denominations choose by *endorsement*. This means that a denomination supports one of the two positions chosen by the parties. It supports the position closer to its ideal politico-economic preference. For example, the liberal denomination would endorse the position of a liberal party and in doing so, directs its adherents to vote for that specific party. This method of endorsement is common in politics. The endorsement serves as a form of *legitimacy* provided by the denomination to the party. This legitimacy is a certificate of support from the religious authorities to the party and it materializes in the form of voting. We assume that parties are ideological. In his forthcoming book that studies religious liberty in the framework of rational choice theory, Gill argues that legitimacy is a relatively inexpensive method for governments to attain and maintain office. Gill (1998) remarks that this demand for legitimacy by government creates a potential for agreement between policymakers and denominations, since, "religion tends

to be the primary producer of societal norms and values" (Gill 1998, 52-53). Gill goes on to examine legitimacy as it plays out in the area of government regulation of religion.

In this section, we seek to formally model legitimacy and endorsement of parties by denominations and how this structure affects the propositions obtained so far in this model.

Voting Stage

The adherents vote in accordance with the directions or teachings given by the religious authorities. They vote for the party that is endorsed by their religious leaders.

Political Competition Stage

Since parties are ideological, they solve the same problem as in cases *1.5b* and *1.5d*.

$$\underset{\{T_k\}}{Max} -(T_k - \hat{T_k})^2$$

Therefore from *F.O.C*, $T_A^* = \hat{T_A}$

$$T_B^* = \hat{T_B} \quad \text{(We let } T_A^* < T_B^*\text{)}$$

Politico-economic Equilibrium

The parties choose their ideal ideological positions, given that the budget constraint is satisfied.

Transition Stage

This is the same as before. Adherents take what the denominations teach them and derive their optimal politico-economic policy. But they end up paying the tax rate of the winning party.

Using backward induction, the denominations know that the parties choose their ideal positions in the political competition stage. But the denominations have their own

optimal or ideal position on the politico-economic issue. Thus, they observe the two party policies and decide to endorse that policy that is closest to their ideal position. We assume that the parties have the same 'popularity' with regards to the 'fixed' policy issue. We can therefore add an *endorsement stage.*

Endorsement Stage

Denomination j chooses to endorse party A iff:-

$$-(T_A^* - T_j^{\wedge})^2 > -(T_B^* - T_j^{\wedge})^2$$

where $T_j^{\wedge}$ corresponds to the preferred tax rate of denomination j.

Suppose we have the following situation below:-

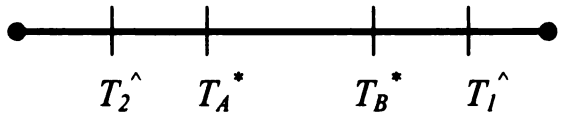

Figure 1.4: Religious Endorsement of Parties (a)

In the situation of figure 1.4, the two parties locate according to their ideal positions. We have a liberal (B) and a conservative (A) party[28]. The conservative denomination, *2* prefers the position of A to B. It therefore would endorse A. If the conservative denomination endorses A, *it would seek to choose its religious position such that it maximizes the probability that A wins the elections.* After all, the voters are in the first place believers and take the orders of their religious leaders seriously.

Religious Competition

The objective of the conservative denomination is therefore to maximize the probability that the conservative party wins. The same goes for the liberal party and

[28] These positions could be derived from a benevolent, sincere representation of adherent preferences, or could be due to some 'dogmatic' stance by the authorities. The origin of the denomination's position is not important in this particular scenario. What is important is that denominations have distinct preferences.

denomination. The situation in practical terms is where a liberal party would seek a *coalition* with the liberal denomination in which the party gets the votes (legitimacy) it needs and the denomination has a party that is more attentive to its needs than the other (conservative) party.

Conservative Denomination, 2:	*Max (Probability that A wins)* $\{x_2\}$
Liberal Denomination, 1:	*Max (Probability that B wins)* $\{x_1\}$

Religious Equilibrium

The positions of both denominations will converge to the middle (or median) of the 'religious investment' spectrum.

Proof

After each denomination has decided which party to endorse or legitimize, they are now interested as per the 'coalition agreement', in gathering as many voters as they can for that party. The only tool the denominations have at hand is the religious variable. By altering this position, they can influence the final votes. If the liberal denomination wants the liberal party to win, it would simply seek to maximize the probability that that party wins. More specifically, the denomination would seek to maximize the *number of adherents it has.* This is because if all adherents are conforming completely to the teachings and rules of the denomination, by maximizing the number of adherents, they are essentially maximizing the number of those who would vote for the liberal party. To maximize the number of adherents, the liberal denomination would try to move its religious position to the right to get more votes for the liberal denomination. As a

rational, strategic response, the conservative denomination would move to the left. The Nash equilibrium is at the median or midpoint of the religious spectrum.

Therefore, the denominations would converge to the midpoint on the religious spectrum and both sets of adherents are now essentially facing the same religious rules or standards. There is a tendency towards increased moderation by both denominations in the hope of attracting more adherents. They are aiming for a larger audience. But they face a trade-off. By trying to increase adherents for the sake of a particular politico-economic objective, they are 'sacrificing' religion. They try to achieve their political-economic objectives at the expense of their religious teachings and doctrine.

Mathematically, the denominations maximize the number of adherents as follows:

$$\textit{Conservative Denomination:} \quad \underset{\{x_2\}}{Max\ (\omega) > 1/2}$$

$$\textit{Liberal Denomination:} \quad \underset{\{x_1\}}{Max\ (1-\omega) > 1/2}$$

Nash Equilibrium (convergence to the middle): $\omega = 1/2$.

Proposition 5

In a framework of endorsement strategies, the liberal denomination will tend to endorse the position of the liberal denomination and the conservative denomination tends to endorse the position of the conservative party.

If the denominations are located symmetrically on the tax rate spectrum, then the liberal denomination will always endorse the liberal party and the conservative denomination will always endorse the conservative party.

We can have situations were a liberal denomination endorses a party with relatively opposing viewpoints, as shown below:

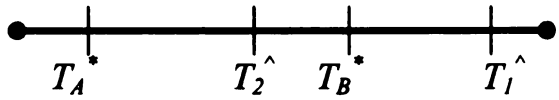

Figure 1.5: Religious Endorsement of Parties (b)

In the situation above, party *A* is extremely conservative to the extent that it is optimal for the conservative denomination, *2*, to endorse the liberal party (*B*) instead. In this case, party *B* is certain to win. Since we can have many possibilities, we can restrict ourselves to cases where the denominations endorse parties of similar viewpoints or ideological orientations., thus the term 'tend'.

However, if we allow parties to react strategically to this possibility (which we haven't done here because parties are 'dogmatic'), then they would move their positions so as to get at least one endorsement. This means *A* moves to the right until *B* cannot get the endorsement of denomination *2* anymore. *B* would move to the left and stop at the point beyond which it loses its endorsement from denomination *1*.

Also, if we give complete freedom to both sides such that they can react strategically to any movement by any other side, then we will have both denominations and parties locating at the midpoint.

Proposition 5'

As denominations become directly interested in political and economic policies, their positions on the religious spectrum will converge to the median or midpoint.

This is because they are interested primarily in a certain political objective, and to achieve it through endorsement, they tend to 'moderate' their religious positions so as to increase support for that endorsed policy. This is where politics drives religion.

Corollary

If denominations are interested in political rather than religious objectives, they will tend to 'sacrifice' the religious interests of their adherents to achieve their 'personal' political-economic agendas.

Also, the religious differentiation between denominations is reduced until eventually there is no notable difference between them. We will have a liberal and a conservative party, but there are no longer a liberal and a conservative denomination.

Religion and believers in general, are the 'losers'. As we have seen, any non-equidistant location of religious positions is sub-optimal. As a result, the location in this scenario is sub-optimal.

We have the following situation:

$$T_A^* = T_A\hat{}$$

$$T_B^* = T_B\hat{}$$

$$T_A\hat{} < T_B\hat{}\ ,\ T_A^* < T_B^*$$

$$T_2\hat{} < T_1\hat{},\ T_1^* = T_2^*[=b(Y-X)\ (\textit{in the example we have})]$$

$$x_1^* = x_2^*$$

$$c_1 = c_2$$

$$Z_1\hat{} > Z_2\hat{},\ Z_1^* = Z_2^*$$

This scenario has raised a very important point and that is about *objectives* and *intentions*. We have seen that with strict religious objectives, there is a notable differentiation between denominations in their religious positions. With politico-economic objectives, this differentiation gradually disappears. The explanation that the

model proposes is that of intentions. If a denomination is sincerely representing the preferences of their adherents, it will assume a distinct religious identity. But if the denominations are instead interested in achieving some political objective through a coalition with parties, they risk losing this religious identity. The coalition and endorsement that occurs, makes denomination solely interested in the election outcome and not the religious stance of its members. Political parties exploit the power that religious institutions have by asking for their support. And in providing this support, the denominations lose in religious terms.

This situation is not uncommon in history. We have witnessed instances where denominations have worked hard for certain parties or candidates to win elections or gain popular support. Denominations alter religious teachings in order to attract more adherents who are later ordered to vote for the endorsed politician. One can even say that politics may have benefited from this strategy in trying to reduce the power that religious institutions have. Providing material or secular incentives and rewards to religious leaders to gain their endorsement can do this. If the religious leaders become 'tempted' by these rewards, they will accept to garner support for that politician. They do this by simply changing their teachings to attract more followers. This can be in the form of more flexible rules, less spiritual requirements or less demand for charity, if it is a conservative denomination. A liberal denomination would in contrast increase the strictness of the rules and require more from their adherents. As a result, this 'strategic change in religion' by the two denominations leads to increased similarity between them.

1.6 Empirical Evidence

In this section, we survey some of the empirical work that has been done on denominations' religious and political behavior in order to assess the practical validity of our propositions. This section will provide an overview of empirical studies that relate to the assumptions and results in this paper.

(i)- Religious Preferences: With regards to the assumptions made in the model regarding religiosity and religious investment, we labeled adherents who prefer low religiosity levels as liberal while those who prefer high religiosity levels as conservative. In his survey of the literature on Economics of Religion, Iannaccone (1998) remarks that most measures of religious involvement such as voluntary contributions or participation in religious activities are positively related to the level of religiosity in the denomination. He states, "the members of liberal Protestant denominations contribute a relatively small proportion of their income to churches (around 1.5 percent), whereas the members of conservative Protestant denominations, such as the Southern Baptists and the Assemblies of God, contribute significantly more (between 2 percent and 4 percent), and Mormon contributions average 6 percent of income" (Iannaccone 1998).

Furthermore, Iannaccone (1998) states that religious involvement in terms of, "rates of church attendance, follow a similar pattern, with liberal Protestant denominations ranking lowest, conservative Protestants attending more, and sect members, such as Mormons and Jehovah's Witnesses, attending still more (Dean Hoge and Fennggang Yang 1994; Iannaccone 1992, 1994)" (Iannaccone 1998).

In a statistical survey on the determinants of religious participation, Iannaccone comments that, "members of conservative and sectarian denominations attend and give

much more than members of liberal denominations even after controlling for socioeconomic differences". (Iannaccone 1998)

Hunter (1991) studies these two 'groups', liberal and conservative, under the titles *progressivism* and *orthodoxy* respectively. He states that, "it nearly goes without saying that those who embrace the orthodox impulse are almost always cultural conservatives, while those who embrace progressivist moral assumptions tend toward a liberal or libertarian social agenda" (Hunter 1991, pp.46).

Therefore, our assumption regarding religious preferences as locating progressively under two distinct banners, liberal and conservative, is consistent with a substantial part of the theoretical and empirical literature on religion and politics.

(ii)- Religion and Economics: In this section, we review some views regarding the relationship of religion to economics. We recall that the model derives a relationship between religious preferences and economic preferences. In particular, individuals with liberal religious preferences will be induced by the denomination to favor liberal economic policies in the form of higher taxes, more government spending and 'bigger' governments. Such adherents will prefer more government spending on programs such as social security, health care and public education. In contrast, the model postulates that conservative adherents will favor low taxes, low spending on welfare projects and less government intervention in their economic lives. [29]We argue that these views are strictly a result of the budgetary choices faced by believers when trying to allocate their resources between religious spending and secular obligations. Strict believers want to

[29] This does *not* mean that conservative believers are opposed to welfare programs. They are specifically opposed to *government* provision of these services using tax revenue. This means they prefer that such spending be done by their religious institutions using religious donations of adherents.

give less to the 'secular' government in order that they can give more to their religious authorities.

But the question that arises is whether we do observe these tendencies in real life. Do liberal religious views translate into liberal economic views in the real world? Do conservatives reject socialist policies by governments? Do they favor a laissez-faire approach by governments? The answer is that there are mixed views and results on these issues. Some authors support the propositions above and some provide evidence to disprove them. One should note however that our model is explaining these phenomena using a single dimension of analysis, namely religiosity. Other authors explain their different conclusions using alternative dimensions.

Two prominent sociologists of religion, Wuthnow (1988) and Hunter (1991), hold the position that religious preferences affect the views of believers and denominations on economic issues. According to Davis and Robinson (1996), who object to the conclusions of Wuthnow (1988) and Hunter (1991), state that, "according to Wuthnow (pp. 132, 219-23, 239), religious liberals take politically liberal positions on a wide variety of contemporary issues, including ..., and economic justice, while religious conservatives take politically conservative stances".

They state that,

> Wuthnow (1988, p.114) sees religiously conservative "special purpose groups" such as the Moral Majority and the Christian Coalition as having arisen to combat the growing role of government in guaranteeing equal rights for women and minority groups and in providing welfare and other forms of assistance to the poor. Wuthnow (p. 248) notes that religiously conservative leaders, such as evangelical economist George Gilder, Moral Majority founder Jerry Falwell, and Christian Coalition founder Pat Robertson, have voiced strong opposition to redistributional efforts by the government. Through analysis of a sample of Americans interviewed in 1984, Wuthnow (pp. 219-

23) finds that religious conservatives are more opposed than religious liberals to government spending on social programs. (Davis and Robinson, 1996)

Hunter (1991, pp.111) argues that the notion of freedom among orthodox believers also refers to freedom in "economic self-determinations" and as a result, these believers are proponents of "'free' enterprise". He argues that evangelicals "trace the [above] relationship to the Old Testament land laws that linked private property to the freedom from state coercion, especially from taxation". (Hunter 1991, pp.111)

Hunter (1991, pp.96-97) observes in a 1987 study of denominational leaders that orthodox religious leaders prefer economic growth as a way of reducing poverty and also tend to reject using redistribution of wealth to solve the problem.

As such, Wuthnow and Hunter are of the view that religious preferences affect the economic preferences of believers and religious authorities. Our model also arrives at similar conclusions on these issues. The explanations presented for this pattern are however different. Wuthnow and Hunter explain these attitudes as a result of particular religious doctrines held by the different denomination members. Hunter (1991, pp.49) argues that, "the culture war emerges over fundamentally different conceptions of moral authority, over different ideas and beliefs about truth, the good, obligation to one another". Thus, they explain this behavior in a Weberian framework. Although our model explains the economic preference as an expression of religious preferences, it specifically uses the budget constraint and allocation of resources as the key concepts. The reason that a conservative prefers low government spending or intervention is not because his/her doctrine praises the laws of capitalism and free market. It is because the level of commitment or involvement or strictness the believer prefers 'forces' the believer to give

a substantial amount of his/her resources to the denomination and as such, he/she are inclined to favor giving less to the 'secular' government. This relationship is due to the impact of the budget constraint on all believers. The economic reality puts certain restrictions on the economic preferences of individuals. Therefore, both the religious doctrine and the economic reality facing individuals, determine their political, economic and religious preferences.

As we noted before, some studies have obtained very different results and observations regarding the effect of religion on economic attitudes. Davis and Robinson (1996), in a statistical survey, show that orthodox adherents do not necessarily hold conservative economic viewpoints. They state that, "the orthodox ... are more liberal on issues of economic inequality" (Davis and Robinson, 1996). But the reason for this observation according to them, is "[that] the tendency of the religiously orthodox to draw adherents from disadvantaged groups makes them more liberal on economic issues"(Davis and Robinson, 1996). In our model, income inequality is not present and therefore we can ignore this effect. Our result holds in a situation of income equality. If a majority of conservatives are poor, this means that they care about welfare programs and thus they would support more government intervention. They are unable to provide to the denomination their preferred levels of religious investments. Also, Davis and Robinson (1996) do find that orthodox adherents believe the government welfare spending is too high. As such, even their results don't support their hypothesis fully.

Furthermore, there are no final conclusions on this matter and different researchers have differing views.

(iii)- Religion and Politics: In this section, we review the empirical work done on the political positions and affiliations of denominations and adherents in the area of U.S politics. In our model, and specifically under the sections that deal with ideological parties, we argued that liberal denominations tend to support liberal parties, while conservative denominations tend to support conservative parties. We also showed the conditions under which a denomination may endorse the position of a party with a 'conflicting' ideology (see section 1.5e).

