# Preferences Over the Size of the Welfare State, Religiosity and Church Participation

*Federico Masera*[*]

**Abstract**

Religious organization and the welfare state often provide goods and services that answer to similar needs. I study the effects of this competition by developing a model where agents vote on the size of the welfare state and decide whether or not to participate to church. I then analyze how the size of the welfare state influences church participation and how religiosity affects preferences over the size of the welfare state. In the static model agents exogenously differ in their level of religiosity, that measures the intrinsic value they attach to participating to church. Additionally, social services provided by the church tend to cater church-goers. In equilibrium I find that participation to church is negatively affected by the size of the welfare state. Interestingly, secular individuals are the ones that react more to these changes. Looking at the voting behavior, as religious individuals participate more often to church they will prefer lower levels of the welfare state. Finally, a dynamic model is introduced where individual religiosity is made endogenous by linking it to participation decisions and religiosity of the parent. This model predicts that an increase in the efficiency of the welfare state is the main driver behind the secularization of a society. I then use international survey data on religiousness and preferences over the size of the welfare state to validate my model. I show how comparative statics on the determinants of church participation and preferences over the size of the welfare state are in line with many empirical regularities.

# 1 Introduction

The welfare state provides goods and services in order to support individuals and families in times of hardship. Religious organizations are often providers of good and services that are similar in nature. These goods and services include the provision food and clothes to the poor, visiting sick patients at the hospital, offering job training, etc. In this paper I study, first theoretically and then empirically, how this situation creates a competition between these two organizations and what are the effects of it. First, I investigate how the size of the welfare state influences church participation. Second, I explore how religiosity influences preferences over the size welfare state. This paper then explores how these results change with some country characteristics - namely, type of religion, share of religious individuals and the government effectiveness in providing goods and services. Finally, I make individual religiosity endogenous and study what are the deep-rooted factors that determine in the long-run the religiosity and the size of the welfare state of a country.

In the model agents vote with a majority rule over the size of the welfare state and after observing the results of the election decide whether or not to participate in a religious organization. The religious organization provides goods and services that tend to cater church-goers. The amount of this good is increasing in the number of people that go to church. There are two types of individuals: secular and religious that differ in the intrinsic value they give to participating to church. I then consider a dynamic extension of the model, in which the religiosity of individuals is made endogenous by linking the religiosity of children to the church participation decision and religiosity of the parent. The dynamic model allows me to study what drives the joint dynamics of religiosity and the size of the welfare state in the long-term.

The model shows how as the welfare state size increases the needs fulfilled by the goods provided by the church are, at least partially, already taken care of by the welfare state. Because of this, an increase in the size of the welfare state reduces church participation. Additionally, the model exhibits heterogeneous responses of church participation decisions to changes in the size of welfare state. Secular individuals go to church only if the size of the welfare state is small, while religious individuals always go to church. Furthermore, I show how the share of religious individuals in a country increases the participation of individuals to church activities. The model also explains how deep-rooted features of a country shape the relationship between religiosity and the welfare state. For example, the types of institutions that govern the quality of policy formulation and implementation or the degree of public corruption influence church participation. As these features, that link how efficiently the government transform taxes in high-quality services, improve the model predicts that less people will participate to church activities.

When individuals vote over the size of the welfare state, the model predicts that religious individuals prefer a smaller size of the welfare state. The reason for this is two-fold. First, given that religious individuals participate more often in church activities they don't need a big welfare state, as part or their needs are already fulfilled by the church. Secondly, religious individuals use voting as a proselytization tool. When voting religious individuals take into account that with a lower size of welfare state also secular individuals will participate in church activities and more religious good will be provided. Given that religious individuals always participate to church activities they will enjoy this increase in religious good produced. Additionally, I show that when deciding about the size of the welfare state voters take into account the type of the main religion and the efficiency of the government in providing goods and services. Given that the winning size of the welfare state is decided by a majority rule, countries with a higher proportion of religious individuals are predicted to exhibit smaller welfare states.Finally, when religiosity is made endogenous two stable equilibria

are found: a religious equilibrium in which a large share of individuals is religious, everybody goes to church, and the welfare state is very low, and a secular equilibrium, in which in the long-run everybody becomes secular, nobody goes to church, and the welfare state is large. The model suggests that the main driver of the secularization of a society is an increase in the relative efficiency of the welfare state with respect to the church.

In the empirical analysis, I explore if the model can account for some of the observed regularities. I merge different waves of the International Social Survey Program (ISSP) that collects data on religious habits and preferences over the size of the welfare. I document a negative correlation between the size of the welfare state and the frequency of participation in church activities. This correlation persists after controlling for many observable country and individual characteristics. Furthermore, I show how that this correlation is much weaker for religious individuals. This is consistent with the model results that show that when deciding whether to participate or not to church activities religious individuals are much less responsive to changes to the size of the welfare state. As further evidence for the validity of the mechanisms proposed in the model I show how measures of government effectiveness in providing public good are negatively correlated to participation to church activities even after controlling for the size of the welfare state. I then study empirically what determines the preferences over the size of the welfare. As predicted by the model, the preferred size of the welfare state is negatively correlated to religiosity even after controlling for many observable individual characteristics, like income. Furthermore preferences over the size of the welfare state are positively correlated to measures of government effectiveness in providing public good. Finally I document how countries with higher share of religious individuals show much smaller welfare states.

The remainder of the paper is organized as follows. The next section outlines the main literature and the paper contribution. Section 3 describes how do religious organizations work. Section 4 develops the main model. Section 5 describes the data used and presents the main results. Section 6 concludes.

## 2    Literature Review and Contribution

The effects and the determinants of religiosity have been usually studied separately. This paper studies both of these aspects of religiosity together while also providing a theoretical model in a literature where the use of formal modeling has not been widely used. Studying both the effects and the determinants of religiosity bring some new insight on the joint dynamics of religiosity and the size of the welfare state. Additionally, it contributes to the literature that studies the determinants of preferences over the size of the welfare state by introducing two new mechanisms that may link religiosity to these preferences and empirically test for them.