In his study of religion and politics in the U.S, Layman (1997) states that, " there is already a good deal of evidence that political activists and voters with orthodox beliefs and affiliations tend to support the Republican Party while the Democratic Party draws its activists and voters disproportionately from the ranks of religious liberals and secularists (Green, Guth, and Fraser 1991; Green et al. 1996; Guth and Green 1986, 1987; Kellstedt, Smidt, and Kellstedt 1991; Miller and Wattenberg 1984; Rozell and Wilcox 1995; Wilcox 1992)". Laymen (1997) states that, "as the cultural tensions between America's religious and secular populations grow, the political impact of religious commitment also should grow, with strongly committed individuals becoming more Republican relative to their less religious counterparts". Furthermore, Layman (1997) states, "highly religious individuals have consistently been more likely than their religious counterparts to identify with the GOP, ...".

To explain the changing political attitudes of Liberal Protestants from supporting the Republican Party to supporting the Democratic Party, Leege (1993) cites the decline in church attendance by liberal Protestants as a possible cause. This means that if attendance falls, in the framework of our model, the religiosity of adherents may have fallen. The

liberal Protestants are more liberal than before, and as such they are more likely to vote for the Democratic Party than the Republican Party.

These results indicate that liberal denominations do indeed endorse liberal party positions (Democratic), while conservative denominations endorse conservative party policies (Republican).

1.7 Conclusion

So far, we have shown that with a budget constraint facing individuals, denominations that act in the interests of their adherents will differentiate themselves from other denominations and as a result, will induce their members to favor particular political and economic policies. The budget constraint facing adherents is also facing the denomination since all it does is sincerely represent the interests of its members. But if the denominations are interested in some other objective such as maximizing the number of adherents, they will converge to the same position on the religious spectrum and choose the same optimal 'religious investment' level. In that case, no differentiation occurs and therefore both denominations induce their adherents to favor the same political and economic policies. There is no difference in preferred tax rates, private consumption and preferred government size. We can deduce from these observations, that if denominations care less and less about their adherents' preferences, any notable differentiation between denominations and among members of different denominations will vanish gradually. A more ambitious deduction is that with a decreasing benevolence by denominational authorities, there would be corresponding decreasing differences between denominations until eventually denominations lose their unique identities and

their impact on the domain of politics and economics. With more benevolence come more differentiation and more power in influencing political and economic policies.

This model has sought to explain the reason why liberal denominations favor higher tax rates, more government spending and 'bigger' governments, while conservative denominations favor lower tax rates, less government spending and 'smaller' governments. We have shown that with adherents facing a budget constraint, if we approximate religiosity in terms of 'religious investment', benevolent denominations who preach low levels of religious investment and low religiosity, will induce their believers to favor high taxes, government spending and 'bigger' governments. The opposite holds for conservative denominations. These factors together influence the specific party that a denomination decides to endorse.

The model has sought to explain a real world phenomenon using simple concepts. Religious preferences, budget constraints, and denominational objectives explain the different religious, economic and political decisions taken by all players in the society.

Chapter 2

Religious Charities and Government Funding

2.1 Introduction

On 29th January, 2001, the White House Office of Faith-Based and Community Initiatives was established with the declared objective of creating a partnership with faith-based agencies in order to achieve common goals in the field of social service provision. This development raised severe controversy with regards to its legality under the laws of the Constitution. It also initiated an extensive debate from all interested parties on the effectiveness of faith-based social service providers in relation to other social service providers, and whether they possess unique advantages that warrant any special treatment from the government. This debate will continue and even intensify as the program progresses. Religious denominations and their affiliated faith-based agencies will be in continuous competition against each other to obtain government funding in order to achieve their specific interests. Political parties now have a useful tool that they can refer to in times of elections when they are in need of legitimacy or endorsements. It seems therefore that without careful examination, such an initiative may not necessarily be a productive partnership or lead to the desired common goals that many would expect.

The purpose of this paper is to examine some aspects of the relationship between religious nonprofits and the government. The paper presents an economic model that describes this relationship in order to give us an insight into the different motives of these institutions and the outcomes that arise as a result of their interaction. We study this relationship by investigating the impact of government funding on religious charities and

on religion in the society as a whole. We model a government that awards funds to religious charities or denominations[30] so that these funds are used for the production and distribution of a social good or service. We provide a rationale for why the government chooses to award the funds to a *religious* charity in particular. A unique nature of religious charities allows them to have an advantage over secular nonprofits in the production of the social good. Based on this formulation, the government decides *which* religious denomination or denominations to award the funds to according to the specified government objective. We argue that religious charities will *intentionally* use part of these funds for proselytizing purposes[31]. As a result, the religious preferences of believers in the population are altered and this alteration leads to a change in the relative powers of the different denominations and the religious nature of the society as a whole. The fact that a particular denomination is given the rights to provide the social service means that the government is intentionally or unintentionally giving one sect an advantage over others. This is mainly because the 'award-winning' sect will use the funds to pursue its specific religious causes. Any law passed by the government to ensure the complete secular nature of the service is bound to fail under instances of imperfect or costly monitoring. Also, requiring the religious charity to exclude any religious content in the provision of the social service may mean that the religious charity will have to act as a secular producer and this nullifies their efficiency advantage which was the reason they were given the award initially.

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[30] In this model, the terms religious charities, faith-based agencies and denominations will be used interchangeably.

[31] Proselytizing can still occur even if denominations do not consciously pursue it. This is usually in the form of externality effects arising from the existing religious and cultural environment. The different methods through which such effects occur will be discussed later in the paper.

In instances where the government provides equal grants to all types of denominations, this is shown to still have far-reaching consequences on religion and believers. Furthermore, the model examines the instances where particular denominations may decide to discriminate in the provision of the social service by restricting their services based on the religiosity or religious affiliation of the social service recipients.

The model derives results that have important policy implications for present and future programs by the government to fund religious and secular charities. The paper raises many significant issues that are sometimes overlooked by many parties involved in the debate. In section 2.2, we discuss the theoretical and empirical literature on nonprofits and faith-based agencies. We later explain the model in detail in section 2.3 and derive results in section 2.4 under different assumptions. We then conclude in section 2.5.

2.2 Literature Review

The literature on the economics of nonprofits and altruistic behavior has developed substantially over the years in the areas of economic theory and empirical research. According to Rose-Ackerman (1996), economists are increasingly becoming interested in exploring areas of related interest that were originally thought to be outside the realm of economic inquiry. Rose- Ackerman (1996) states that many theories have been developed to explain the motives behind charitable donations, ranging from donations driven by a sense of commitment as in Sen (1977) and Sugden (1984), to donations driven by the intention of signaling one's wealth to others as in Glazer and Konrad (1996). Andreoni (1990) also presented another explanation for altruistic behavior based on the desire to gain utility from the act of giving, referred to as the warm-glow effect.

Additional literature has focused on the economic behavior of nonprofit institutions in particular. Rose-Ackerman (1996) presents the theories developed that aim to explain the functions of nonprofits. One function of such organizations is to provide a channel for private donations, as many donors may trust nonprofits more than other types of institutions, such as for-profit agencies. Also, nonprofits may have emerged as a response to information problems that donors are facing as in the works of James and Rose-Ackerman (1986), Steinberg and Bradford H. Gray (1993) and Weisbrod (1989). Furthermore, "nonprofits may provide a more diverse collection of services than is possible in the public sector" (Rose-Ackerman, 1996).

The empirical economics literature has mainly sought to test the hypotheses proposed by several theorists. Much of the empirical work has focused on testing the hypothesis of crowding out of private contributions by public spending with results ranging from complete crowding out as in Roberts (1984), Sugden (1982) and Warr (1982) to partial crowding out as in Cornes and Sandler (1984, 1994), Steinberg (1987) and Andreoni (1989, 1990). With regards to the effectiveness of nonprofits, Rose-Ackerman states that initial studies such as Clarkson and Martin (1980) concluded that for-profits were more efficient than nonprofits due to the advantage that the profit motive presents. Others such as Hawes and Phillips (1986), Weisbrod (1988, 1994) and Aaranson et al (1994) concluded, using data from nursing homes, that the lack of the profit incentive served as an advantage for nonprofits over competing agencies. Also, Rose-Ackerman (1996) argues that some studies such as Kagan (1991) and Kisker et al (1991) conclude that for-profits provide services at a lower cost but also at a lower quality. As such, "when

nonprofits provide higher quality services, they may also charge higher prices to compensate, [thus] reducing their advantage" (Rose-Ackerman, 1996).

An essential component of the nonprofit sector is religious charities and faith-based agencies[32]. The vast majority of the theoretical literature on the economics of nonprofits has focused on the economic choices of private donors, the economic functions and decisions of nonprofit agencies, and the impact of income and wealth redistribution policies by the public sector on the decisions of donors and nonprofits. There has not been any formal examination of the impact of government policies on the religious state of society, both on the individual and group level. In addition, the models have treated all types of nonprofits identically, while none has sought to examine *religious* nonprofits in particular.

In this paper, we formally examine the relationship between religious nonprofits and the public sector with the primary aim of studying the impact of this relationship on religion in society. Also, we specifically investigate the religious nature of religious charities in order to study their uniqueness relative to other types of social service providers. Reinikka and Svensson (2003) develop a simple model to highlight the differences between religious nonprofits and for-profit service providers. In their model, managers of nonprofit agencies will seek to hire altruistic workers that are willing to work at lower wages and produce the service at a lower cost, thus allowing the agency to offer the service cheaper than it is offered by for-profit agencies. In our model, instead of *assuming* that managers intentionally seek to employ workers who are willing to accept lower wages, we endogenize workers' wages, and are able to derive the proposition that

[32] We do not differentiate between congregations and faith-based organizations as in Wuthnow et al (2004). All nonprofit agencies that have a distinctly religious identity fit into our model.

religious nonprofits are more efficient than secular or non-religious nonprofits in the production of social services. This essential result will then allow us to study the impact of government funding of religious or faith-based agencies on all parties involved.

The majority of empirical work on religious nonprofits has been in the fields of sociology of religion and religious studies. These empirical studies have aimed to study the unique nature of religious charities and also to present comparative analysis with secular or for-profit organizations. Smith and Sosin (2001) examine the general characteristics of faith-based agencies in a series of interviews with faith-based officials. They classified faith-related agencies in terms of source of funding, link to religious authority or congregation and the underlying religious culture in which different agencies exist. Their study provided an insight into the degree of linkage between faith-related agencies and the doctrine they subscribe to, and also policy implications with regards to possible funding of such agencies by the government (Smith and Sosin, 2001). Ebaugh et al (2003) also discuss other authors who have classified the different characteristics of faith-based agencies, such as Unruh (2001) and Jeavons (1998).

In their study of faith-based agencies in Texas, where the concept of the Faith-Based Initiative was first implemented, Ebaugh et al (2003) argue that faith-based agencies do not differ from secular agencies in the types of services that they provide to their recipients. However, Ebaugh et al (2003) concluded that faith-based agencies are unique in that in addition to providing the social service, they also convey a collection of religious services simultaneously. This led to their conclusion that, "'organizational culture' significantly differentiates religious from secular agencies, with the former supporting a culture thoroughly imbued with religious values in terms of staff interaction

with clients" (Ebaugh et al, 2003). With regards to specific social programs, many studies have arrived at a variety of results concerning the effectiveness of faith-based agencies. Desmond and Maddux (1981) studied the success of religious programs aimed at drug addicts in San Antonio and concluded that the programs had a positive impact relative to other programs. Other studies include Berrien, McRoberts and Winship (2000) where they studied the effect of clergy-police partnership on crime rates in Boston. (Wuthnow et al, 2004). In his book, "When Sacred and Secular Mix: Religious Nonprofit Organizations and Public Money" (1996), Stephen Monsma presented a comprehensive historical and empirical study of the relationship between nonprofits and the public sector. He examined the history of the relationship between these two sectors and studied this relationship in the context of different religious denominations. These studies and others provide useful insights as to the future of the Faith-Based Initiative and other programs that involve some form of economic alliance between the government and faith-based agencies.

Although extensive applied research has been done on religious nonprofits, little has been said about the impact that government funding of these nonprofits has on religion and believers in general. The literature has mainly dealt with the characteristics of faith-based agencies and their effectiveness in relation to other service providers. We will explain the unique nature of faith-based agencies or religious charities and provide an economic rationale for their efficiency. The paper fills an important gap in the literature by explaining how denominations and their affiliated faith-based charities compete with each other for adherents, for public funds and-ultimately-for religious hegemony. Ultimately, the paper predicts the impact on religion and believers of any relationship that

might exist between these agencies and the government sector. Several empirical results that already exist in the literature will be shown to support our propositions.

2.3 The Model

The paper makes use of the framework of spatial location models. We follow, to some extent, the procedure of Barros and Garoupa (2002) in which they use a spatial location model to formulate a theory of church strictness. In particular, they use a modified Hotelling model (See Hotelling (1929)). Also, denominations or charities compete in a Nash environment. The games of strategic interaction in this model will utilize the tools of game theory and in particular, the concept of 'backward induction', to derive the sub-game perfect Nash equilibrium results.

Similar to Barros and Garoupa (2002), we study a situation where believers locate on the 'religious spectrum' and choose that denomination that maximizes their utility. This follows the Hotelling model of consumers grouping near different sellers, according to their preferences. Furthermore, we model the choices of individuals in similar fashion to Becker's theory of household production. See Becker (1965, 1974), Becker and Murphy (1988), and Stigler and Becker (1977). In our case, we have individuals' resources allocated between religious consumption (in the form of religious investment) and secular consumption (consumption of private commodities)[33].

The main components of our model include the government, the adherent population and the religious charities or nonprofits. The government consists of the decision makers that make choices with regards to public revenue and public expenditure. The religious

[33] In this model, it is charities and the government that actually *choose* the equilibrium resource allocations. Charities or denominations choose a religious investment level according to some given objective and all adherents conform to this level.

charities or denominations comprise the religious authorities that direct and coordinate the institutions' plans and services, and the clergy that are essentially the religious workers performing their duties in accordance with the rules and regulations set by the religious authorities. The adherent population consists of the total number of believers in the society.

Government: - The government has funds that it intends to award to a nonprofit agency. We assume that the funds are obtained exogenously. The purpose of the funds is the production of a social good or service, Z. This service or good is assumed to be different from the religious 'club' good, R_k, that is already produced by religious denominations. The government may opt to award the funds to a religious nonprofit or a secular nonprofit or may have to choose between two competing religious nonprofits. We assume that the government seeks to award the funds to the most efficient nonprofit agency. In particular, the government awards the funds to the nonprofit agency that can produce the service with the least cost of production.

Denomination: - Denomination or charity k is a religious institution that cares for the welfare of a community of adherents. The religious authorities in charge of the denomination are assumed to have a benevolent nature and as such, seek to maximize the total welfare of their adherents. For simplicity purposes, we have two denominations in the model, A and B. In addition to the task of providing its specific religious 'club' good to its adherents, a denomination may also be given the responsibility of providing the social good or service, Z. This happens when the government awards the funds or social service contract to the denomination.

Religious Clergy: - They represent the staff working in the religious organization. In other words, they are the religious producers or workers. These workers are employed by the charity to produce the religious 'club' good, R_k. But in addition to producing the religious good, they will also be assigned the task of providing the social service, Z, in the event that the charity they work for is awarded the contract by the government. The objective of the religious clergy is to maximize their utility by preaching their doctrine to a larger community of adherents. Their utility increases as the size of the community increases. In other words, the amount of utility they derive is directly proportional to the amount of preaching they can accomplish.

Believers/Adherents: - An individual i is a believer who belongs to a particular denomination. There are N believers in the population. In an extension to the model, we consider a set of non-believers or pure secularists, **n**, in addition to the N believers. The utility of a believer i in denomination k is given by:

There are two main components of this utility, namely the religious utility and the secular utility. The religious utility is given by:

$$\beta\left\{R_k - s\left(r_k - a_i\right)^2\right\}$$

In the above function, R_k is the religious 'club' good that is exogenously provided by denomination k. The parameter β represents the weight placed on religious consumption in the population. It is the same for all individuals[34]. We can regard it as an

[34] We can have β vary by individual, although this will not affect the results of the model. However, a value of 0 may indicate no preference for religious utility which may indicate that the individual is an atheist or an agnostic. This could be a way of structuring the preferences of these groups in the population.

indicator of the 'power' of religious institutions or religion in the society, as evidenced by its effect on the utility function of all individuals. This power may represent the prominence of religious institutions and their impact on society in general. This parameter is not related to the individual-specific preference of 'religious investment', given by a_i. The religious parameter a_i represents the ideal position of individual *i* on 'religious investment'. A principle assumption of our model is that preferences can be represented by a unidimensional variable, in the form of 'religious investment'. All individuals in the population have an ideal preference regarding the 'amount of religious investment' they are willing to undertake in their religious life. This religious investment may refer to the preferred amount of money each individual is willing to contribute to religious institutions, or the amount of time the person prefers to contribute in assisting in the social and religious activities of the religious institution he/she belongs to[35]. This parameter describes the level of religion preferred by individuals in terms of measurable variables such as monetary contributions or voluntary assistance in church activities. *Thus, we can safely assume that these variables serve as proxies for the religiosity of individuals.* As such, we can construct a spectrum of religiosity based on ideal religious investment preferences, starting from 0 (minimum religiosity) to 1(maximum religiosity).

In his survey of the literature on Economics of Religion, Iannaccone (1998) remarks that most measures of religious involvement such as voluntary contributions or participation in religious activities are positively related to the level of religiosity in the denomination. For example, he states, "[that] the members of liberal Protestant

[35] The 'value' of time may be in the form of the opportunity cost in terms of productive secular activities such as working, studying, etc.

denominations contribute a relatively small proportion of their income to churches (around 1.5 percent), whereas the members of conservative Protestant denominations, such as the Southern Baptists and the Assemblies of God, contribute significantly more (between 2 percent and 4 percent), and Mormon contributions average 6 percent of income" (Iannaccone 1998).

Furthermore, Iannaccone (1998) states that religious involvement in terms of, "rates of church attendance, follow a similar pattern, with liberal Protestant denominations ranking lowest, conservative Protestants attending more, and sect members, such as Mormons and Jehovah's Witnesses, attending still more (Dean Hoge and Fennggang Yang 1994; Iannaccone 1992, 1994)" (Iannaccone 1998).

In a statistical survey on the determinants of religious participation, Iannaccone comments that, "members of conservative and sectarian denominations attend and give much more than members of liberal denominations even after controlling for socioeconomic differences". (Iannaccone 1998) Thus, for expositional purposes, we will label the two denominations A and B as *liberal* and *conservative* respectively. The conservative or stricter denomination consists of the adherents that prefer high levels of religious investment while the liberal or less strict denomination consists of those that prefer low levels of religious investment. This distinction is made to allow us to examine the policy implications of our model.

The level of religious investment chosen by denomination k is r_k. We assume that denominations can move on the religious spectrum at no cost. We denote the cost incurred by individuals as a result of their obligation to conform to the teachings or rules of the denomination, by S. It is the 'price' of sacrifice. This value is the same for all

individuals in the society. From the form of this utility, we can infer that the individual loses utility as a result of conformism to the denomination's rules, but also gets utility from giving his/her preferred investment level. As such, the total effect is given in the quadratic form, $s\left(r_k - a_i\right)^2$.

The secular utility is given by:

$$(1-\beta)\left\{\upsilon_{ik}\left(Z_k, X_i\right)\right\}$$

In the above function, $(1-\beta)$ refers to the weight that society places on secular consumption in the population. Z_k is the social good or service that may be produced by the denomination if awarded the funds and X_i is the private consumption of individual i after investing in religion.

The *initial* budget equation is given by: $Y = X_i + a_i$. The *actual* budget equation is $Y = X_i + r_k$.

Hence, the composite utility function will be as follows:

$$U_{ik} = \beta\left\{R_k - s\left(r_k - a_i\right)^2\right\} + (1-\beta)\left\{\upsilon_{ik}\left(Z_k, X_i\right)\right\} \qquad (1)$$

Where $i \in \{1,...,N\}; k \in \{A,B\}$.

Stages of the Game: - The sequence of events in the model is as follows: -

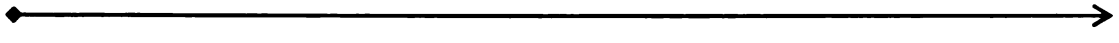


Figure 2.1: Stages of the Game

2.3a. Stage 1: Religious Competition/Original Preferences

Religious Human Capital:

In this stage, the religious preferences of individuals in the population are formed and denominations compete in a Nash environment on this spectrum of preferences. To study this gradual formation of religious preferences, we employ an approach similar to the religious human capital method used by Smith and Sawkins (2003). This formation of preferences represents a long period of learning by the individual in his/her interactions in the society. It also represents an accumulation of parental investment decisions over time, in addition to the cumulative influence of the social and cultural environment. The outcome of this long process is given by a_i. We assume that the individual has been primarily exposed to the influence of one denomination only. This can be due to the religion of the parents and the circle of close relatives and friends, or it can be due to the cultural and political structure of the country where the individual lives. This limited exposure to the teachings of a particular denomination has shaped the individual's preferences over time. The exposure to teachings of other denominations is assumed to be negligible. We let this relationship be given by the following religious production function: $a_i = g[\lambda_k, \lambda_{-k}, \mathrm{E}]$[36], which then becomes: $a_i = g[\lambda_k, \mathrm{E}]$ since $\lambda_{-k} = 0$.

λ_k : The influence of denomination k on individual i. This is due to direct effects such as preaching, learning, advertising, training, etc. The direct effects of a

[36] k and $-k$ refer to the two rival denominations in the model. We will later label them as A and B.

denomination on an individual's religious preferences are due to the personal effort of the individual in the form of time invested in religious consumption, monetary contributions that provide religious utility and voluntary participation in religious activities. We construct the direct effect as a production process given by:

$\lambda_k = \lambda_k\left(L_k, \Psi_k\right)$ where,

L_k : time devoted by individual i to denomination k.

Ψ_k : all other human capital contributing to religious investment or education.

$$\partial\lambda_k / \partial L_k; \partial\lambda_k / \partial\Psi_k; \partial^2\lambda_k / \partial L_k \partial\Psi_k \geq 0$$

These mean that as more time and human capital investment are devoted to denomination k's teachings, the individual becomes more committed to its teachings over time. We should note that λ_k increases if we are considering the stricter or conservative denomination since with more time and education, the believer prefers a higher ideal religious investment level. In contrast, if we are considering the liberal or less strict denomination, λ_k decreases with more time and education. But this increase or decrease must be constrained because, for instance, it is not plausible to have a believer become an atheist $\left(a_i = 0\right)$ if exposed to a substantial level of liberal teachings. Changes in religious preferences are usually small and slow[37]. A different but useful formulation would be to assume that all individuals start with $\lambda_k = 0$ and increase

[37] To make the concept more understandable, one can imagine that all individuals start at the midpoint of the spectrum and move left or right depending on the teachings they are influenced by.

depending on the teachings they are primarily influenced by. That is, a person exposed to less strict teachings would have λ_k increase but still be to the left of the spectrum's midpoint.

λ_{-k} : the influence of denomination $-k$ on individual i.

E : all other factors that influence an individual's religious preferences. These are the indirect effects such as learning through parents, friends and the community.

To consider the indirect effect, we can safely assume that all the individuals that influence the religious preferences of i will experience the same process that i goes through at some point in their lives. More formally, we can state it as follows:

$\mathrm{E} = \tilde{g}\left[\lambda_k, \lambda_{-k}, \tilde{\mathrm{E}}\right]$ and so on and so forth.

$\partial\lambda_k / \partial\mathrm{E} \geq 0$[38]: indirect effect such as parents, strengthens the commitment and learning outcome of λ_k , given that E was influenced primarily by λ_k.

$\partial\lambda_{-k} / \partial\mathrm{E} < 0$: indirect effect such as parents, weakens the influence of λ_{-k}, given that E was influenced primarily by λ_k.

This means that if the surrounding community around i is committed to the doctrine of k, then i will also be influenced primarily by k's doctrine. The doctrine of past generations passes on to future generations through parental and social investment in an individual's religious capital. This is similar to Smith and Sawkin's (2003) concept of

[38] λ_k and λ_{-k} in these derivatives are those of individual i and not his/her parents, relatives or friends.

social interactions that argues that religious involvement by individuals is proportional to their interactions with the surrounding religious community.

Therefore, we assume that a_i is formed initially by the influence of a single denomination, k, through direct and indirect means. This is given by:

$$a_i = g[\lambda_k, \mathrm{E}]$$

The denominations A and B take the ideal religious preferences of individuals as given and compete against each other in a Nash environment. We regard the denominations as benevolent players whose objective is to maximize the expected welfare of *their* adherents by locating at an optimal position on the 'religious investment' spectrum. Then, individuals automatically join the denomination that is closest to their ideal position on the spectrum. We assume that all members of the population voluntarily join a denomination.

2.3b. Stage 2: Religious Provision of Social Service

In this stage, the government decides which nonprofit agency to award the funds or grants to. We suppose that the objective of the government is to award the funds to the nonprofit agency that produces the good or service with the lowest production cost. Much work on religious nonprofits emphasizes the quality of service that they provide in comparison to other types of nonprofits and to for-profit service providers. The argument made is that religious nonprofits produce better quality services due to their long experience in service delivery and unique methodology and as such, should be encouraged by the public sector through funding. In our paper, the government funding is provided for efficiency reasons and not for quality concerns. The main results of the

model hold even if we assume the quality-driven objective for the government.[39] Thus, the government seeks the most efficient producer of the social service. In this stage, if a religious denomination or charity is awarded the funds, that denomination will fulfill the task of producing the social service, Z_k. We will later examine a case where more than one charity may be awarded funds, as this is the case with the current Faith-Based Initiative. Also, the denomination(s) awarded the funds should be a more efficient producer of the service than the government itself.

The funds are provided for a specific purpose, namely, the production of a social service. The government, through some objective, has decided that it is in its own interest to delegate the task of producing the social service to the religious charity. This social good or service may be for educational purposes, such as building a school or a library. It may also be for health purposes, such as building a hospital, clinic or a drug rehabilitation center. We should note that the rules governing grants under the Faith-Based Initiative state that charities are prohibited from using the government funds for religious worship, teaching or proselytizing, but should only be used for the provision of non-religious programs. As such, charities should aim to separate their religious activities from the non-religious services that are provided using the awarded government funds (Guidance to Faith-Based and Community Organizations on Partnering with the Federal Government, White House Faith-Based and Community Initiatives, http://www.whitehouse.gov/government/fbci/). However, our central argument in this paper is that, coupled with the task of providing the service, the denomination and clergy

[39] In addition to being a reasonably sound objective for the government, the efficiency objective also has the advantage of being more convenient for empirical purposes.

are incidentally given an *opportunity to proselytize* the particular doctrine or religion that they abide by.

In the course of producing and providing this service, the charity may seek to include religion via several means. A careful examination of the methods by which religious charities convey religious messages or doctrine as part of their social service delivery process is done by Unruh (2004). One method, that she calls religious self-descriptions, is through printed media such as program descriptions, brochures, pamphlets, etc. Another method is through religious objects present in the surrounding environment. This may include wall pictures, architecture of the buildings, artifacts, etc. The religious music played may also have a spiritual effect on the recipients of social services (Unruh 2004). In addition to these subtle and indirect ways, more direct methods can be employed such as prayers for the recipients, reading out loud religious text or quotations and participation in group worship (Unruh 2004). Also, the staff can also have an effect, through their dress codes, manner of conduct and their informal conversations with the consumers or recipients of this social service. Any imposed separation of religion and social services is arguably an impossible task to achieve. This is mainly due to the fact that religious charities are, by definition, religious institutions with a religious identity that is essential to their operation and performance. Any forced disjointing of the religious element inherent in them and the social services they provide will only succeed up to a limit beyond which it cannot go further. Religion in both its implicit and explicit form of expression will continue to leave a noticeable mark on the activities and social service philosophy of faith-based agencies. Furthermore, government monitoring of services provided by religious charities is both costly and difficult to implement.

The essential idea is that religious charities have numerous methods of utilizing the government funds for religious purposes. The religious clergy in particular will aim to preach their religion to the consumers or recipients of the social service that are initially non-adherents of their denomination. This is because by doing this, they can preach to a larger audience than before and thus gain more utility as a result. In so doing, they alter the distribution of preferences on the religious spectrum and shift the average religiosity level of the population in the direction of their preferred level. We are assuming that all members of the population, adherents and non-adherents, are consuming this social good or service that is provided by denomination k[40]. The non-adherents are particularly targeted by denomination k's clergy.

We let the outcome of the proselytizing be represented by λ_{-k}. That is, the individual i is now affected not only by denomination k, but also by denomination $-k$. The individual, through the consumption of the social service and its *associated religious messages*, is now exposed to the teachings of another denomination, $-k$. The individual is thus exposed to the doctrine of more than one denomination and this alters his/her lifelong beliefs.

2.3c. Stage 3: Religious Competition under Revised Preferences

With the added influence of another denomination's teachings on the preferences of an individual, the individual will accordingly revise his/her religious preferences. The function that now determines the ideal religious preferences of i is given by:

[40] This is consistent with the result obtained by Wuthnow et al (2004) in which they show that Faith-Based organizations cater to a varied community of social service recipients.

$$a_i^{'} = g^{'}[\lambda_k, \lambda_{-k}, \mathrm{E}]$$

For simplicity, we assume that this can be given by:

$$a_i^{'} = g\ [\lambda_k, \mathrm{E}]\ \pm \lambda_{-k}$$

Whether λ_{-k} is (+) or (–) will depend on the denomination that is awarded the funds.

We have,

$$a_i^{'} = a_i \pm \lambda_{-k} \qquad (2)$$

Denominations will now compete in the same manner as in stage 1 but with revised religious preferences of individuals.

We now investigate the model in more detail to derive results under different assumptions.

2.4 Results

Stage 1: Given the original spectrum of religious preferences, the denominations maximize the welfare of their adherents and locate at the Nash equilibrium positions. With two denominations, there are two corresponding equilibrium positions on the spectrum. Each denomination maximizes the following:

Denomination k:

$$\underset{\{r_k\}}{Max} \int_0^t \left\{ \beta\left\{R_k - s(r_k - a_i)^2\right\} + (1-\beta)\left\{\upsilon_{ik}(X_i)\right\}\right\} g(a)da$$

Subject to $Y = X_i + r_k$

$g(a)$: distribution of ideal preferences.

More specifically, we can write denomination A's problem as follows:

Denomination A:

$$\underset{\{r_A\}}{Max} \int_0^t \left\{ \beta \left\{ R_A - s(r_A - a_i)^2 \right\} + (1-\beta)\left\{ \upsilon_{iA}(X_i) \right\} \right\} g(a)da$$

$$\text{s.t } Y = X_i + r_A$$

Substituting in the budget equation, we have,

Denomination A:

$$\underset{\{r_A\}}{Max} \int_0^t \left\{ \beta \left\{ R_A - s(r_A - a_i)^2 \right\} + (1-\beta)\left\{ \upsilon_{iA}(Y_i - r_A) \right\} \right\} g(a)da$$

Denomination B will have similar equations.

First Order Condition for A:

$$\int_0^t \left\{ -2s\beta(r_A - a_i) + (1-\beta)(\partial \upsilon_{iA} / \partial X_i)(-1) \right\} da$$

$$r_A^* = t/2 - \left[(1-\beta)/(2\beta s) \right] (\partial \upsilon_{iA} / \partial X_i)$$

Similarly, for B, we have:

$$r_B^* = 1/2 + t/2 - \left[(1-\beta)/(2\beta s) \right] (\partial \upsilon_{jB} / \partial X_i)$$

We assume $g(a) = 1$.

These represent equidistant allocations (from the end points) on the religious spectrum, if we ignore the marginal utilities of private consumption, which are not relevant for our analysis.

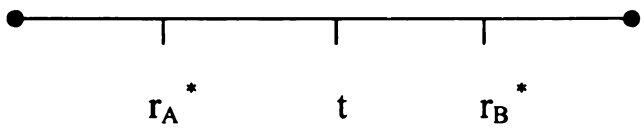


Figure 2.2: Religious Equilibrium

As discussed earlier, r_A^* would be the optimal position chosen by the liberal denomination A and r_B^* is the optimal position chosen by the conservative denomination B.

Stage 2: In this stage, the government chooses whom to award the funds to. Let the funds be given by T.

Ideally, the funds for the social service should be used to cover mainly the costs of capital and labor. But the denominations may use part of the funds for proselytizing purposes.

Therefore, actual expenditure of the funds is given by:

T = Cost of Capital + Cost of Labor + Proselytizing Costs

T_A = Cost of Capital + $\omega_A L$ + A's Proselytizing Costs, A's expenditure of T.

T_B = Cost of Capital + $\omega_B L$ + B's Proselytizing Costs, B's expenditure of T.

T_G = Cost of Capital + $\omega_G L$, G's expenditure of T.

Where ω is the wage rate paid to the social service workers or producers and L is the number of hours they are willing to work.

The government will award the funds to *a* denomination if and only if the government is less efficient in the production of the service than the two religious charities.