### 2.1    The Determinants of Religiosity

Differences in the levels of religiosity between countries have been explained by reasons either internal or external to the religious market. This paper contributes to both literatures.

In the external-causes literature changes to more secular preferences are attributed to changes in some characteristics of the country not directly related to religiosity. This idea was famously used by Max Weber's, The Protestant Ethic and the Spirit of Capitalism where he postulated that economic development and the modernization of a society would cause religiosity to vanish. In more modern works other characteristics of countries like income per capita [Paldam and Gundlach

(2012)], credit availability [Chen (2010)], growth [McCleary and Barro (2006)], government spending [Gruber and Hungerman (2007)], education [Franck and Iannaccone (2009)], Human Development Index [Gaskins, Golder, and Siegel (2013)], poverty [Berman (2000)] have been attributed to be an important factor to determine religiosity. Other authors like Becker and Woessmann (2013) have instead not found significant evidence of the link between rise of income and church attendance. Following the reasoning of Hungerman (2005) and Gill and Lundsgaarde (2004) I study how an increase in the size of the welfare state can explain the secularization of a society. The first contribution is to build a theoretical model of participation to church activities and formalize the previously cited empirical results. In particular, I show how an increase in the size of the welfare state causes a decrease in the participation to church activities but how this relationship is more subtle than previously tested. Secular individuals are the ones that are more reactive to changes in the size of the welfare state when deciding whether or not to participate to church. Furthermore I show how deep-rooted institutions that control the effectiveness of the government and the level of corruption should influence participation to church activities. In the empirical exercise I test at the individual level the relationship between welfare state and participation that previously has been tested only at the US state Hungerman (2005) or at the country level Gill and Lundsgaarde (2004).

Differences in the level of religiosity have also been explained by differences in the internal workings of the religious markets between countries. For example there is strong evidence that smaller churches have higher levels of per member spending and donations [Hungerman (2005)]. In line with previous works I show how direct regulation of religion [Gill and Lundsgaarde (2004); Gaskins, Golder, and Siegel (2013); McCleary and Barro (2006)] and religious plurality [Opfinger (2011)] have a big impact in religiosity and participation to church activities. Additionally, I show how other aspects of the religious market affect the level of religiosity in a country. In particular, I show theoretically why different kinds of religions are associated with different participation levels into church activities. In the empirical exercise I observe how protestant countries are associated with higher levels of participation even after controlling for many observable country characteristics. Furthermore I show how the average level of religiosity influences participation decision of individuals. Secular individuals go more often to church if they live in a country where the share of religious individuals is high.

## 2.2   The Effects of Religiosity

Religiosity has been shown to influences preferences and actions well beyond the religious lives of individuals. For example Guiso, Sapienza, and Zingales (2003) show how several economic attitudes and preferences are strongly connected to the strength of your religious beliefs. They find that religious people trust others more, trust the government and the legal system more, are less willing to break the law, and are more likely to believe that markets' outcomes are fair. On the other hand religious people have been found to be more intolerant to foreigners and less sympathetic to women's rights.

Religiosity has been also shown to influence negatively growth [McCleary and Barro (2006)] , preferences for redistribution of income [Huber and Stanig (2011); Stegmueller, Scheepers, Rossteutscher, and de Jong (2012); Gaskins, Golder, and Siegel (2013)] and the rate of innovation [Bénabou, Ticchi, and Vindigni (2013)]. Furthermore religious individuals are better able to insure against income shocks [Dehejia, DeLeire, and Luttmer (2007)].

More in line with my research question Scheve and Stasavage (2006) have found that welfare expenditure in a country is negatively correlated both with average religiosity and participation to

religious activities of these countries. At the individual level they find that in high-income OECD countries, individuals that participate more often to church also prefer less social spending by the government. Interestingly Stegmueller (2010) show that religious individuals indeed prefer lower social spending but only when it is aimed at individuals that are thought to be deservingly in that condition, like the unemployed. No differences in preferences are found for social spending in other areas, like help for the sick.

In this paper what I do is provide a theoretical model to rationalize these results where individuals that differ in religiosity may vote differently on the size of the welfare state. What I find is that indeed religious individuals in average vote for a lower welfare state. Finally I test my theory using a large dataset that comprehend preferences over the size of the welfare state of individuals coming from 33 countries.

## 2.3 Preferences Over the Size of the Welfare State

The size of the welfare state and the amount of redistribution vary systematically across countries [Alesina, Glaeser, and Sacerdote (2001)]. Benabou and Tirole (2006) and Alesina and Angeletos (2005) show how differences in preferences for redistribution and the size of the welfare state can be explained respectively by how much individuals think the world is just or the market is fair. In both papers the idea is that if people believe to live in a world where effort doesn't translate fairly into income people prefer larger amounts of redistribution. In an extensive literature review Alesina and Giuliano (2009) show how there are many determinants of preferences for redistribution. Income, education, employment status, race, sex, belief in fairness of the markets are all shown to have a sizable effects on preferences for redistribution. Other determinants are the possibility of upward mobility of income [Ravallion and Lokshin (2000); Alesina and La Ferrara (2005)], country of origin culture [Luttmer and Singhal (2011)] and believes on what determines income [Corneo and Grüner (2002)]

More similarly to Stegmueller, Scheepers, Rossteutscher, and de Jong (2012) and Gaskins, Golder, and Siegel (2013) that study the effects of religiosity and religious participation on preferences for redistribution I study the effects of religiosity on preferences over the size of the welfare state. With the theoretical model I identify 2 new mechanisms that together can explain the negative correlation between religiosity and the preferred size of the welfare state. Religious individual want a smaller welfare state because: First of all part of their needs that the welfare would satisfy are already taken care of, at least partially, by the church; Secondly, they know that if the welfare state is small also secular individuals will participate to church and they will enjoy this higher rate of participation. From the theoretical model I'll be also be able predict how some characteristics of the country like government effectiveness and share of religious individuals. Finally I test the implications of the model using a newly build international survey dataset on preferences over the welfare state and religiosity.

## 3 The Role of Church Organizations

Religious organizations have provided many types of services that have been present not only in the religious lives church-goers. These goods include the provision food and clothes to the poor, visiting sick patients at the hospital, offering job training, etc. The main assumptions here on these type non-religious goods and services are the following. First of all, these non-religious services provided

by the church are often close competitors with services provided by the government, especially those by the welfare state. Secondly, these services are often biased towards church-goers.

Looking at the first assumption, church and the state both supply services that provide some form of insurance against negative shocks. For example looking the findings of the last National Congregations Study, that surveys a representative sample of Americas churches, is possible to see how virtually all congregations are involved in some social or human services [Chaves, Anderson, and Byassee (2009)]. About half of the congregations have a food programs, one-quarter reported home building, 20% clothing programs and 15% help to the homeless. Similar results can be found in the Faith Communities Today national survey [Roozen (2008)]. In the year 2000 84% of the congregations had conducted some community service program. This number had risen to 94% in 2008. Many individuals take advantage of these services, for example in the US alone over 70 million Americans enjoy goods or services provided by church organizations [Tompkins and Webb (2008)]. These religious organizations provide services that often are intended to help materially individuals when they are in need. Additionally religious organization offer psychological relief from many possible adverse events to church-goers. Events like unemployment, illness, retirement or financial distress often have associated psychological costs like loss of self-esteem, stress and depression. For example Pargament (1997) drawing from arguments on the theory of stress and coping developed by Lazarus (1984) demonstrates how religion indeed changes the way we cope with adverse events in our life. Empirically it has been also shown that religious individuals have higher levels of life satisfaction [Ellison (1989, 1991)], have lower incidence of depression [Park (1990); Smith (2003)] and experience a lower impact on happiness after unemployment [Clark and Lelkes (2005)].

On the second assumption we can see how availability of some of these services is restricted only to church-goers because of the nature of the services. On the other hand many of these services could be provided as a public good to all the citizens by the church. In practice this is not the case. Churches have been show to behave like a club by creating an insider-outsider identity [Lichterman (2008)]. As stated by Huber and Stanig (2011) "social services provided by churches are overwhelmingly religious, and that churches tend to cater to their own members". The reasons for this differential treatment in the provision of services can be multiple. Churches on one side may decide to impose costs on religious participation and then provide services as a club good not to incur in a free-riding problem [Berman (2000); Berman and Laitin (2008)]. People that do not participate in church activities may have an informational disadvantage with respect to the services offered by the church. To rationalize why churches provide this kind of service as a club it has been observed by Dehejia, DeLeire, and Luttmer (2007) that religious organizations may be able to overcome some of the adverse selection and moral hazard that can appear in formal insurance contracts. This happens because the church may be better equipped to monitor the behavior of those that are part of the organization given the pervasiveness that this organization can have in the daily live of church-goers. As shown by Lipford (1995) the free-rider problem is not widespread and doesn't appear to increase with the group size of the congregation.

## 4  Model

Here I present a theoretical model for understanding participation to church and voting on the size of the welfare state. In the first version the model the size welfare state is fixed and religious and secular individuals decide whether or not to participate to church. Later a voting stage is added where the size of the welfare state is decided by a majority rule. Finally also the religiosity of individuals is made endogenous where the young individuals religiosity is linked to the participation

decision and the religiosity of their parent.

## 4.1   A Model of Church Participation

There are 3 types of agents: the citizens, the government and a church. Citizen are of 2 types ($\tau \epsilon \{S, R\}$): secular or religious. What the type $\tau$ measures is the intrinsic value that a citizen gives to participating to church($\lambda_\tau$). **This can be interpreted as....** . Religious types are an exogenous fraction $q$ of the population. Citizen $i$ decides whether to participate in church activities ($p_i = 1$) or not ($p_i = 0$). If he decides to participate he has to pay a participation cost of 1. The government collects taxes ($t$) from all the citizens and distributes $\alpha f(t)$ units of welfare state to each citizen. The church collects participations, that we can think think of them of being either in time or in money, from all citizens that participate to church. Where $P$ is the measure of church-goers. The church then distributes $g_1(P)$ goods to each citizen and $g_2(P)$ goods only to church-goers.
The timing is as follows: Nature draws the type of each citizens. Then citizens observe their own type, the proportion of religious types ($q$) and the level of taxes ($t$). Finally they decides at the same time whether to participate or not to the church.

The utility of citizen $i$ of type $\tau$ with participation decision $p_i$ when a measure $P$ citizens participate to church is as follows:

$$U_{i,\tau}(p_i, P) = H(\alpha f(t) , \ [g_2(P) \, p_i] + [g_1(P)]) - t - p_i + \lambda_\tau p_i \tag{1}$$

**Assumption 1.** $\lambda_R > 1, \ \lambda_S = 0$

**Assumption 2.** $H_1', H_2' > 0 \ and \ H_{22}'', H_{11}'', H_{12}'' < 0$

**Assumption 3.** $\alpha > 0, \ f', g_1', \ g_2' \geq 0, \ f'', g_1'', \ g_2'' \leq 0, \ and \ f(0) = g_1(0) = g_2(0) = 0$

In assumption 1 religious individuals are defined as individuals that are willing to go to church just because of the intrinsic value associated to going to church. Secular individuals instead only care about the non-religious good provided by the church when making the participation decision. Assumption **??** states that the utility function is increasing in the amount of welfare state and church goods consumed by the citizens. As discussed in previous chapters $H_{12}'' < 0$ in assumption **??** wants to capture that church good and services provided and the welfare state answer to similar needs. Finally assumption 3 states that how much welfare state each individual receives is increasing in the per-capita taxes payed $t$ and that the amount of good and services delivered to each citizen and to each church-goers is increasing in the number of church-goers and is concave.