Assuming that to be the case, the government then chooses to award the funds to the denomination that is more efficient or produces the service at lower costs.

If the government *cannot observe* the proselytizing costs, then it bases its decision on the factor costs of both denominations. For example, the charity that has more volunteer workers will get the funds since its total labor costs will be lower than the labor costs of the other denomination. We argued that the government chooses to award the funds to a religious charity because it expects the service to be produced at a lower cost. But instead of *assuming* that the cost of production is lower for the denomination, we construct a process that explains why this is the case. In other words, we endogenize the production costs of the social service.

The producers of the social service are the persons in charge of the religious denomination or charity and we denote them by m. *They are the religious workers.* Clergy members have a utility function that describes their preferences in the religious arena. Specifically, this is given by,

$U_m = U_m(X_m, L_m, P)$ where,

X_m: private consumption by m.

L_m: total number of hours worked by m.

P: volume of proselytizing done by m.

The budget constraint of m is given by: $\omega_m L_m = X_m$. That is, total wages equal total consumption. We assume that the clergy do not consume the social service.

But the volume of proselytizing is given by: $P = L_m.\theta.\sigma$, where,

θ: Proselytizing per person per hour.

σ : total number of individuals being preached to.

Thus P=(Total number of hours spent on preaching)x(Preaching per person per hour)x(total number of individuals preached to).

Furthermore, the total number of individuals preached to is determined by two factors: r_k and Z_k. It depends on the number of adherents already in the denomination, and the number of non-adherents preached by the clergy as they consume the social service.

Without the funds, k is as follows:

$$P = L_m.\theta.\sigma(r_k)$$

With the funds,

$$P' = L_m.\theta.\sigma(r_k, Z_k)$$

The difference is:

$$P' - P = L_m.\theta.\sigma(r_k, Z_k) - L_m.\theta.\sigma(r_k) = L_m.\theta.(\sigma(r_k, Z_k) - \sigma(r_k))$$

Clearly, we can observe that the difference is due to the presence of the social service.

We can now solve m's problem:

$$\underset{\{L_m\}}{Max} U_m = U_m(X_m, L_m, P)$$

Without the service, we have:

$$\underset{\{L_m\}}{Max} U_m = U_m\left(\omega_m L_m, L_m, L_m.\theta.\sigma(r_k)\right)$$

The solution to this maximization problem will give us an indirect utility function given by: $V(\omega_m^*, P)$

With the service, we have:

$$\underset{\{L_m\}}{Max} U_m = U_m\left(\omega_m L_m, L_m, L_m.\theta.\sigma\left(r_k, Z_k\right)\right)$$

This gives us: $V\left(\omega_m^{\wedge}, P^{'}\right)$

But $\sigma\left(r_k, Z_k\right) \geq \sigma\left(r_k\right)$, because with the presence of the social service, the clergy are preaching to a larger audience or community, since it also includes all non-adherents.

That is, $P^{'} - P \geq 0$.

Using the concept of *compensating wage differentials*, we equate both indirect utilities:

$$V\left(\omega_m^{*}, P\right) = V\left(\omega_m^{\wedge}, P^{'}\right)$$

Given that $P^{'} - P \geq 0$, then $\omega_m^{\wedge} < \omega_m^{*}$.

In addition to compensating the clergy for the work that they perform providing the social service, we should also consider the positive attributes of their job in the form of religious proselytizing[41]. This externality resulting from the social service provision increases the clergy's utility. Therefore, we are using wage differentials to 'compensate' the clergy for the extra utility they gain. This is done by the clergy trading off a higher wage rate or supply price for a lower wage rate in return for the extra utility from proselytizing.

[41] The concept of compensating wage differentials was first discussed by Adam Smith in his, *Wealth of Nations*. He states that "the whole of the advantages and disadvantages of the different employments of labour and stock must, in the same neighbourhood, be either perfectly equal or continually tending to equality" (Smith, 2000, Ch. X, pp. 114). In other words, it is not only wages that should be equalized, but also the negative or positive attributes associated with the job. For more on compensating wage differentials, see Rosen (1986).

In summary, the award to the denomination increases the utility of the religious leaders or workers since they can now preach to a larger group of individuals. This increase in the size of the group receiving the clergy's preaching, will increase the clergy's willingness to 'give' more and 'take' less. *Religious workers are now willing to offer the social service at a lower supply price* $\left(\omega_m^{\wedge} < \omega_m^{*}\right)$ *than before.* This preference of religiously-oriented workers towards working in a religious work environment is supported in the work by Ebaugh et al (2003) where their survey shows that employees of religious charities are attracted to their jobs primarily due to the religious nature of the job.

Proposition 1: *The supply price of the social service is inversely related to the amount of preaching that religious workers perform.*

Corollary: *Religious workers are willing to offer the social service at a lower production cost than non-religious workers. Religious charities are thus more efficient at the production of social goods and services than non-religious charities.*

This unique characteristic of religious workers gives religious charities an advantage over non-religious providers of social services. *Because they gain utility from providing to more consumers, they are willing to reduce their supply price in order to get that extra utility.* Ebaugh et al (2003) conclude with empirical evidence that faith-based agencies rely more on volunteer workers than secular agencies. In particular, "volunteers outnumber paid staff by more than 2:1 in faith-based agencies, while the ratio of volunteers to paid staff in secular agencies is a little less than one volunteer for every paid employee (.89:1)" Ebaugh et al (2003). As such, this supports our argument that the

religious nature of working in a religious charity serves to lower the supply price or wages that workers demand to the extent that some may decide to work free of charge.

A non-religious provider will have this form of utility function:

$$\underset{\{L_m\}}{Max} U_m = U_m(X_m, L_m)$$

According to our compensating wage differentials argument, it is clear that workers in non-religious settings will demand higher wages, because no proselytizing exists. Hence, $\left(\omega_m^{\cdot} > \omega_m^{\hat{}}\right)$ and $\left(\omega_m^{\cdot} > \omega_m^{\bullet}\right)$.

A government thus awards the funds for a social service to a particular denomination because of the decrease in costs associated with the denomination's production. But we should note that that the portion of the funds spent on proselytizing should not exceed the difference in costs between the government's provision and the denomination's provision of the service. Even with lower costs, the denomination may use a large portion of the funds such that very little amount of the social service is produced relative to if the government is the producer.

2.4a. Funds to a Single Denomination

Initially, we examine the case where only one denomination receives funds from the government. We assume for now that the government has awarded the funds to denomination A, because $\left(\omega_A^{\hat{}} > \omega_B^{\hat{}}\right)$. That is, A's religious producers have a lower supply price of the social service than B's producers. Since the government cannot observe the portion of funds spent on proselytizing, the denominations may have to alter their factor costs to increase their likelihood of obtaining the award. This means that the

denominations may be asked to present a summary of their projected factor costs that the government uses to decide the final recipient of the funds.

Stage3: With A producing the social service, it would seek to influence the preferences of B's adherents. A produces both Z_A and λ_A (the proselytizing outcome).

New preferences are given by:

All of A's adherents maintain the same preferences because the proselytizing is directed only at B's adherents.

All B's adherents revise their preferences due to the influence of A's proselytizing. The new preferences are given by:

$$a_j^{'} = g^{'}\left[\lambda_A, \lambda_B, E\right]$$

$$a_j^{'} = g\left[\lambda_B, E\right] - \lambda_A$$

$$a_j^{'} = a_j - \lambda_A$$

The new preferences are reduced by λ_A because A is originally on the left part of the spectrum and seeks to lower the level of 'religious investment' or religiosity preferred by B's adherents. A wants B's adherents to become more *liberal*. We assume that the proselytizing affects all B's adherents equally.

The denominations now compete on this revised spectrum and locate optimally. We now include the social service Z_A in the utility function of all adherents as they are now all recipients of the social service.

$$\mathrm{A}: \underset{\{r_{\mathrm{A}}\}}{Max} \int_{0}^{t'} \left\{ \beta \left\{ R_{\mathrm{A}} - s\left(r_{\mathrm{A}} - a_i\right)^2 \right\} + (1-\beta)\left\{ \upsilon_{i\mathrm{A}}\left(Z_{\mathrm{A}}, Y - r_{\mathrm{A}}\right) \right\} \right\} g(a)da$$

$$+ \int_{t-\lambda}^{t'} \left\{ \beta \left\{ R_{\mathrm{A}} - s\left(r_{\mathrm{A}} - a_j\right)^2 \right\} + (1-\beta)\left\{ \upsilon_{j\mathrm{A}}\left(Z_{\mathrm{A}}, Y - r_{\mathrm{A}}\right) \right\} \right\} g(a)da$$

$$\mathrm{B}: \underset{\{r_{\mathrm{B}}\}}{Max} \int_{t'}^{1-\lambda} \left\{ \beta \left\{ R_{\mathrm{B}} - s\left(r_{\mathrm{B}} - a_j\right)^2 \right\} + (1-\beta)\left\{ \upsilon_{j\mathrm{B}}\left(Z_{\mathrm{A}}, Y - r_{\mathrm{B}}\right) \right\} \right\} g(a)da$$

$$+ \int_{t'}^{t} \left\{ \beta \left\{ R_{\mathrm{B}} - s\left(r_{\mathrm{B}} - a_j\right)^2 \right\} + (1-\beta)\left\{ \upsilon_{j\mathrm{B}}\left(Z_{\mathrm{A}}, Y - r_{\mathrm{B}}\right) \right\} \right\} g(a)da$$

From F.O.C, we have:

$$r_{\mathrm{A}}^{\wedge} = t/2 - \lambda/2 - \left[(1-\beta)/(2\beta s)\right]\left(\partial \upsilon_{i\mathrm{A}} / \partial X_i\right)$$

$$r_{\mathrm{B}}^{\wedge} = 1/2 + t/2 - \lambda/2 - \left[(1-\beta)/(2\beta s)\right]\left(\partial \upsilon_{j\mathrm{B}} / \partial X_j\right)$$

We now have,

$t' = t - \lambda_{\mathrm{A}}/2$, where $t = 1/2$.

$$r_{\mathrm{A}}^{\wedge} = r_{\mathrm{A}}^{*} - \lambda/2_{\mathrm{A}}$$

$$r_{\mathrm{B}}^{\wedge} = r_{\mathrm{B}}^{*} - \lambda_{\mathrm{A}}/2$$

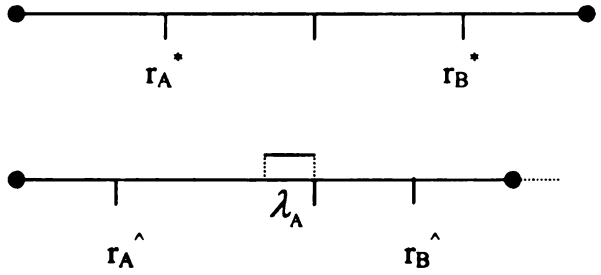


Figure 2.3A: Proselytizing by 'liberal' denomination

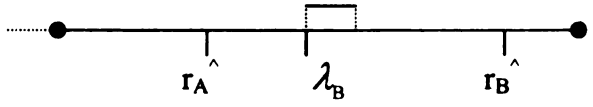


Figure 2.3B: Proselytizing by 'conservative' denomination

Proposition 2: *If the government awards funds to a charity with a low average religiosity level, the average religiosity of the population as a whole will reduce or move to the left on the spectrum.*

Proof: Consider: $t' = t - \lambda_A / 2$

Also, $\hat{r_A} < r_A^*$

$\hat{r_B} < r_B^*$

Implication: If the government awards the funds to the liberal denomination, the population as a whole will become more liberal or less conservative. Through similar arguments, if the funds are awarded to a conservative denomination, the level of religiosity in the population will increase as believers become more conservative. See figure 2.3B. As shown, this is due to the fact that denominations will utilize this opportunity given to them to proselytize their own doctrine and alter the preferences of the adherents of other denominations. The exposure to the teachings of the liberal

denomination influenced the religious preferences of the conservative believers, inducing them to become more liberal. Since they were previously only exposed to conservative teachings, they happened to belong to a conservative denomination. But with this new exposure to liberal teachings, they have an opportunity to revise their preferences. They are now affected by two contrasting religious positions, liberal and conservative. The funds gave the liberal denomination an advantage over the conservative denomination in the last stage of competition. *The conservative denomination was forced to reduce its optimal position on the religiosity spectrum as a strategic response to the proselytizing efforts of the liberal denomination. One should also notice that the funds reduce the number of extremists in the denomination that didn't receive funding. There are more moderates in that denomination.*

2.4b Funds to Both Denominations

In this case, both denominations receive funding from the government. We assume that the government awarded equal funds to both denominations to produce *two different social services* that will be consumed by all members of the population[42]. However, both social services provide equal proselytizing potential for each denomination. We will have the following situation:

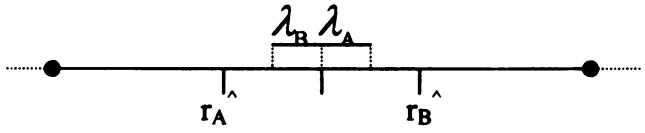


Figure 2.3C: Proselytizing by both denominations

[42] Awarding one denomination more funds than another would result in a similar situation to the case where only one denomination received funding. That is, the average religiosity of the population of adherents will tilt in the direction of the denomination with more funds. We specifically consider the case of equal funds in order to derive the important result regarding the number of extremists in the population. We show that even with equal funds to all denominations, the funding of charities still has significant consequences on the society's religious composition and character.

With this situation, the population is neither more liberal nor more conservative. This is because the proselytizing efforts of both charities offset each other, if we assume that $\lambda_B = \lambda_A$. Both social services provide equal potential for proselytizing and as a result, we assume that the magnitude of the proselytizing outcome by both denominations will be equal, although the direction of the outcome or the proselytizing effect on preferences will be different. The denominations' positions are closer to the center however. There are less people at the extremes of the spectrum.

Proposition 3: *If the government awards equal grants to the denominations, then the proselytizing efforts of the denominations have a zero net effect on the overall religiosity of the population (see figure 2.3C). The population is neither more liberal nor more conservative than before. However, there are fewer individuals at the extremes. Consequently, there are more individuals concentrated at the center of the spectrum. Both denominations have equal number of adherents.*

Corollary: *If the government awards equal grants to denominations, the result is a decrease in the number of extremists in both denominations as shown by the shrinking of the spectrum. There are more moderates as a result.*

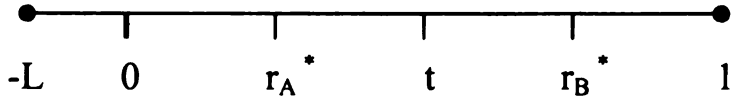
Implication: This result gives us a possible motive for having government funding of religious charities. We have shown that with equal funds to opposing denominations, an important result is that there are fewer extremists on both sides and more moderates. By giving out funds, the government has given both denominations the opportunity to influence the other. As a result, this interaction between the players in both denominations encourages openness and toleration. Adherents are given the chance to

learn more about the 'other' and this learning yields increased understanding and toleration by both sides[43]. This may well be an important outcome that influences the decision a government takes regarding funding of religious charities. This result offers important insight into the long-term effects of the Faith-Based Initiative in which several charities of diverse religious doctrines are awarded grants under the new system. It may well be that such a system will help to bridge the differences among different and often rival religious groups and promote a more tolerant society.

2.4c. Believers and Secularists

In this case, we add a new section to the population that we label, 'secularists' or non-believers. The unique feature about this portion of the population is that, in addition to being located at the extreme left of the religiosity spectrum, they do not belong to any organized community. That is, they are not members of an institution's congregation. They are independent individuals who located at the extreme left of the spectrum[44]. However, they are also recipients of the social service, Z. But with the social service being produced exclusively by a religious organization, they are now exposed to aggressive proselytizing by the denomination producing Z. The charity in question will seek to attract new members from the 'secular sect' in addition to its efforts at attracting new members from the rival denomination.

Stage 1: The spectrum is as follows: (Figure 2.4: Believers and Secularists)



[43] This is similar to Wood and Warren (2002), in which they discuss how faith-based community organizations act as bridging institutions that enhance social capital between different sects. They link this to Putnam (2000), where he argues that social capital leads to increased tolerance between groups.

[44] Barros and Garoupa (2002) label a similar group as the 'non-church'.

There are L non-believers or secularists in the population.

$a_l = g_l(\mathrm{E})$, the initial preferences of $l = 1,...,L$

It is clear that the definition of a non-believer or secularist is an individual who did not receive any religious teachings from a religious institution. Also, the influence of friends, relatives and society was insufficient to induce this individual to be committed to any religious entity[45].

In this stage, the denominations have no influence over the secularist portion of the population. Thus, their location is an equidistant equilibrium as shown in figure 3.

Stage 2: Let A be the award winner. With A producing the social service, it would seek to influence the preferences of B's adherents *and* the non-believers. A produces both Z_{A} and λ_{A}.