One important thing to notice is that the incentives to participate to church may increase as more and more citizens decide to go to church. Intuitively if all the citizen participate to church given assumption 3 more goods will be delivered by the church to each church-goer and this increases furthermore the incentive to go to church. This strategic complementarities between player actions create a coordination problem with multiplicity of equilibria for some values of the parameters $\alpha$ and $q$. As a selection criteria I will use the usual global game approach of relaxing the common

knowledge assumption. Noise is added to the cost of participation of the previously described complete information game. As the noise goes to zero , and we approach again the complete information setting, a unique strategy survive iterated deletion of dominated strategies. This 'limit uniqueness' result has been first shown by Carlsson and Van Damme (1993) and then extended to infinite player games by Morris and Shin (2003) and Frankel, Morris, and Pauzner (2003). Formally, the utility function of citizen $i$ of type $\tau$ with participation decision $p_i$, cost of participation $X_i$ when a measure $P$ citizens participate to church is as follows:

$$G_{i,\tau}(p_i, P, X_i) = H(\alpha f(t) , [g_2(P)\, p_i] + [g_1(P)]) - t - X_i p_i + \lambda_\tau p_i \tag{2}$$

In the model noise is added to the cost of participation so that each individual has his own idiosyncratic cost of participating to church. We can think of these noise coming from the fact that individuals could have different cost of going to church. This costs could come from the fact that individuals may live at different distances from the church, may have different opportunity cost in the time use for going to church and many other idiosyncratic differences between individuals.

**Assumption 4.** $X_i = \theta + \sigma \epsilon_i$ *where* $\theta$ *follows an improper uniform and* $\epsilon_i$ *follows a continuous distribution*

**Assumption 5.** $\frac{\partial U_{i,\tau}(1,P)}{\partial P} > \frac{\partial U_{i,\tau}(0,P)}{\partial P}$

Assumption 4 follows the usual global game assumptions. Given the improper uniform prior on $\theta$, observing $x_i$ gives the citizens no information on their ranking within the population of signals. Added to this Assumption 5 assumes that strategic complementarities exist for in all the parameter space.

**Proposition 1.**
*The equilibrium of the global game under Assumptions 1 ,2 , 3, 4 and 5 for $\sigma \to 0$ is*

$$(p_S^*, p_R^*) = \begin{cases} (1,1) & if\ t < \hat{t} \\ (0,1) & if\ t > \hat{t} \end{cases}$$

$\hat{t}$ *is decreasing in $\alpha$ and increasing in $q$* [1]

In equilibrium only secular individuals react to changes in the size of the welfare state. They will decide to participate to church activities whenever the size of the welfare state is under a certain threshold ($\hat{t}$). What happens is as the welfare state size increases the needs fulfilled by the goods provided by the church are, at least partially, already taken care of by the welfare state so secular citizens no longer need to participate in church activities. Following Assumption 1 instead religious individuals enjoy so much the religious good to always have an incentive to participate to church. Additionally the model shows how the share of religious individuals in a country ($q$) influences positively the propensity of participation of secular individuals. This comes from the fact that religious individuals always participate in church activities. This entails that as their share increases

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[1] Proofs for all propositions can be found in appendix

more non-religious goods will be produced by religious organizations, increasing the incentives to participate in church activities also to secular individuals.

Finally, participation to church is shown to increase with $\alpha$. Looking at equation (1) we can interpret $\alpha$ as a measure of how efficiently the state transforms taxes into high quality welfare state goods and services. For example the type of institutions that govern the the quality of policy formulation and implementation or the degree of public corruption are closely related to what $\alpha$ measures in the model. Proposition 1 shows how as these features, that link how efficiently the government transform taxes in high-quality services, improve the model predicts lower participation rates to church activities.

## 4.2  Welfare State and Religiosity

As an extension of the previous model a political stage is added where, before the participation decision is made, citizen vote on the size of the welfare state. Elections are then resolved by majority rule.

The timing is as follows:

1. Nature draws the type ($\tau$) of each citizen.

2. Citizens observe their type and the proportion of religious types ($q$)

3. Citizens vote for the preferred size of the welfare state and the implemented size is decided by a majority rule

4. Citizens observe the implemented welfare state ($t$) and decides whether to participate or not to religious activities

Given the results of the previous model we can rewrite the optimal participation rules as a function of the taxation level $p_S^*(t)$, $p_R^*(t)$. Notice that $p_R^*(t) = 1$ for every level of $t$

We can also re-write the utility function only as a function of taxes as follows

$$U_{i,\tau}(t) = H(\alpha f(t)\,,\,[g_2(q + (1-q)p_S^*(t))\,p_\tau^*(t)] + [g_1(q + (1-q)p_S^*(t))]) - t - p_i + \lambda_\tau p_i \quad (3)$$

**Definition 1.** $(t_S^*, t_R^*, t^*)$ is a voting equilibrium if:

$t_\tau^* \epsilon argmax_t\ H(\alpha f(t)\,,\,[g_2(q + (1-q)p_S^*(t))\,p_\tau^*(t)] + [g_1(q + (1-q)p_S^*(t))]) - t - p_i + \lambda_\tau p_i$

And the welfare state size is:

1. $t^* = t_R^*$ if $q > \frac{1}{2}$
2. $t^* = t_S^*$ if $q \leq \frac{1}{2}$

In other words voters, after observing their type and $q$, vote sincerely. After the voting stage the majority winner is the implement size of the welfare state.

**Assumption 6.** *Assumption 2 and* $\frac{\partial H(\alpha f(t),(g_1(1)+g_2(1)))}{\partial t} < 1$

$\frac{\partial H(\alpha f(t),(g_1(1)+g_2(1)))}{\partial t} < 1$ in Assumption 6 reinforces Assumption 2 adding that $H_{12}^{''}$ has to be negative enough. This is needed for making the competition between church and the welfare state has to be strong enough. This assumption states that in a situation where a citizen goes to church and all the citizens go to church there is no space for the welfare state.

**Proposition 2.** *Under assumptions 1,3 and 6 the voting equilibrium is:*

*For religious types:* $t_R^* = 0$

*For secular types:* $t_S^* = \begin{cases} 0 & if\, W > 0 \\ \tilde{t} & if\, W < 0 \end{cases}$

$t^* = \begin{cases} 0 & q > \frac{1}{2}\, or\, W > 0 \\ \tilde{t} & q \leq \frac{1}{2}\, and\, W < 0 \end{cases}$

*Where* $W = H(0, g_1(1) + g_2(1)) - H(\alpha f(\tilde{t}), g_1(q)) - 1 + \tilde{t}$ *decreasing in* $\alpha$
*and* $\tilde{t}$ *is increasing in* $\alpha$

From Proposition 2 the first important results is that preferences over the size of the welfare state are in average negatively correlated to the religiosity of the individuals. The reason to this is two-fold. The first, more direct, is that given that religious individuals always participate in church activities they don't need a big welfare state. Secondly, religious individuals use voting as a proselytization tool. When voting religious individuals take into account that, as shown in Proposition 1, a lower welfare state will mean that more secular individuals will participate to church. This will more production of the non-religious good and so an increase in welfare for religious individuals.

Furthermore Proposition 2 gives a theoretical explanation to a phenomenon that has been often observed: individuals that are socially conservative (in the model religious individuals) tend to be more liberal on decision of the role of the government (in the model low taxes and low size of the welfare state). Evidence of this can be found looking at the location of political parties and political candidates in a 2 dimensional political space. In this political space one dimension concerns the economic issues (Left-Right) and social issues (Authoritarian-Libertarian). In most elections parties and candidates display themselves in a line, where economically right wing parties tend also to be more authoritarian in social issues. For example the website policalcompass.org provide evidence of this for modern elections in Germany, Australian, New Zealand, Canada and the US. Furthermore this results is in accord with the evidence from political science spatial model that represents voters preferences on a multidimensional euclidean space. What has been noted is that both voters [Snyder (1996)] and congressman [Poole and Rosenthal (1991)] vote as if the space was uni-dimensional or of low dimensionality.

Finally, Proposition 2 shows that when deciding the size of the welfare state voters also take into account the efficiency of the government in providing goods and services. Finally, is important

to notice also that religious and secular individuals do not disagree in every situation on the size of the welfare state. In particular, in situation where the government is very inefficient they will both agree that the size of the welfare state should be limited and these goods and services should be provided by the church.

Now results of Proposition 2 are restated in terms of preferences for additional welfare as defined below.

**Definition 2.** Preferences for additional welfare are defined as: $PAW_\tau \equiv t_\tau^* - t^*$. Where $PAW_\tau$ is the difference between the preferred size of the welfare state and the size of the welfare state implemented by majority rule.

So positive (negative) $PAW_\tau$ means that individuals of type $\tau$ disagree on the size of the welfare state and would like a bigger (smaller) one. In the case that $PAW_\tau$ is equal to zero the optimal size of the welfare state for individuals of type $\tau$ coincides with the implemented one

**Lemma 1.** $PAW_S \geq PAW_R \, \forall \alpha, q$

This Lemma is provided as in the empirical exercise data on preferences for additional welfare is available. We can see how preferences for additional welfare are (weakly) higher for secular individuals.

## 4.3   The Dynamics of Secularization

In this final version of the model the religiosity of agents is made endogenous. Agents live for 2 periods the first as a children and the second as an adult. When they are children they just acquire their level of religiosity ($\tau$). Their level of religiosity will depend both on the participation decision and the religiosity of the parent. Then at the begging of their adulthood every agents has a children. The rest of the adult life follows the previous version of the model, agents take their level of religiosity ($\tau$) as given, vote on the size of the welfare and decide whether to participate or not to church.

The inter-generational transmission of religious values works as follow. First, if the parent of the child participates in church activities then the child will become religious with probability $c$. This captures *Church socialization* of religious norms. This type of socialization captures the fact that children often follow their parent to church and there they will be introduced to religious ideas. This introduction to religious ideas as a children then influences your religiosity as an adult [Francis and Brown (1991); Francis (1993)]. Additionally religious parents may also transmit religious belief directly to the children at home, I call this *Home Socialization*. If *Church socialization* fails the probability that a religious parent succeeds in *Home Socialization* is $h$. This captures the usual socialization inside the family, also know as direct vertical transmission [Bisin and Verdier (2010)], of cultural traits and social norms. In vertical transmission parents transmits with some probability there own type directly to their child.

Using the function $t^*(q)$ from Proposition 2, that links the share of religious individuals $q$ to the implemented size of the welfare state $t$, and $p_\tau^*(t)$ from Proposition 1, that links the size of the welfare state to the participation decision of type $\tau$, we can define the following function $P_\tau^*(q)$. This function links the share of individuals of type $\tau$ that participate in church activities directly to the share of religious individuals in the population. We can then use the definition of inter-generational transmission and $P_\tau^*(q)$ to define the dynamics of the religiosity:

$$q_{t+1} = q_t[c+h] + [1-q_t]\, c\, P_S^*(q_t)$$

**Definition 3.** $q^*$ is a (locally) stable equilibrium if:

1. $q^* = q^*[c+h] + [1-q^*]\, c\, P_S^*(q^*)$

2. $\exists \delta > 0 : if\ q_t \in (q^* - \delta, q^* + \delta)$ then $lim_{t\to\infty} q_t = q^*$

**Proposition 3.** *The following are the stable equilibria:*

1. $q_S^* = 0$ *if* $W(\alpha) < 0$ *(Secular Equilibrium)*

2. $q_R^* = \frac{c}{1-h}$ *if* $W(\alpha) > 0$ *or* $\frac{c}{1-h} > \frac{1}{2}$ *(Religious Equilibrium)*