New preferences are given by:

All of A's adherents maintain the same preferences because the proselytizing is directed only at B's adherents and the non-believers..

All B's adherents revise their preferences due to the influence of A's proselytizing.

All the non-believers revise their preferences by increasing their religiosity or appreciation for religion. Some of the non-believers would actually commit to a particular doctrine and join a denomination while some would still decide to maintain their non-believer stance. Those that decide to join a denomination would choose to join the liberal denomination, A.

The new preferences of B's adherents are given by:

[45] We can think of non-believers as 'ultra-liberals'.

$$a_j^{'} = g^{'}[\lambda_A, \lambda_B, E]$$

$$a_j^{'} = g\ [\lambda_B, E]\ - \lambda_A$$

$$a_j^{'} = a_j - \lambda_A$$

For the non-believers,

$$a_l^{'} = g_l^{'}(\lambda_A, E)$$

$$a_l^{'} = a_l + \lambda_A$$

The new preferences for the non-believers are increased by λ_A because A seeks to increase the level of 'religious investment' or religiosity preferred by the secularists. Denomination A wants B's adherents to become more *liberal* and the non-believers to become 'more religious'.

Stage 3: The denominations now compete in a Nash environment given this revised spectrum of religious preferences.

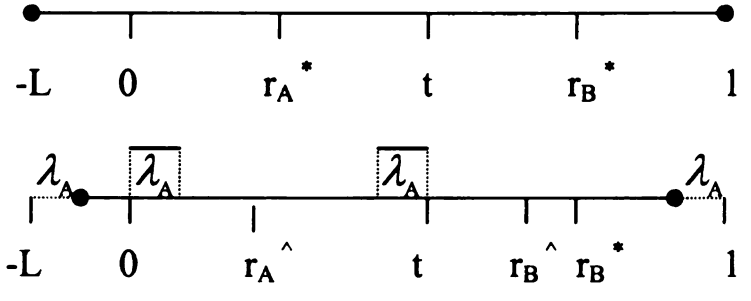


Figure 2.5 : Proselytizing that includes Secularists

$$\mathrm{A}: \underset{\{r_{\mathrm{A}}\}}{Max} \int_{0}^{t'} \left\{ \beta \left\{ R_{\mathrm{A}} - s\left(r_{\mathrm{A}} - a_i\right)^2 \right\} + (1-\beta)\left\{ \upsilon_{i\mathrm{A}}\left(Z_{\mathrm{A}}, Y - r_{\mathrm{A}}\right) \right\} \right\} g(a)da$$

$$+ \int_{t-\lambda}^{t'} \left\{ \beta \left\{ R_{\mathrm{A}} - s\left(r_{\mathrm{A}} - a_j\right)^2 \right\} + (1-\beta)\left\{ \upsilon_{j\mathrm{A}}\left(Z_{\mathrm{A}}, Y - r_{\mathrm{A}}\right) \right\} \right\} g(a)da$$

$$+ \int_{0}^{\lambda} \left\{ \beta \left\{ R_{\mathrm{A}} - s\left(r_{\mathrm{A}} - a_j\right)^2 \right\} + (1-\beta)\left\{ \upsilon_{j\mathrm{A}}\left(Z_{\mathrm{A}}, Y - r_{\mathrm{A}}\right) \right\} \right\} g(a)da$$

where the last component is due to the entrance of non-believers into A.

$$\mathrm{B}: \underset{\{r_{\mathrm{B}}\}}{Max} \int_{t'}^{1-\lambda} \left\{ \beta \left\{ R_{\mathrm{B}} - s\left(r_{\mathrm{B}} - a_j\right)^2 \right\} + (1-\beta)\left\{ \upsilon_{j\mathrm{B}}\left(Z_{\mathrm{A}}, Y - r_{\mathrm{B}}\right) \right\} \right\} g(a)da$$

$$+ \int_{t'}^{t} \left\{ \beta \left\{ R_{\mathrm{B}} - s\left(r_{\mathrm{B}} - a_j\right)^2 \right\} + (1-\beta)\left\{ \upsilon_{j\mathrm{B}}\left(Z_{\mathrm{A}}, Y - r_{\mathrm{B}}\right) \right\} \right\} g(a)da$$

From F.O.C, we have:

$$r_{\mathrm{A}}^{\bullet} = t/2 - \lambda + \lambda^2/2 - \left[(1-\beta)/(2\beta s)\right]\left(\partial \upsilon_{i\mathrm{A}} / \partial X_i\right)$$

$$r_{\mathrm{B}}^{\bullet} = 1/2 + t/2 - \lambda/2 - \left[(1-\beta)/(2\beta s)\right]\left(\partial \upsilon_{j\mathrm{B}} / \partial X_j\right)$$

The locations are:

$$r_{\mathrm{A}}^{\bullet} = r_{\mathrm{A}}^{*} - \lambda_{\mathrm{A}} + \lambda^2/t$$

$$r_{\mathrm{B}}^{\bullet} = r_{\mathrm{B}}^{*} - \lambda_{\mathrm{A}}/2$$

From the above equations, we have that the new position for A is more to the left than the previous scenario. This is to account for the additional adherents from the 'secular' subset of the population[46].

The spectrum facing the denominations is the same ranging from $(0,1-\lambda)$. However, A has more adherents at the leftmost part due to the entrance of non-believers. Therefore, A *has more adherents than* B.

By including a non-believer portion of the population, denomination A will have to proselytize two groups of individuals and in quite different ways. It will seek to lower the religiosity level of B's adherents to attract them into the liberal arena and at the same time trying to increase the appreciation for religion of the secularists to attract them into the religious or non-secualr arena. It is doing both of these tasks using the same social service Z.

One should note that denomination A can use the same teachings or methods for both targeted groups. In fact, all A is doing is teach its own doctrine or interpretation of doctrine through several means. By teaching the 'liberal doctrine', A is exposing B's adherents to a relatively more liberal interpretation of religious doctrine and at the same time exposing the non-believers to this same liberal interpretation which by nature of the religious spectrum, is not very different from their original preferences. The main difference is that the exposure is having distinct effects on both targeted groups.

Proposition 4: *In a society that includes non-believers, the award of a government grant to the 'less strict' (liberal) denomination will induce it to attract the members of the*

[46] This is the case if: $-\lambda_A + \lambda_A^2 / t < -\lambda_A / 2$. This holds for $\lambda_A < t/2$.

'stricter' (conservative) denomination and also non-believers. The liberal denomination will seek to lower the religiosity or strictness level of the rival denomination's adherents, and also increase the religiosity of the non-believers. As a result, there are more liberal than conservative believers in the population.

Proof: (See figure 2.5).

As shown in figure 2.5, the non-believers who joined A meant that A has more adherents then B. Even with the strategic response by B, it could *not* account for the fact that A is also targeting non-believers who are located at the far left end of the spectrum where B has little or no power.

Let the grant be given to B. In this case, B would surely seek to influence A's adherents to induce them to be more conservative. However, can B induce non-believers to be *conservative*?

It is clear from observing the spectrum that if B attempts to increase the religiosity of the non-believers, this would mean that they move to the right and join A.

Proposition 4': *If B (conservative) is awarded the funds, any proselytizing that also targets non-believers will result in an increase in the number of liberal adherents in the population. In other words, the population becomes more liberal. Therefore, targeting non-believers may benefit A (liberal) instead.*

Implication: This result implies that if conservative denominations and charities become interested in the size of their adherent population relative to that of the rival denomination, then they may seek to *discriminate* against non-believers in the provision of the social service. This is also the case if both denominations care about the religious orientation (conservative or liberal) of the total population of believers.

Since the proselytizing is a necessary by-product of the social service provision, then any service provided to non-believers will also mean that their religous preferences are altered so that they are more religious and eventually become liberal. This implies that the conservative charity is actually performing a favor for the liberal denomination at no cost to the liberal denomination. *Therefore, in the event that the conservative denomination is attentive to its rival's relative stance, the likely response of the conservative denomination would be to restrict the provision of the social service to individuals who are more likely to accept conservative teachings.*

Based on this result, one can conjecture that if part of the objectives of denominations is maximizing adherence or achieving a religious orientation of the population towards its doctrine, *a liberal denomination will not discriminate against any group in the population in the provision of the social service, while a conservative denomination is likely to discriminate against non-believers or any group to the left of the liberal denomination on the religiosity spectrum.*

2.5 Conclusion

In this paper, we have examined the relationship between religious charities and the government sector. In particular, we have sought to investigate the impact of government funding on relgious charities and on religion and believers in the society. In order to do this, we developed an economic rationale for the efficiency advantage of religious charities over non-religious providers of social service. We have shown that religious workers or clergy are willing to offer social services at lower costs than their non-religious counterparts and are thus more cost efficient. This advantage is mainly due to the proselytizing opportunity that the government funds have offered to the charities. By

catering to more social service consumers, the clergy can utilize this opportunity to preach their particular doctrine to more people and thus gain more religious utility.

This unavoidable by-product of the government funds will give denominations an advantage over their rival denominations that didn't receive government funds and this will eventually change the religious balance of power in the society as a whole. But even with equal grants to all denominations, we have shown that the government funds will have the effect of reducing the number of extremists in all denominations and increase the number of moderates. Furthermore, by including non-believers in the model and under certain conditions, we argue that strict denominations may seek to actively discriminate against this group of the population in the provision of the social service.

These results provide important insights into the future of the Faith-Based and Community Initiatives. In its goal to encourage religious agencies in their social service missions, the government should be aware of the implications on religion and believers in society. The government should consider the effect that such programs have on the interaction between denominations and on the ideological character of society. Religious authorities should also consider the effect that these programs may have on their denomination's position in society relative to other denominations. And finally, believers and adherents should be aware of the consequences of such programs on their religious preferences and affiliations.

Chapter 3

Religious and Economic Preferences: An Empirical Analysis of State Tax Rates

3.1 Introduction

Economics of religion is gradually developing to become an important specialty in the field of economics. Economists, political scientists, sociologists and even religious scholars are increasingly aware of the important contributions that this growing specialty can convey to our understanding of human behavior and structure of institutions in society[47]. One area of concern for economists of religion is to thoroughly study all aspects of 'religious markets', where adherents or believers represent the demand side, while religious institutions represent the supply side. The analysis is also extended to study the interaction between players in religious markets and external players, such as political parties, government, secular nonprofits, media, etc. This area of concern is therefore an attempt by economists of religion to study religion using economic theory as a set of analytical tools, and religion as the object of study.

Another agenda for economists of religion, which is to some extent similar to the first, is to reexamine past theoretical and empirical literature with the aim of introducing religion as a key variable in the analysis of economic phenomena. In other words, religion has traditionally been excluded as an explanatory variable in the study of changes in economic conditions over time. Examples of studies that have sought to fill

[47] For a comprehensive review of this literature, see Iannaccone (1998).

this gap in the literature include Heath et al (1995), Lipford and Tollison (2003), Ewing (2000) and Paldam (2001). Heath et al (1995) attempt to study the impact of religion on economic performance. They employ U.S statewide data to study the effect of religion on state per capita income and conclude that fundamentalism has the most significant effect relative to other denominational groups such as non-fundamentalist Protestants, Catholics and Jews. Using cross-state data for the U.S., Lipford and Tollison (2003) study the relationship between religious participation and per capita personal income. By employing a simultaneous equation estimation method, they find that church membership is negatively related to income. On one hand, higher incomes means higher opportunity costs for involvement in religious activities, and on the other hand, higher participation levels in religious activities reduce the effort and willingness to seek material wealth. In studying the effects of specific religious doctrine and cultures, Ewing (2000) examines the effects of Catholic affiliation on the wages and earnings of individuals relative to those of non-Catholic affiliations, using the National Longitudinal Surveys of Youth. The study finds that Catholics receive higher wages than non-Catholics. Ewing (2000) argues that the Catholic religion adds to an individual's human capital over time, and that it sends a signal that such individuals have attractive labor market qualifications such as discipline, honesty, trustworthiness, enthusiasm and low demand for leisure. Paldam (2001) studies the impact of religion on corruption, as the latter is believed to have some significant effect on economic development. Paldam's (2001) findings state that, "two groups of religions decrease corruption – Reform Christianity [Protestants and Anglicans] and Tribal religion – while the others [Catholics, Orthodox and Islam] increase corruption in a similar way". But Paldam (2001) does concede that the Christian

implication of the study should be treated cautiously, since Protestantism emerged as a reaction to the corruption inherent in the Catholic Church at that time, and thus raises the issue of 'reverse causality'.

In recent years, much empirical work has centered on studying the impact of religion on economic development, which Paldam (2001) refers to as the 'Weber link'[48]. These studies include Grier (1997), Barro and McCleary (2003), Guiso et al (2003) and Montalvo and Reynal-Querol (2003). Grier (1997) studies the impact of religion on economic development for the main British, French and Spanish ex-colonies using data over a period of 30 years. Grier's (1997) findings propose that British ex-colonies that are predominantly Protestant perform significantly better, economically, than French and Spanish ex-colonies that are mostly Catholic. Grier (1997) argues that the results do support the Weberian hypothesis that Protestantism exerts a positive influence on economic development, although this is only one of many factors that affect economic performance.

Barro and McCleary (2003) also attempt to fill this gap in the literature by studying the impact of religion on economic growth using a cross-country panel data. Initially, the authors acknowledge the possibility of reverse causality, i.e. how economic development affects religion. The secularization hypothesis, which argues that religiosity levels in societies decrease over time as these societies attain higher levels of economic and technological progress, has acquired a central position in the sociology of religion

[48] Many historians, economists and sociologists have criticized Weber's hypothesis. A notable critic, R.H. Tawney (1926), argued that "the Protestant ethic, with its insistence on hard work, thrift, etc., had contributed to the rise of capitalism, but at the same time Protestantism itself was being influenced by an increasingly capitalistic society." This and other positions argue that Weber's monocausal relationship between religion and economic development is restrictive.

literature over time[49]. Barro and McCleary (2003) argue that this theory has been strongly challenged in recent years by rational choice models that have instead focused on the market forces of demand and supply in religious markets as the key determinants of religious behavior and changes in religion over time[50]. Furthermore, within the rational choice literature, more focus has been directed towards supply-side explanations of religious behavior by analyzing the competition between different players in the religious markets[51]. In order to focus on the effect of religion on economic development, Barro and McCleary (2003) include instrumental variables in their analysis, by initially analyzing the determinants of religiosity levels. Their findings suggest that higher religious beliefs tend to fuel higher economic growth by encouraging growth-augmenting facets of individuals, while higher church attendance levels lower growth as more resources are directed towards religious activities (Barro and McCleary, 2003).

Guiso et al (2003) utilize the World Values Survey to analyze the impact of religion on economic attitudes. Their findings support the view that religion in general has a positive impact on economic growth, with Christianity being more positively linked to factors promoting economic growth, while Islam is negatively linked. Within Christianity, Protestants tend to trust others more than Catholics and are more opposed to cheating on taxes and agreeing to bribes than Catholics. However, Catholics have more favorable

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[49] For detailed discussions about the secularization hypothesis, see Wilson (1966), Berger (1967), Martin (1978) and Chaves (1994).

[50] A more complete elucidation of this new paradigm and its main argument can be sought from Stark and Bainbridge (1987), Finke and Stark (1992, 2000) and Iannaccone (1997, 1998). For a discussion of Adam Smith's impact on the field of economics of religion, see Anderson (1988) and Iannaccone (1991). Also, Smith dedicates Chapter I, Article III of "The Wealth of Nations" to a discussion of the market-like structure and behavior of religious establishments.

[51] For a discussion of the supply-side explanations of religion as a methodological approach, see Finke (1997). For theoretical and empirical applications of this approach, see Iannaccone, Finke and Stark (1997), Anderson *et al* (1992), Davidson and Ekelund (1997) and Ekelund *et al* (1989, 1992, 1996), Iannaccone (1988, 1992), Montgomery (1996) and Zdeski and Zech (1992), and Chapters 1 & 2 of this dissertation.

attitudes towards private ownership and competition than their Protestant counterparts. Even with all these empirical observations, the authors admit that further research is needed before a statement can be made as to which religious group is more favorable towards economic growth (Guiso et al, 2003). In another study, Montalvo and Reynal-Querol (2003) examine the impact of religious diversity on economic development using religious polarization as a measure of religious diversity and as the key independent variable explaining growth patterns across countries. Their findings suggests that higher religious polarization, which implies more potential for religious conflict, has a negative impact on factors that promote economic growth, such as investment, education and working-age population growth (Montalvo and Reynal-Querol, 2003).