Using the properties of $W$ found in Proposition 2 ($W$ is decreasing in $\alpha$) we can see how dynamics of welfare state and religion change with government efficiency. As shown in left graph of Figure 1 when $\alpha$ is small there will be a Secular Equilibrium. In this case independently from where which situation the population starts everybody will vote for the lowest welfare state possible and slowly the dynamics will move to an equilibrium where majority of individuals are religious. As $\alpha$ secular individuals will start voting for a higher welfare state. As shown in the right graph of Figure 1 the dynamics will slowly move towards a situation where in the long-run all individuals are secular and there will be a big welfare state.
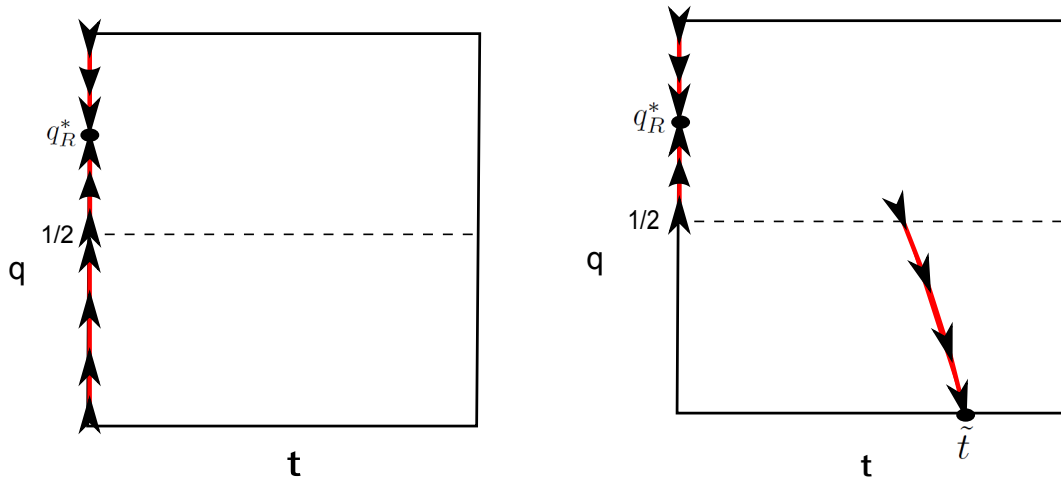


Fig. 1: Left: Example of Religious Equilibrium,    Right: Example of Secular Equilibrium

## 5 Empirical Exercise

Given the available data many of the implication of the previous propositions can be tested. In this section I'll be interested in studying if the theoretical results on the determinants of church participation and preferences over the size of the welfare state are in line with the observed regularities in the data.

### 5.1 Testable Implications

Proposition 1 predicts that there is a negative relationship between the size of the welfare state and participation decisions of individuals. Furthermore the model predicts that this negative effect is higher for secular individuals. In other words secular citizens care more about the size of the welfare state at the moment of deciding whether or not to participate in church activities.

Additionally Proposition 1 states that once controlling for the size of the welfare state participation decisions depend positively on the share religious individuals in a country. Finally interpreting $\alpha$ as the efficiency of a country in transforming taxes into high quality welfare state we should observe that even after controlling for the size of the welfare state more effective countries should display lower levels of participation.

In the empirical exercise I am also interested in studying what determines preferences for additional welfare as defined in definition 2. I will test if Lemma 1 results are in line with the correlation observed in the data. The main result to test if there exist a negative correlation between religiosity and preferences for additional welfare. Lemma 1 and Proposition 2 inform us on what should be the correct specification of a regression that aims at understanding the determinants of the preferences over the size of the welfare state. In particular it is important to take into account the average level of religiosity and the efficiency of a government as these has been shown to influence voting decisions of individuals.

### 5.2 Data

Important information about religiosity can be used from the International Social Survey Program (ISSP). The ISSP database is a compilation of surveys devoted each year to different specific topics such as religion, social networks or the role of government. In 3 years (1991, 1998 and 2008) the survey has been devoted to study religious behavior and believes across 38 countries. This particular dataset have been used in some empirical paper in the literature like Iannaccone (2003); McCleary and Barro (2006); Scheve and Stasavage (2006); Stegmueller (2010) because of the numerous type of question that are able to asses different aspect of the religious life of individuals. Of particular importance for this analysis is the possibility of having measures both of attendance and intensity of religious believes.

In this empirical exercise for identifying the religiosity of an individual (in the theoretical model represented by the type identifier $\tau$) I will use the following question: "Would you describe yourself as.." ("Extremely non-religious" "Very non-religious" "Somewhat non-religious" "Neither religious nor non-religious" "Somewhat religious" "Very religious" "Extremely religious"). Instead the question "How often do you participate to religious services?" ("Never" "Less frequently than once a year" "Once a year" "Several times a year" "Once a month" " 2-3 times a month" "Once a week" "Several times a week") will be use as a measure for the participation to church activities that is represented by $p_i$ in the model.

I also use the ISSP "Role of the Government" surveys conducted in 1990, 1996 and 2006 for data on the preferred size of the welfare. These are a collection of different international surveys from 32 countries on the opinion that individuals have on the role of the government. I will use some of the question to identify the preferences for additional welfare ($PAW_\tau$) as defined in Lemma 1. The question used for this purpose is the following: Listed below are various areas of government spending. Please show whether you would like to see more or less government spending in each area. Remember that if you say "much more", it might require a tax increase to pay for it. The possible answers are "Spend much more", "Spend more", "Spend the same as now", "Spend less, "Spend much less". The government areas are: health, education, old age pensions and unemployment benefits. For every individual I construct an index that is the principal component of the of the answers given to the 4 areas. The higher is the score of this index the more welfare state does this individual wants with respect to what the state is providing now. The index is normalized such that the sample average is zero and the standard deviation is one in the full sample.

Furthermore is important to notice that the ISSP doesn't present data in a panel fashion so to correctly asses what drives the participation decision of individuals I will control for many observable individual characteristics. In particular in this empirical exercise I will control for the following observed individual characteristics: sex, age, religious group, marital status, work status, education degree, size of the household, type of occupation, hours worked and if you supervise somebody at the job. Furthermore, the family income is used to identify the income quartile of each individual with respect to the family incomes of their country in that year. Finally when studying the determinants of preferences for additional welfare self-assessed interest in politics is also added as further control.

For the empirical analysis data on the size of the welfare state is also needed. As a first measure I use the Social Expenditure dataset (SOCX) by the OECD that presents the public social expenditure as a percentage of GDP.

The OECD defines public social expenditures as: "The provision by public institutions of benefits to, and financial contributions targeted at, households and individuals in order to provide support during circumstances which adversely affect their welfare". This is indeed in line with the goods and services that answer similar need to the ones provided by church organizations.

Unfortunately the SOCX welfare state measures are available only for OECD countries. Because of this I also use an alternative measure of the size of the welfare state by using the Standardized World Income Inequality Dataset (SWIID) developed in Solt (2009). Using the difference between the pre-tax and post-tax measure of the Gini income coefficient I construct a measure of the impact of the state in redistributing income between individuals. The good feature of this measure is that is available for all the countries of the sample. On the other side this is an imperfect measure of the expenditure in welfare state and doesn't capture as precisely as the SOCX welfare state measure what is expressed in the theoretical model. This is because the SWIID measure incorporates both government expenditure and its efficiency. A country is able to redistribute a lot of welfare across individuals both if it spends a lot of resources in this endeavor or if it is very efficient.

For the data of the government efficiency in transforming taxes into high quality public goods ($\alpha$ in the model) I will use the Worldwide Governance Indicators that are constructed by the World Bank.

The Worldwide Governance Indicators are a compilation of the perceptions, collected in large number of surveys and other cross-country assessments of governance. Some of these instruments capture the views of firms, individuals, and public officials in the countries being assessed. Others

reflect the views of NGOs and aid donors with considerable experience in the countries being assessed, while others are based on the assessments of commercial risk-rating agencies.

As a way of measuring the government efficiency I will focus on 3 of these measures:

- Government Effectiveness: Measures the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

- Regulatory Quality: Measures the perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

- Control of Corruption: Measures the perceptions of the extent to which public power is exercised for private gain, as well as "capture" of the state by elites and private interests.

I then combine these measures in a principal component analysis with sample average equal to zero and standard deviation of 1. When I study the determinants of the preferences for additional welfare I also include indicators for how well the political system work. This is done to control any country specific characteristic of the political system that could influence then political preferences of individuals. In particular, I control for the "Voice and Accountability" and the "Political Stability and Lack of Violence" indexes of the World Bank. These indexes measure respectively the perceptions of the extent to which a country's citizens are able to participate in selecting their government and measuring perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means.

Finally for controlling for other possible unobserved country specific characteristics I control for how religions and religious individuals are treated in each country.

I do so by using 2 measures of religious restrictions and hostilities produced by the PEW research center. In particular I use the Government Restrictions Index (GRI) that measures "government laws, policies and actions that restrict religious beliefs or practices". The GRI is comprised of 20 measures of restrictions, including efforts by governments to ban particular faiths, prohibit conversions, limit preaching or give preferential treatment to one or more religious groups. Additionally I use the Social Hostilities Index (SHI) that measures "acts of religious hostility by private individuals, organizations and social groups. This includes mob or sectarian violence, harassment over attire for religious reasons and other religion-related intimidation or abuse".

## 5.3 Econometric Methodology

For matching the data with the model in the main specification I only take into account only a sub-sample of the dataset.

First of all is important to notice that the model doesn't take into account countries where there is more than one main religion. Notice that, in the model each citizen is either religious and has an intrinsic enjoyment to participating to the only religion available in the country or is secular and cares just about the non-religious good produced by the only church. Because of this when presenting the main results I will only include observations that come to countries where there is only on main religion. Through all the course of the empirical exercise a religion is considered the main one of the country if more than 70% of the religious people are of one religion. Notably countries like the US, Germany or Switzerland are excluded from the sample.

Furthermore is important to notice that the model doesn't take into account people that attend religious services that are not the one provided by the main religion. Because of this I will take only into account only individuals that are either secular or have their declared religion as the main religion of their country. Because of this individuals like Muslims in Spain or Protestants in Italy are excluded from the sample. Even if through the main part of the empirical exercise I will present the results using this 2 sampling techniques as they fit better the assumptions of the model I will also present the results for the full sample.

Notice that in the model participation decisions ($p_i$) and types ($\tau$) are assumed to be dichotomous. For having the best match between the model and the data I will transform intensity of participation answers (takes 8 possible values) and religiousness (takes 7 possible values) into a dichotomous variable.

In particular and individual will be considered to participate in church activities (in the model $p_i = 1$) if the question "How often do you participate to religious services?" is answered "Several times a year" or more. An individual is considered religious ($\tau = R$) if the question "Would you describe yourself as.." is answered "Somewhat religious" or more.

Furthermore, controlling for type of the main religion of different countries is essential in the econometric analysis as religions may systematically differ on how they influence participation decisions.

Given that main religion fixed effects are included country fixed effects cannot be added to the regression. Furthermore variables of interest like the size of the welfare state, the share of religious individuals and $\alpha$ for some countries do not vary a lot through time adding country fixed effect may create problem of collinearity with some of this variables. Finally some of the countries of the sample are only observed once and country fixed effects would not be identifiable. Because of this I separate countries into 8 areas. East Europe, Anglophone, South America, Israel, Japan, Cyprus, Mediterranean and Non-Mediterranean West Europe. This are fixed effects that control for characteristics that influence participation decisions and preferences over the size of the welfare state that are common between country in the same area. Non the less I will also present the results with country fixed effects by including only observations coming from countries that I observe at least 2 times[2].

Finally year fixed effects will be added to control for global trends in church participation. Additionally time fixed effects are interacted with main religion and area fixed effect to let trends in church participation to vary between religions and areas.

## 5.4   The Determinants of Participation to Church

The merged 1991, 1998 and 2008 waves of the ISSP comprehends data for 38 countries that sum up to 70000 observations (more than 50000 coming from OECD countries). Table 1 presents the list of countries used in the empirical exercise that studies what determines the participation decisions of individuals and some summary statistic associated to them. In the second column of Table 1 is shown how average participation to church activities has high heterogeneity. In countries like Russia only 14% are regular church goers while in the Philippines 88% of the population goes regularly to church. High levels of heterogeneity are also observed in the welfare total expenditure as a

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[2] When adding country fixed effects observable country characteristics that do not vary or vary very little through time will not be added. This include GRI, SHI, Government Effectiveness, Share of religious individuals and the share of the main religion.

percentage of GDP. Mexico spends around 7% of their GDP while many Northern European and Central European countries spend more than 4 times as much with countries like France spending around 30% of the GDP in welfare. Also redistribution levels are widely heterogeneous. Countries like Sweden reduce the Gini coefficient by 0.22 points using taxes and transfers while countries like Croatia even increase it.