In a similar approach to the above studies, this paper attempts to fill another gap in the literature where religion has been ignored as a factor in the analysis. In particular, we aim to study the impact of religion on government behavior. The paper seeks to reconsider the question of what affects a government's decision to alter taxes by including in the analysis the role that religion plays. Another equally important objective of this study is to empirically assess the propositions projected by the 'Culture Wars' thesis and their political and social implications. Are the government's revenue and expenditure decisions responsive to the religious preferences and affiliations of believers in society? Does the government, in the process of formulating its fiscal plans, take into consideration the demands and prescriptions of religious institutions and religious doctrine? Are the choices of political leaders and parties influenced by the religious inclinations of their constituencies? These are the questions that this paper will attempt to answer, in order to empirically evaluate the arguments proposed by the 'Culture Wars'

thesis and to increase our understanding of the interconnectedness between religious, political and economic preferences, while at the same time aiming to include religion as a possible key factor explaining economic changes in society.

The main question therefore that will be investigated in this paper is whether changes in the religiosity levels of US states affect state tax rates over time. Our paper does not report any significant relationship between government tax rates and the religiosity of the population. However, the results do not reject our hypothesis, but only fail to support it. As such, we attempt to explain the reason for our findings and suggest possible future methods to reexamine the issue and extend the analysis further.

The next section will discuss in detail some of the arguments in the literature that shed light on the 'Culture Wars' thesis, and we will develop a theoretical model that explains this thesis and that will serve as our foundation for the empirical work to follow. In the third section, we present our empirical model, explain the data and methodology used, and discuss the results. We conclude in the last section.

3.2 Religious and Economic Preferences

The aim of this paper is to empirically test the argument that religious preferences and affiliations of individuals in a society affect, directly or indirectly, the decisions of governments regarding public revenue and expenditure. In particular, we aim to test the hypothesis that the religiosity of an individual is inversely related to the amount of taxes he or she is willing to pay to the government. This also extends to the hypothesis that the religiosity of an individual is inversely related to his/her preference on the size of government, measured by government expenditures. In general terms, the analysis is essentially Weberian, in that we are interested in how religious preferences, derived from

religious doctrine and culture, influences the economic and political preferences of individuals and hence, society as a whole. Our analysis will be in the context of the U.S. religious and political framework. It then follows that we are interested in explaining the nature of what has been in recent decades called, 'culture wars'. This refers to the polarization that is now evident in the religious and political maps of the U.S. between the conservative and liberal sides. It has become a common feature of religious and political discourse in the U.S. to employ the conservative-liberal dichotomy in analyzing most religious, economic and political phenomena. Almost any issue, whether economic, political, social or moral will be explained in terms of opposing conservative and liberal views. As such, all issues have to go through this polarization process that reduces complex tastes and preferences into a one-dimensional spectrum extending from most liberal to most conservative.

Two prominent sociologists of religion, Wuthnow (1988) and Hunter (1991), hold the position that religious preferences affect the views of believers and denominations on economic issues. Davis and Robinson (1996), (who object to the conclusions of Wuthnow (1988) and Hunter (1991)), argue that, "according to Wuthnow (pp. 132, 219-23, 239), religious liberals take politically liberal positions on a wide variety of contemporary issues, including economic justice, while religious conservatives take politically conservative stances".

They state that,

> Wuthnow (1988, p.114) sees religiously conservative "special purpose groups" such as the Moral Majority and the Christian Coalition as having arisen to combat the growing role of government in guaranteeing equal rights for women and minority groups and in providing welfare and other forms of assistance to the poor. Wuthnow (p. 248) notes that religiously conservative leaders, such as evangelical economist George Gilder, Moral Majority founder

> Jerry Falwell, and Christian Coalition founder Pat Robertson, have voiced strong opposition to redistributional efforts by the government. Through analysis of a sample of Americans interviewed in 1984, Wuthnow (pp. 219-23) finds that religious conservatives are more opposed than religious liberals to government spending on social programs. (Davis and Robinson, 1996)

Hunter (1991, pp.111) argues that the notion of freedom among orthodox believers also refers to freedom in "economic self-determinations" and as a result, these believers are proponents of "'free' enterprise". He argues that evangelicals "trace the [above] relationship to the Old Testament land laws that linked private property to the freedom from state coercion, especially from taxation". (Hunter 1991, pp.111)

Hunter (1991, pp.96-97) observes in a 1987 study of denominational leaders that orthodox religious leaders prefer economic growth as a way of reducing poverty and also tend to reject using redistribution of wealth to solve the problem.

As such, Wuthnow and Hunter are of the view that religious preferences affect the economic preferences of believers and religious authorities. The explanations presented for this pattern are similar, although distinct to some extent. Wuthnow and Hunter explain these attitudes as a result of particular religious doctrines held by the different denomination members. Hunter (1991, pp.49) argues that, "the culture war emerges over fundamentally different conceptions of moral authority, over different ideas and beliefs about truth, the good, obligation to one another". Thus, they explain this behavior in a Weberian framework.

However, one must note that this view is not shared by all sociologists of religion, as some have arrived at results that contradict the 'culture wars' thesis, or at least fail to affirm that it exists. Davis and Robinson (1996), in a statistical survey, show that orthodox adherents do not necessarily hold conservative economic viewpoints. They state

that, "the orthodox ... are more liberal on issues of economic inequality" (Davis and Robinson, 1996). But the reason for this observation according to them, is "[that] the tendency of the religiously orthodox to draw adherents from disadvantaged groups makes them more liberal on economic issues" (Davis and Robinson, 1996). However, Davis and Robinson (1996) do find that orthodox adherents believe that government welfare spending is too high. As such, their results don't support their hypothesis fully.

We attempt to explain this polarization in religious and economic preferences and its manifestation in society. Specifically, we are interested in why individuals with relatively low levels of religiosity (namely liberal) prefer higher levels of government taxes and higher government spending, while those with higher levels of religiosity (namely conservative) prefer lower government taxes and spending[52].

It is clearly (and logically) evident that the 'culture wars' phenomenon also extends to the political sphere. People's religious preferences influence their economic preferences, which in turn will impact their political choices and affiliations. In his study of religion and politics in the U.S, Layman (1997) states that, " there is already a good deal of evidence that political activists and voters with orthodox beliefs and affiliations tend to support the Republican Party while the Democratic Party draws its activists and voters disproportionately from the ranks of religious liberals and secularists (Green, Guth, and Fraser 1991; Green et al. 1996; Guth and Green 1986, 1987; Kellstedt, Smidt, and Kellstedt 1991; Miller and Wattenberg 1984; Rozell and Wilcox 1995; Wilcox 1992)". Laymen (1997) states that, "as the cultural tensions ['wars'] between America's religious

[52] In Chapter 1, we argued that conservative opposition to government spending is not a reflection of opposition towards welfare programs. What it signifies is a preference for *religious* provision of such services using religious donations, rather than a *secular* (government) provision using tax revenues.

and secular populations grow, the political impact of religious commitment also should grow, with strongly committed individuals becoming more Republican relative to their less religious counterparts". Furthermore, Layman (1997) states, "highly religious individuals have consistently been more likely than their religious counterparts to identify with the GOP ..." As such, the polarization extends to the political sphere with Republicans being generally labeled as conservatives and Democrats generally labeled as liberal.

Our aim is therefore to explain these patterns that we observe in society in order to gain some insight into the effect that religion has on the economic and political aspects of society. To achieve this, we will develop a theoretical model that utilizes economic theory and rational choice assumptions. Then, we will aim to test the propositions of our model using state-level panel data for the U.S.

In addition to our discussion about the arguments of the 'culture wars' thesis and its political inferences, it is important that we also examine what has been said on the economics of taxation and how states decide tax changes, so that we can better understand the contribution of our theory, and the usefulness of including religion in the analysis of tax changes. In a paper titled, "When Do States Legislate Tax Changes?" David Merriman surveys the theories that have been proposed to explain the positive and normative aspects of state tax policy. Merriman discusses five main classes of theories offered in the literature to explain the determinants of tax policy changes over time. The first type is illustrated by Rosen (1988) where Ramsey rules are proposed as the optimal tax policy, by setting tax rates according to the inverse elasticity rule. Other theories have explained tax changes as being responsive to business cycles (See Kee and Shannon

1982, Vogel and Trost, 1979). Political equilibrium theories have also been put forward to explain tax policies that argue that political parties in power affect the tax legislation that passes (See Hettich and Winer, 1988). Another position has been the view that tax policies in one state affect policies in neighboring states. This has been termed 'yardstick competition'. See (Case 1993, Besley and Case, 1995 and Wilson 1986, 1999). Finally, a public choice view argues that complex tax structures and tax bases may induce more taxes in the future (Holcombe, 1998). It is apparent from this survey of the state tax literature that the analysis so far has neglected the relevance of religion and religious institutions in society, and their impact on the decisions of governments regarding taxation and expenditure. This paper will attempt to study the function that religion plays in the complex decision-making processes that eventually lead to tax changes over time.

3.3 Theoretical Model

In this model, we use a structure that is characteristic of contemporary politics and religion. The political structure is one of political parties competing against each other in an election. The 'secular' parties are at some stage declaring their platform or positions on the various issues that interest the voters. The voters respond to this political competition by voting for their preferred candidate. Thus, this structure may not be applicable to many periods in history, where the forms of political activity differ substantially. Also, we construct the religious world as one where denominations take the religious preferences of all the individuals in the society as given and according to some specified objective, locate optimally on that spectrum of religious preferences.

A unique feature of the model is the timeline of events it presents. In the pre-game stage, the preferences of individuals are given. Denominations or parties cannot influence

these. In the game's stages, we model the denominations as the first players. Their decisions precede those of the parties. We believe that this formulation is both realistic and insightful. To a great extent, religion arrives at home earlier than politics. Young individuals are exposed to religion at an earlier stage in their life than they are to politics. Religion arrives via the parents, relatives, and friends and more importantly for us, the *church*. Smith et al (1998) explain the influence of parents on their children in the area of religion as an "investment in a child's religious human capital". They argue that this investment by parents serves as the driving force for continuing interest in religion in the later stages of a child's life (Smith et al 1998). As such, our structure assumes that the religious institution in general influences individuals before they become exposed to the world of politics. Religious institutions fuel this perpetuating influence over generations of new children through their impact on parents, who represent the main vehicles of religious learning and investment.

With their own preferences given beforehand, the denominations compete and attract adherents and then impose conformity to a standard that they choose. These standards that represent the teachings of the denomination, will direct the political and economic decisions of the adherents. In other words, the religious teachings will lead to political and economic orientations. This assumption that religious doctrine directs political-economic perspectives and actions is the crucial concept that underlines the model in general. In more concrete terms, the model presents a structure where political and economic decisions are endogenized and this endogeneity is due to religious doctrine.

The model is thus presenting religion as a central force in the lives of individuals, both on the private and public levels[53]. The utility function used is described as follows:

The Utility Function

The first part of this utility function represents the *religious utility* while the second part represents the *politico-economic utility*.

i) *Religious Utility*

The religious utility is given by:

$$\beta\{R - s(x_j - a_i)^2\}$$

In the function above, R is the religious 'club' good that is exogenously provided. β represents the weight placed on religion in the population in general. It is the same for all individuals[54]. We can regard it as an indicator of the 'power' of religious institutions or religion in the society, as evidenced by its effect on the utility function of all individuals. This power may represent the prominence of religious institutions or their history. This parameter is not related to the individual-specific preference on 'religious investment'. The variable a_i represents the ideal position of individual i on 'religious investment'[55] and x_j corresponds to the level of religious investment chosen by denomination j in stage 2. We denote the transportation cost incurred by individuals as a result of their obligation

[53] We should note that the model does not adopt a strict monocausal relationship between religious and economic preferences. Both religious and economic preferences affect each other as explained on pp. 54-55.

[54] We can have β vary by individual, although this will not affect the results of the model. However, a value of 0 may indicate no preference for religious utility which may indicate that the individual is an atheist or an agnostic. This could be a way of structuring the preferences of these groups in the population.

[55] In practice, a_i will usually have a range of small values such as [0, 0.2], since contributions to denominations do not constitute high percentages of individuals' incomes. Similarly is the case for the tax rate. Private consumption is usually the largest component of income spending. The nature of the model and its primary interest in the religious and political components makes them seem to command very big portions of income.

to conform to the teachings or rules of the denomination, by s. It is the 'price' of sacrifice. This value is the same for all individuals in the society.

From the form of this utility, we observe that the individual derives utility from his/her input into the religious good production as given by $\{- s(x_j - a_i)^2\}$[56]. The individual loses utility as a result of conformism to the denomination's rules, but also gets utility from giving his/her preferred investment level. As such, the total effect from this is given in the quadratic form $\{- s(x_j - a_i)^2\}$.

ii) *Politico-economic Utility*

$$(1-\beta)\{ U_{ijk}(Z, c_i) + v_{ik}\}$$

In the politico-economic utility above, Z is the public good produced by the party that assumes office after the elections. $(1-\beta)$ this refers to the weight that society places on political and economic issues in general. Also, it may refer to the 'power' of these political and economic institutions in the society. c_i denotes the private consumption of individual i after investing in religion and paying taxes. Whatever is left after religious investment and government taxes is used for private consumption. Also, v_{ik} is the fixed position of individual i towards party k. This position is independent of the tax rate or the religious preference. It refers to the bias of individual i towards party k regardless of the positions of party k in the elections, thus the term 'fixed'. This variable could be positive as well as negative. A positive v_{ik} means that the individual has a positive bias towards party k.

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[56] This is reasonable because in the religious domain, individuals feel spiritually satisfied by the act of *giving* to the denomination as well as *receiving* from it.

Hence, $U_{ijk}(Z, c_i)$ represents the politico-economic utility of individual *i*. The individual derives utility from the public good provided by the government (winning party) and from private consumption. This function is maximized in the transition stage.

The composite utility function is therefore:

$$U_{ij} = \beta\{R - s(x_j - a_i)^2\} + (1-\beta)\{ U_{ijk}(Z, c_i) + v_{ik}\}$$

We now examine the workings of the model given our assumptions and objective function.

The Voting Stage

In this stage, voters will decide which parties to vote for, based on utility considerations, after the parties have announced their platforms on the tax rate issue. Each voter in this stage already belongs to a particular denomination.

Political Competition Stage

***Politico-economic equilibrium*:** In this stage, both parties will converge to the same position in equilibrium[57]. This should be expected since all the parties care about is winning. The equilibrium tax rate will depend on the *average* of the optimal positions on 'religious investment' chosen by the denominations. Also, it will depend on the share of the adherent population that each denomination holds. Given this equilibrium result, we now turn to the preceding stages to derive the strategic decisions made there.

The Transition Stage

We have seen that in this stage, believers take their denomination's policy as given and derive their optimal tax rate. Their optimal or preferred tax rates are influenced primarily by the denomination's positions on the 'religious investment' issue. This is the tax rate

[57] For detailed derivations, see Chapter 1, pp 23.

that they would prefer to see implemented and it is driven by their religious convictions. This will form the main idea of the model and we will elaborate on it in more detail in working out the details of the *religious competition* stage.

As we stated previously, individuals maximize their politico-economic utility, given that they now belong to a particular denomination. In general, each individual solves the following problem:-

$$\underset{\{T_i\}}{Max}\ U_{ijk}(Z_i, c_i) \quad s.t \quad Y-x_j-T_i = c_i\ ,\ Z_i = T_iN$$

where T_i*: tax rate.*
N*: population.*
Y*: income.*

We are assuming income to be homogenous across the population.

Substituting in the constraints, we have :

$$\underset{\{T_i\}}{Max}\ U_{ijk}(T_iN,\ Y-x_j-T_i)$$

$$F.O.C:-\ (dU_{ijk}/dZ_i)(dZ_i/d\,T_i) + (dU_{ijk}/dc_i)(dc_i/d\,T_i)=0$$

We can then derive the optimal tax rate for *i*, (T_i^*) from the above result.

<u>*Example*</u>: Let us consider the following utility function for simplicity and in order to get results that can be readily interpreted.

$$U_{ijk}(Z, c) = b\ln Z + (1-b)\ln c_i$$

$$U_{ijk}(Z, c) = b\ln(T_iN) + (1-b)\ln(Y-x_j-T_i)$$

$$F.O.C:-\ \ b/T_i + (1-b)/(Y-x_j-T_i).-1 = 0$$

$$T_i^* = b(Y-x_j) \qquad (2)$$

It is evident that the preferred tax rate, T_i^* ***, is inversely related to the individual's religiosity level,*** x_j **.**

The Religious Competition Stage

As previously stated, the denominations act as benevolent players who sincerely seek to maximize the sum of the 'religious welfare' of their adherents. They also compete in a Nash environment. Each denomination chooses the best response strategy to its competitor[58].

***Religious Equilibrium*:** Both denominations will locate *equidistant* from the end points[59]. The denomination locating on the left will be labeled the *liberal* denomination while that on the right labeled the *conservative* denomination. This differentiation is partly caused by the benevolent or democratic nature of the denomination's objectives[60].

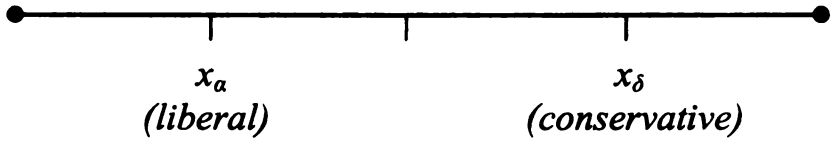

Figure 3.1: Religious Equilibrium

Proposition:

In equilibrium, the liberal denomination will induce its members to favor a high tax rate while the conservative denomination will induce its members to favor a low tax rate[61].

Corollary:

Liberal denominations favor more government spending than conservative denominations[62]*. Thus, we can reasonably say that liberal denominations favor 'bigger' governments and conservative denominations favor 'smaller' governments*[63].

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[58] This methodology is similar to the application of Hotelling's Model by Barros and Garoupa (2002).
[59] For detailed derivations, see Chapter 1, pp 25.
[60] The denominations act as sincere social planners, thus we arrive at the optimal location equilibrium.
[61] For proof, see Chapter 1, pp 27.

This corollary is insightful, since in real politics, we observe that liberal denominations are more closely affiliated with the Democratic Party and are thus proponents of 'bigger' governments, while the conservative denominations are more closely affiliated with the Republican Party and are thus proponents of 'smaller' governments.

Based on this theoretical framework, we will proceed to explain the empirical model that will be used to test the model's propositions.

3.4 Empirical Model and Results

The main result derived from our model is that individuals with high religiosity levels will prefer to pay less taxes to the government, while those with low religiosity levels will be in favor of (or at least not opposed to) higher taxes. The reasoning behind the hypothesis is that individuals with stricter religiosity levels will tend to give a larger percentage of their income to religious causes, and as a result and due to the fact that they are faced with a budget constraint, are willing to give less to the government in the form of taxes. This result assumes that all individuals in the population have equal income levels. By controlling for income differences, we can then observe the direct link between religious and economic preferences, which is our main question in this study. In other words, do conservative adherents strictly prefer lower taxes, regardless of whether they are poor or rich? The extension that we derived from this result is that conservative believers will desire 'smaller' governments, while liberal believers will favor 'bigger' governments, given that income is homogenous across the population. We will test the

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[62] We reiterate that this does *not* mean that conservative believers are opposed to welfare programs. They are specifically opposed to *government* provision of these services using tax revenue. This means they prefer that such spending be done by their religious institutions using religious donations of adherents.

[63] For proof, see Chapter 1, pp 29.

model's hypotheses using U.S. state level panel data from 1971, 1980, 1990 and 2000.

Therefore, in the context of our data, our objective is to test whether changes in state tax rates over time is influenced by a state's religious composition. In other words, does an increase in the proportion of a state's population that is religiously conservative lead to a decrease in the state's tax rates over time?

In the context of our model, believers' economic preferences (derived from their religious preferences) will have an effect on a state's tax policy if their preferences are sincerely represented by the religious institutions or denominations that they subscribe to, and by the political party that they vote for. This means that in order for the believers' preferences to be influential, their religious preferences should first be optimally mapped or translated into economic preferences by their denominations. If this mapping is fulfilled, these economic preferences will then lead to their corresponding political outcomes, provided that the political parties adhere to their promises highlighted in their policy platforms during election campaigns.

For the measure of the religiosity of a state's population or the composition of its population that is conservative, we will use state-level data on church membership for the years 1971, 1980, 1990 and 2000 for all fifty states[64]. In particular, we will use the percentage of the state's population that belongs to conservative denominations as our measure of religiosity. In order to gain more insight into the question that our paper is addressing, we will also use another measure of religiosity, given by state-level data on contributions to religious charities and organizations. The two measures of religious

[64] Data on church membership are taken from Johnson et al. (1974) for 1971, Quinn et al. (1982) for 1980, Bradley et al. (1992) for 1990, and Jones et al. (2002) for 2000. These surveys were conducted by the Glenmary Research Center. The data collection methods are uniform across all four surveys.

contributions that we will use are the percentage of state households who contributed to religious causes, and the average per household religious contribution in a state.

Our measure of the conservative composition of a state's population will have to be based on some given classification of which denominations are conservative, and which are not. This classification should itself be based on a careful and comprehensive study of the beliefs structure of the various denominations and their positions on many social, economic, moral and political issues. The resulting outcome would be a classification mechanism by which we can categorize denominations on some given dimension. For our analysis, a classification based on religiosity or conservatism would be the most appropriate. Steensland et al (2000) state that, "the most widely used denominational classification scheme in survey research [is] (T.W.Smith1990)".

According to T.W. Smith (1990), researchers in the field of religion have found that the most appropriate categorization method for denominations is one that classified denominations along a spectrum from most conservative (fundamentalist, orthodox or Evangelical) to most liberal (secular, modern or humanistic)[65].

Due to the limitations of the data on church membership, we are initially using data on eight denominations as the measure of the conservative composition of a state's

[65] However, Steensland et al (2000) argue that, "T.W. Smith (1990) does not adequately capture essential historical differences between American religious traditions and offers no way of measuring some recent trends in religious affiliation". They therefore develop a different classification system that registers mainline Protestants, evangelical Protestants, black Protestants, Roman Catholic, Jewish and others (e.g. Mormon, Muslim, etc.) as separate denominational classifications. In our analysis, we have classified denominations according to the schemes discussed in Smith (1990) and used by many other studies. As evident from the Steensland et al (2000) classification above, their approach does not allow us to classify denominations according to religiosity, and thus would make it practically difficult to find a measure of the religiosity or strictness of a state's population, which is necessary for our study.

population[66]. The percentage of the total population that belong to these denominations will serve as our measure of the conservative composition, and hence religiosity, of a state's population[67]. We will later include the Catholic Church in this measure and observe the effect this has on the results. Although the small number of denominations may seem to limit the scope of our analysis, it is important to note that, within the survey's data, the conservative denominations used in this analysis comprise a substantial percentage of the total *adherent* population in the nation as a whole[68]. These eight denominations represent the prominent conservative denominations in the US. See table 3.1 for the percentage of the adherent population that belongs to these eight denominations[69].

Table 3.2 comprises the eight conservative denominations, *in addition to the Catholic Church*[70].

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[66] These are the only conservative denominations that had complete data for all four years and all fifty states.

[67] The eight denominations are as follows: Church of God (Anderson, Indiana), Church of God (Cleveland, Tennessee), The Church of Jesus Christ of Latter-day Saints, Church of the Nazarene, Lutheran Church-Missouri Synod, The Salvation Army, Seventh-day Adventist Church and the Southern Baptist Convention.

[68] Heath et al (1995) limit their analysis to denominations with 100,000 or more adherents, as the inclusion of the smaller denominations will have little or no effect on the final results.

[69] The adherent population refers to only the denominations included in the surveys. The study does not include all denominations in the nation.

[70] Black churches have generally been hugely underrepresented in the survey data. The slight exception is the 1980 survey where four denominations were included (African Methodist Episcopal Zion, Bible Church of Christ, Christian Methodist Episcopal Church and Fire Baptized Holiness Church) and the 1990 survey that had the same denominations (as 1980) with the exception of the Christian Methodist Episcopal Church. The majority of black churches were not included in the 1971 and 2000 surveys. However, the churches included in 1980 and 1990 constitute a small percentage of total black membership in the U.S. and a very small percentage of total adherents included in the surveys (about 1.6 and 0.8 percent in 1980 and 1990 respectively). Also, the two large denominations included (African Methodist Episcopal Zion and Christian Methodist Episcopal Church) are classified as 'moderate' and 'liberal' respectively by Smith (1990). Furthermore, in similar method to Hull and Bold (1998), we estimate the equation for the subset of the data with proportion of African-Americans less than or equal to 10% of the population. We did not detect any change in the results. It is reasonable therefore to assume that the missing data on black churches will not have a profound impact on our final results, since the measurement error seems to be generally

Year	Percentage of total adherents
1971	21.9
1980	21.8
1990	20.4
2000	21.4

Table 3.1

Year	Percentage of total adherents
1971	66.4
1980	64
1990	59.3
2000	65.3

Table 3.2

From the tables, we can observe that even with our data limitation to eight denominations plus the Catholic Church, these denominations combined still represent a significant percentage of total adherents in the population, especially if we take into consideration that the population also comprises of liberal and moderate denominations that also have significant adherent populations[71]. Furthermore, in order to fully ensure

systematic. We do also include 'black' as a separate explanatory variable to capture the effect that this group of the population has on government policies and decisions.

[71] For instance, in 1971, the percentage of the adherent population that belongs to the *main* liberal and moderate denominations is 20.6 percent. Similar figures for 1980, 1990 and 2000 are 18.4, 14.4 and 12.8 percent respectively. The liberal denominations considered here are: Episcopal Church, Friends (Quakers), Unitarian Universalist Association of Congregations, United Church of Christ and The United Methodist

that this limitation will not affect the reliability of our results, we created alternative measures that include more conservative denominations[72] for the years for which the data is available, and found a very high correlation coefficient between our main measure and these alternative measures[73]. This means that the conservative denominations we are using sufficiently represent the complete set of conservative denominations in all states.

In other words, our measure of the conservative composition of a state's population is a very reliable and representative measure. In addition to this measure, we will later use a broader measure that includes some moderate denominations[74]. These denominations, although classified as generally moderate by Smith (1990), are similar to conservative denominations in many respects. By examining the sources that Smith (1990) relied upon to construct the religious classifications, it becomes clear that different studies classified these denominations differently. For example, Johnson (1962) and Gay (1980) classify Disciples of Christ (Christian Church) as 'fundamentalist', while McCutcheon (1984) classifies it as 'conservative' and Wood (1970), Gill (1982) and Glock and Stark (1965) classify it as 'moderate'. Another example is Church of the Brethren that is classified as 'fundamentalist' by Chi (1982) and Gay (1980), while Gill (1982) classifies it as

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Church. The moderate denominations are: American Baptist Churches in the USA, Christian Church (Disciples of Christ), Christian Reformed Church in America, Church of the Brethren and the Reformed Church in America.

[72] The additional denominations are: Assemblies of God, Baptist General Conference, Baptist Missionary Association of America, The Christian and Missionary Alliance, Churches of Christ, Free Methodist Church of North America, International Church of the Foursquare Gospel, International Pentecostal Holiness Church and the Wisconsin Evangelical Lutheran Synod. The combined eighteen denominations comprise 68.1, 63.3 and 69.7 percent of total adherents in 1980, 1990 and 2000 respectively.

[73] For example, the correlation coefficient between our main measure (8 conservative denominations) and the alternative measure (17 conservative denominations) for the change in church membership from 1980 to 1990 was 0.9757. Thus, our religiosity measure is a very reliable measure of the conservative 'nature' of a state's population.

[74] These are: American Baptist Churches in the USA, Christian Church (Disciples of Christ), Christian Reformed Church in America and Church of the Brethren. All the denominations included in this broad measure constitute 69.6, 67.2, 61.8 and 67.6 percent of total adherents in 1971, 1980, 1990 and 2000 respectively.

'moderate'. It is therefore useful to consider these denominations as conservative as an extension to our analysis, in order to fully assess the impact that conservative adherents and denominations have on government policies.

It is likely that long-standing cross-state differences in both religiosity and tax policy are affected by unobserved state characteristics. As a result, we employ both a first differencing approach and a fixed effect approach to eliminate bias due to unobserved effects in our data. The first-differenced equation will have the following form:

Estimating Equation:

$$\Delta \text{TAX RATE} = \beta_0 + \beta_1 \Delta \text{CONS.C} + \beta_2 \Delta \text{HIGH} + \beta_3 \Delta \text{COLL} + \beta_4 \Delta \text{FEM} + \beta_5 \Delta \text{BLACK} + \beta_6 \Delta \text{HISP} + \beta_7 \Delta \text{UNEM} + \beta_8 \text{D80} + \beta_9 \text{D90} + \Delta e$$

where[75]:

TAX RATE = ratio of total state tax collections to total state personal income[76]

CONS.C = percent of state's population that belongs to the eight conservative denominations and the Catholic Church[77]

HIGH = percent of state population with high school diploma

COLL = percent of state population with college diploma

FEM = percent of state households headed by females

BLACK = percent of state population that is black

HISP = percent of state population that is Hispanic

UNEM = state unemployment rate

D80 = a dummy variable taking the value one if change is from 1970 to 1980, zero otherwise

D90 = a dummy variable taking the value one if change is from 1980 to 1990, zero otherwise

e = random error term, independently and normally distributed

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[75] The data sources are given in Appendix B, pp. 138.

[76] The change is a 10 year range, such as 1970-1980, etc.

[77] We will also consider results when the Catholic denomination is not included in the conservative measure. When separately considered, they are CONS and CATH.

Variable	Mean	S.D	Minimum	Maximum
Year = 1971				
TAX RATE	.0635863	.0129562	.0351111	.1001471
CONS	13.398	13.73258	.6	75.8
CATH	19.67	13.67417	1.4	63.6
HIGH	53.108	8.076998	37.8	67.3
COLL	10.572	2.1517	6.6	14.9
FEM	10.09085	3.106082	6.158948	27.62543
BLACK	8.668	9.236008	.1	36.8
HISP	3.356	5.384147	.2	30.3
UNEM	4.482	1.252864	2.7	9.2
Year = 1980				
TAX RATE	.0641083	.0276795	.0290217	.2396667
CONS	12.676	12.7575	.5	68.5
CATH	19.074	13.73348	1.6	63.7
HIGH	67.338	7.568326	51.9	82.8
COLL	16.072	3.004082	9.7	23
FEM	12.95715	2.510142	7.944283	18.35509
BLACK	9.14	9.221935	.2	35.2
HISP	4.29	6.594749	.4	36.6
UNEM	6.838	1.612311	4	12.4
Year = 1990				
TAX RATE	.0650941	.0143656	.0258696	.1226984
CONS	13.332	13.65942	.6	73
CATH	18.874	13.31946	2.2	63.1
HIGH	75.686	7.109609	45.6	86.6
COLL	19.756	3.746681	12.3	27.2
FEM	14.75217	2.65576	10.23253	20.92812
BLACK	9.534	9.249326	.3	35.6
HISP	5.372	7.519391	.5	38.2
UNEM	5.468	1.152006	2.2	8.4
Year = 2000				
TAX RATE	.0684919	.0125684	.0412652	.0986686
CONS	12.366	12.58314	.9	67.4
CATH	19.61	12.40547	3.2	51.7
HIGH	85.482	3.959782	77.1	91.8
COLL	24.932	4.312319	15.3	34.6
FEM	16.8481	2.966972	12.04819	24.23026
BLACK	9.902	9.580134	.3	36.3
HISP	7.786	8.914721	.7	42.1
UNEM	3.902	.9464197	2.2	6.7

Table 3.3
Summary Statistics

Based on the propositions that were derived from our theoretical model, we predict that a higher concentration of conservative adherents (i.e. a higher religiosity level) in a state will lead to a decrease in the state tax rate over time, all other things being equal. With regards to the Catholic denominations, the signs seem unclear. This is because the Catholic Church tends to be labeled a moderate denomination as in Smith (1990). As such, we will estimate the model both when the Catholic denomination is excluded and included in order to observe the effect it has on the results. The relationship between education (both HIGH and COLL) and tax rates is not clear cut. This is because higher state education levels would increase personal income[78] and at the same time increase state tax revenues. A definite relationship can be suggested if education has a direct or indirect effect on tax policies or tax legislation changes.

The relationship between tax rates and the percentage of families that are female-headed is slightly ambiguous. This is because one would expect that as the percentage of female-headed households increases, the government would attempt to reduce the tax burden on these families since they would be economically disadvantaged relative to the rest of the population. However, according to a study by Kula (2004), changes in state government expenditures on welfare programs (such as Medicaid), had no significant effect on state tax laws over time. In other words, state governments did not alter tax laws in response to changes in their expenditures on welfare programs. This may suggest that an increase in the proportion of female-headed households, which depend to some extent on welfare programs, will not necessarily lead to a change in tax rates over time.

Furthermore, this rejects any positive correlation, as one would have argued that an

[78] Heath et al (1995) also argue that education should be positively related to income since it measures human capital levels in each state.

increase in the percentage of female-headed households would actually raise tax rates in order to finance the welfare programs. The signs on BLACK and HISP can also go either way, due to similar reasoning to the FEM case. In the case of unemployment, Kee and Shannon (1992) show that tax policy is responsive to business cycles, and in particular, that states raise taxes when their unemployment rate increases. However, David Merriman finds no significant correlation between state tax policy changes and unemployment rates. The results of estimating our model by the first-differencing and fixed effects methods are given in tables 3.4 and 3.5 respectively.

3.4a. Church Membership

Table 3.4: Estimation Results using "Church Membership"-First Differencing Approach

Estimation Results-First Differencing Approach- Dependent Variable: DTAX

Variable Name	Excluding Catholic	Including Catholic
DCONS (DCONSC)	0.000	-0.001
	(0.34)	(1.15)
DHIGH	0.000	0.000
	(0.72)	(.73)
DCOLL	0.002	0.002
	(2.20)*	(2.06)*
DFEM	0.001	0.001
	(1.11)	(1.22)
DBLACK	-0.001	-0.001
	(0.49)	(0.48)
DHISP	0.000	0.000
	(0.21)	(0.21)
DUNEM	-0.002	-0.001
	(1.25)	(1.13)
D80	0.001	-0.001
	(0.11)	(0.12)
D90	0.002	0.002
	(0.36)	(0.34)
Constant	-0.016	-0.015
	(1.96)	(1.86)
Observations	150	150
Adjusted R-squared	0.06	0.07

Absolute value of t statistics in parentheses
* Significant at 5%; ** significant at 1%

The second column (in Tables 3.4 and 3.5) contains the results of the regression with Catholics included in the religiosity measure. In both the first-differencing and fixed effects approaches, the coefficients on the conservative measure are statistically insignificant. The signs of the coefficients become negative when the Catholics denomination is included in the religiosity measure. Although in this case the sign is consistent with our hypothesis that tax rates decrease with religiosity, the coefficients are insignificant. This means that, based on the evidence, we cannot reasonably conclude that tax rates decrease as the conservative religious composition of a state increases. The change in the sign of the religiosity coefficient when the Catholic Church was added hints at the possibility that Catholics may be *conservative* on economic issues. The only statistically significant coefficient in our analysis (from the first-differencing approach) is the positive relationship between tax rates and the percentage of the population that has a college diploma. Although insignificant, the sign on the FEM and BLACK variables are positive and negative respectively. The positive relationship implies that as the percentage of female-headed households increases, the government raises taxes to fund more welfare programs. The negative relationship implies that tax rates decrease as the black population in a state increases. The UNEM coefficient's sign is consistent with David Merriman's results of no significant correlation between state tax policy changes and unemployment rates. The sign on the coefficient however rejects the Kee and Shannon (1992) result that states raise taxes when their unemployment rate increases.

The general observation from both regression methods is the absence of any significant relationship between tax rates and the explanatory variables. This would imply that these variables describe very little of the variation in tax rates over time within states.

Table 3.5: Estimation Results using "Church Membership"-Fixed Effects Approach

Estimation Results-Fixed Effects Approach- Dependent Variable: TAX		
Variable Name	Excluding Catholic	Including Catholic
CONS (CONSC)	0.001	-0.000
	(0.82)	(0.33)
HIGH	0.000	0.000
	(0.73)	(0.64)
COLL	0.001	0.001
	(1.29)	(1.29)
FEM	0.001	0.001
	(0.61)	(0.62)
BLACK	-0.001	-0.000
	(0.42)	(0.35)
HISP	0.000	0.000
	(0.66)	(0.38)
UNEM	-0.002	-0.002
	(1.49)	(1.35)
Constant	0.018	0.034
	(0.49)	(0.65)
Observations	200	200
Adjusted R-squared	0.64	0.64

Absolute value of t statistics in parentheses
* Significant at 5%; ** significant at 1%

We also used a broader measure of the conservative nature of a state's population by including 'moderate' denominations in our list of conservative denominations. The results are similar to those in Tables 3.4 and 3.5, with no significant relationship between tax rates and the dependent variables.

In addition, we increased our date range from 10 to 20 years to observe whether any notable relationship exists for specifications with longer time periods. The time intervals are now (1970-1990) and (1980-2000)[79]. The results are similar to the above results with no significant relationship present. This means that even over longer intervals of time, there is no observed effect of religiosity on changes in tax rates.

[79] This gives us 100 observations in a first-differencing approach.

Next we employ a different measure of religiosity, namely religious contributions. This is to provide an alternative measure of religiosity, and also to observe differences in the final results from both analyses.

3.4b. Religious Contributions[80]

Table 3.6: Estimation Results using "Religious Contributions"

Estimation Results-First Differencing Approach-Dependent Variable: DTAX		
Variable Name	Average household religious contribution	% of households contributing (religious)
DAVERC	0.000	
	(1.29)	
DPERRC		0.006
		(0.30)
DHIGH	0.000	0.000
	(0.92)	(0.63)
DCOLL	0.002	0.001
	(0.98)	(0.75)
DFEM	-0.001	-0.001
	(0.14)	(0.19)
DBLACK	0.001	0.001
	(0.31)	(0.51)
DHISP	0.001	0.001
	(0.69)	(0.67)
DUNEM	-0.002	-0.002
	(1.04)	(1.05)
Constant	-0.016	-0.013
	(0.84)	(0.65)
Observations	30	30
Adjusted R-squared	0.22	0.16

Absolute value of t statistics in parentheses
* Significant at 5%; ** significant at 1%

We will use two different measures for religious contributions, the average household contribution by state[81] per year to religious organizations and the percentage of state households contributing to religious causes[82]. The results are given in table 3.6 for the

[80] We are grateful to Tom DeLeire for making this data available to us.

[81] Due to data limitations, we only have data for 30 states.

[82] We are using averages over 1982-85 (to represent the 1990 religiosity measure) and 1995-98 (to represent the 2000 religiosity measure). We are implicitly assuming that the impact of religiosity (measured

first-differencing approach. The first column uses average household religious contribution by state in a year (AVERC) as the religiosity variable while the second column uses the percentage of households in the state that have contributed at all to religious organizations (PERRC) as the religiosity measure.

From the table, it is clear that no significant relationship can be detected between tax rates and religious contributions. Furthermore, the sign on AVERC and PERRC are not negative, which is different from our previous measure of religiosity. However, due to the insignificance of any of the results, we can neither draw definite conclusions nor make reasonable comparisons between the different coefficients that we use as religiosity measures.

To summarize, no significant relationship was observed between tax rates and any of our explanatory variables. In particular, the results of our analysis have provided no significant relationship between tax rates and religiosity levels, measured by percentage membership in conservative denominations and household religious contributions. The results therefore fail to support our main hypothesis that tax rates tend to decrease as the religiosity of a population increases. In other words, from our results, there is no evidence that as the conservative adherents in a population increase, the government would respond by decreasing taxes or enacting new legislation to reduce taxes.

3.5 Conclusion

The theoretical model we developed in this paper aimed to model the relationship between religious and economic preferences. In particular, we constructed a model to

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by religious contributions) on tax rates will occur some years later. Thus, we have two sets of data and variables at the state level.

describe the relationship between the religiosity of an individual and the tax rate he/she prefers. The model proposed that individuals that prefer high levels of religiosity and as such belong to conservative denominations will prefer to give less to the government in the form of taxes. This is because these individuals will instead prefer to give more to religious causes as an expression of their strict commitment to the demanding rules of the doctrine they adopt, and the institution they belong to. This rationale assumes that individuals face a budget constraint that forces them to allocate their income into preferred levels of religious investment (money and time to religious causes) and 'secular' investment (government taxes and private consumption). These religious preferences of individuals will therefore translate into economic and political preferences. Conservative denominations that sincerely represent the interests of their adherents will induce them to support political parties and government policies that advocate lower taxes and government spending.

We then tested these propositions using U.S. state-level data for a period spanning from 1970 to 2000. We used two sets of data as measures of the religiosity of state populations. The first measure was church membership in conservative denominations and the second was religious contributions. The measure of church membership was broadened to include more denominations to ensure that we capture the impact of religiosity levels as best as possible. The empirical results did not include significant relationships to support our hypothesis that tax rates decrease as religiosity levels increase, although we did sometimes obtain coefficient signs that are consistent with our predictions. We also obtained similar results when we increased the date range to monitor changes over longer periods of time. The absence of results to support our hypothesis

suggests the possibility that certain assumptions of our model do not hold in practice.

One such assumption is that religious authorities sincerely represent the preferences of their adherents in the economic and political spheres. It could be that the assumption of the 'benevolence' of religious authorities does not fully reflect the reality of religious institutions in the U.S. and their true objectives. Another assumption is that these religious preferences will eventually map themselves into corresponding political choices on elections day and eventually into government policies that fulfill campaign promises. This is also an overly ambitious assumption, since we do know that politics is a very complex and unpredictable process, and post-election policies do not genuinely reflect pre-election promises. Furthermore, elections and subsequently, government policies depend on many other factors other than religious preferences. Sometimes, other factors may outweigh the impact of religion on the political and economic decisions of the government. Finally, changes in tax legislation and tax policies over time are sometimes very slow and minimal due to the complex nature of tax structures and the many obstacles that stand in the way of such changes.

The paper's findings encourage a deeper examination of the question at hand, and not a conviction that the results are final and conclusive. Further research should attempt to consider different measures of tax policy changes and also an attempt to correct for possible deficiencies in the data. An alternative would be to measure the incidence of tax legislation as a proxy for tax preferences. It should also incorporate political factors and outcomes into the analysis, such as preferences of parties and politicians. Finally, one can also consider the preferences of religious leaders and authorities in order to examine the correlation between their preferences and those of their respective congregations.

CONCLUSION

The three essays in this dissertation have attempted to study different aspects of the relationship between religion, economics and politics, using neoclassical economic theory as our analytical apparatus. In addition, we incorporated into our models concepts and theories from political science, religion and sociology. The use of these concepts and modeling techniques has proved to be both useful and informative.

In formal modeling, a significant portion of the overall picture is lost when a one-dimensional or reductionistic approach is employed. This is naturally due to the overly restrictive perspective the assumptions impose on the model, and this extends to a corresponding restriction on the potential descriptiveness of the results and propositions. Despite these reservations, economic theory has much to offer in terms of specificity, exactness and insights.

Economics models allow us to zoom in on the *specific* object of inquiry that is of interest. This is evident in our essays, since we were capable of focusing on questions of interest, such as the impact of religiosity on preferences for taxes and government spending. Similarly, we studied the impact of government funding of religious charities on religiosity levels in the population and how this affects the competition between religious denominations. In addition, this specificity allows us to derive *exact* propositions regarding the relationship between different institutions in society. This helps us in overcoming the real complexities that so often prevent us from arriving at practical and comprehensible *insights*. By addressing such a complex system as the interaction of religion, economics and politics, the models presented us with useful insights and important policy implications for the present and the future. In light of the

above, we strongly believe that the models and results of the three essays have much to offer.

The main contribution of the first essay is its effort to explain the behavior of political parties and religious denominations explicitly. As evident in the review of literature on the economics of religion, the behaviors of parties and denominations have not been jointly studied in a framework that explains both their *independence* and their *interdependence*. The model explains the behavior of religious denominations in the religious domain and the behavior of political parties in the political-economic domain. The model offers an economic perspective for the 'Culture Wars' thesis that we observe in society. As such, this is the first effort to formally model this real world phenomenon.

The second essay also presents the first formal examination of the relationship between the government and religious charities. The model studies the impact of government funding on religious charities and religion in general. We develop an original model to describe the provision of a social service by religious clergy. Using the concept of compensating wage differentials, since the clergy derive additional utility from proselytizing their particular doctrine, they are thus willing to demand a lower supply price for their labor. The model derives important policy implications for present and future government faith-initiatives.

In the third essay, we empirically test the hypothesis that higher levels of religiosity in states will lead to lower tax rates over time. The insignificance of the results gives a possible indication that some assumptions do not hold in practice. As such, this encourages an extended study of the hypothesis, by investigating the empirical reliability of the model's assumptions and any alternative formulation that may prove more useful.

APPENDICES

APPENDIX A: **Religiosity**

In this appendix, we discuss the issue of *religiosity* in more detail. The question as to whether 'religious investment' can be used to represent religiosity is one of potential controversy. This is so because it introduces the problems associated with 'free-riding'. There is a tendency for consumers of religious goods to free ride. This is due to the fact that religious goods produce an externality effect that is unaccounted for by the religious market. Iannaccone (1994) argues that the collective nature of religious consumption induces some members or adherents of a denomination to contribute less than others. The 'club good' effect yields contribution levels that are disproportionate to the individual consumption levels. Ianaccone (1994) states that "people with low levels of religious commitment tend to free ride off those with higher levels; they tend to take more than they give." If this is the case, the problem arises as to whether one can use 'religious investment' as a proxy for 'religiosity". Iannaccone (1994) states that "the aspects of religious participation that confer the greatest external benefits (effort, enthusiasm, solidarity, etc.) are intrinsically difficult to monitor and reward. The willingness to pay membership dues is a poor proxy for these qualities because income correlates weakly with most dimensions of religious commitment..."

Zaleski and Zech (1995) acknowledge that, "economists are aware that people's willingness to pay for a product, even through voluntary contributions, measures their satisfaction with that product. Analyzing contributions can offer sóme valuable insights into the effect of competition in the religious market place."

However, they argue that, "to the extent that churches are populated by free riders, the use of contributions as a measure of religiosity might be misleading." (Zaleski and Zech (1995)

These perspectives thus question the modeling of religiosity as a function of voluntary contributions and attendance. The arguments we present in response to these concerns are as follows:

The problem that the correlation between income and "religious commitment" can pose is not present in the framework of our model, because we are assuming that all individuals have the same income level regardless of their actual beliefs and preferences.

Also, the model is assuming *honesty* and *consistency* on the part of religious consumers. The willingness to contribute to charity or attend sermons is a sincere representation of an individual's demand for religion. This means that free riding may be characterized as a 'sinful' act. One may also argue that it is an act of selfishness and therefore, counter-religious. The issue of free riding is essentially distinguishing theory from practice, and preferences correspond to theory and not practice. If in practice, individuals do free ride, then that can be modeled as an extension to the model in the form of uncertainty, where religious investment follows some specified probability distribution. Then, we can distinguish between ideal preferences and actual deeds.

In most religious traditions, voluntary contributions and attendance at sermons is an integral part of the doctrine. To give charity is thus a religious obligation. And the amount one prefers to give represents his/her commitment to these religious obligations, assuming income is the same for all. Given the above, we argue that our use of 'religious investment' as a proxy for religiosity is both reasonable and informative.

APPENDIX B: **Data Sources**

Church Membership[1]:

1971: Churches and Church Membership in the United States 1971, Table 2, pp. 3-14.
1980: Churches and Church Membership in the United States 1980, Table 3, pp. 10-27.
1990: Churches and Church Membership in the United States 1990, Table 3, pp. 12-36.
2000: Churches and Church Membership in the United States 2000, Table 3, pp. 14-42.

State Tax Collections:

1970: Statistical Abstract of the United States, 1971, Table 629, p.412.
1980: Statistical Abstract of the United States, 1981, Table 490, p.293.
1990: Statistical Abstract of the United States, 1992, Table 463, p.290.
2000: Statistical Abstract of the United States, 2002, Table 429, p.282.

Personal Income:

1970: Statistical Abstract of the United States, 1972, Table 519, p.319.
1980: Statistical Abstract of the United States, 2002, Table 642, p.425.
1990: Statistical Abstract of the United States, 2002, Table 642, p.425.
2000: Statistical Abstract of the United States, 2002, Table 642, p.425.

Percent of state population with high school diploma:

1970: Statistical Abstract of the United States, 1977, Table 223, p.139.
1980: Statistical Abstract of the United States, 1981, Table 227, p.144.
1990: Statistical Abstract of the United States, 2001, Table 219, p.141.
2000: Statistical Abstract of the United States, 2001, Table 219, p.141.

Percent of state population with college diploma:

1970: Statistical Abstract of the United States, 1977, Table 223, p.139.
1980: Statistical Abstract of the United States, 1981, Table 227, p.144.
1990: Statistical Abstract of the United States, 2001, Table 219, p.141.
2000: Statistical Abstract of the United States, 2001, Table 219, p.141.

Percent of state households headed by females:

1970, 1980 and 1990: State Statistical Abstracts[2].
2000: Statistical Abstract of the United States, 2001, Table 56, p.50.

Percent of state population that is black:

1970: U.S Census Bureau, 2002, Table A-7.
1980: U.S Census Bureau, 2002, Table A-3.
1990: U.S Census Bureau, 2002, Table A-1.
2000: Statistical Abstract of the United States, 2001, Table 24, P.27.

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[1] Glenmary Research Center.
[2] These percentages were manually computed from each state's individual Census Population Survey.

Percent of state population that is Hispanic:
1970: U.S Census Bureau, 2002, Table A-7.
1980: U.S Census Bureau, 2002, Table A-3.
1990: U.S Census Bureau, 2002, Table A-1.
2000: Statistical Abstract of the United States, 2001, Table 23, P.25.

State unemployment rate:
1970: Census Population Survey, 1970.
1980, 1990 and 2000: Bureau of Labor Statistics: Local Area Unemployment Statistics, 2004.

Religious Contributions:
Tom DeLeire, personal communication.

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