Countries with different main religions are observed. The most represented religion is Catholicism with 47% of the observations and 28% of the observations come from countries without a main religion.

Tab. 1: Summary Statistics

| Country | % Participants | Main Religion | Total Welfare | Redistribution | Alpha | Area |
|---|---|---|---|---|---|---|
| Australia | 0.30 | No Main Religion | 0.16 | 0.10 | 0.86 | Anglosaxon |
| Austria | 0.52 | Catholicism | 0.26 | 0.16 | 0.86 | Rest of Europe |
| Belgium | 0.29 | Catholicism | 0.27 | 0.06 | 0.40 | Latin Europe |
| Chile | 0.63 | Catholicism | 0.11 | 0.01 | 0.35 | Latin America |
| Croatia | 0.75 | Catholicism | . | -0.01 | -0.88 | East Europe |
| Cyprus | 0.84 | Orthodox | . | 0.14 | 0.32 | Cyprus |
| Czech Republic | 0.30 | Catholicism | 0.18 | 0.13 | -0.33 | East Europe |
| Denmark | 0.31 | Protestantism | 0.27 | 0.20 | 1.34 | Rest of Europe |
| Dominican R. | 0.80 | Catholicism | . | 0.02 | -1.95 | Latin America |
| Finland | 0.21 | Protestantism | 0.25 | 0.18 | 1.17 | Rest of Europe |
| France | 0.24 | Catholicism | 0.30 | 0.18 | 0.37 | Latin Europe |
| Germany | 0.36 | No Main Religion | 0.25 | 0.18 | 0.75 | Rest of Europe |
| Hungary | 0.32 | Catholicism | 0.23 | 0.15 | -0.27 | East Europe |
| Ireland | 0.83 | Catholicism | 0.18 | 0.11 | 0.84 | Anglosaxon |
| Israel | 0.47 | Judaism | 0.17 | 0.09 | 0.11 | Israel |
| Italy | 0.65 | Catholicism | 0.23 | 0.11 | -0.55 | Latin Europe |
| Japan | 0.49 | Buddhism | 0.17 | 0.05 | -0.02 | Asia |
| Latvia | 0.42 | No Main Religion | . | 0.14 | -0.72 | East Europe |
| Mexico | 0.77 | Catholicism | 0.07 | 0.02 | -1.19 | Latin America |
| Netherlands | 0.37 | No Main Religion | 0.22 | 0.13 | 1.14 | Rest of Europe |
| New Zealand | 0.35 | Protestantism | 0.21 | 0.05 | 1.12 | Anglosaxon |
| Norway | 0.19 | Protestantism | 0.23 | 0.16 | 0.92 | Rest of Europe |
| Philippines | 0.88 | Catholicism | . | 0.01 | -1.43 | Philippines |
| Poland | 0.87 | Catholicism | 0.21 | 0.12 | -0.56 | East Europe |
| Portugal | 0.70 | Catholicism | 0.20 | 0.17 | 0.09 | Latin Europe |
| Russia | 0.14 | Orthodox | . | 0.06 | -2.17 | East Europe |
| Slovakia | 0.59 | Catholicism | 0.17 | 0.11 | -0.58 | East Europe |
| Slovenia | 0.52 | Catholicism | 0.21 | 0.10 | -0.08 | East Europe |
| South Africa | 0.77 | No Main Religion | . | 0.04 | -0.83 | Anglosaxon |
| South Korea | 0.49 | No Main Religion | . | 0.03 | -0.41 | Asia |
| Spain | 0.63 | Catholicism | 0.22 | 0.10 | 0.25 | Latin Europe |
| Sweden | 0.31 | Protestantism | 0.29 | 0.22 | 0.99 | Rest of Europe |
| Switzerland | 0.46 | No Main Religion | 0.19 | 0.10 | 1.10 | Rest of Europe |
| Turkey | 0.80 | Islam | 0.11 | 0.03 | -1.08 | Turkey |
| Ukraine | 0.62 | Orthodox | . | 0.05 | -2.19 | East Europe |
| United States | 0.60 | No Main Religion | 0.15 | 0.09 | 0.68 | Anglosaxon |
| Uruguay | 0.26 | Catholicism | . | 0.05 | -0.59 | Latin America |
| Venezuela | 0.70 | Catholicism | . | 0.02 | -2.90 | Latin America |

The goal of this exercise is to take the main testable of the model to the data. The preferred specification has the following form:

$$p_{i,c,t} = \theta_1 r_{i,c,t} + \theta_2 W_{c,t} + \theta_3 r_{i,c,t} * W_{c,t} + \theta_4 \bar{r}_{c,t} + \theta_5 GE_{c,t} + \theta_6 MR_c + \theta_7 X_{i,t,c} + \epsilon_{i,t} \quad (4)$$

Where $i$ identifies the individual, $c$ the country and $t$ the time. On the left-hand side $p_{i,c,t}$ is a dichotomous variable that identifies individual decision to participate in church activities. On the right-hand side $r_{i,c,t}$ is a dummy variable that takes value 1 if the individual describes itself as religious. $W_{c,t}$ shows the welfare expenditure. For the main results the OECD measures of total welfare spending as a percentage of GDP will be used but as a robustness check I will check if any results change when looking at the SWIID definition of redistribution as this measure is available for also for non-OECD countries. Furthermore the interaction between these 2 regressors is added ($r_{i,c,t} * W_{c,t}$) as the model predicts that non-religious people should react more to changes in the welfare state when deciding whether to participate or not in church activities. Additional with $\bar{r}_{c,t}$ I control for the share religious individuals in a country ($q$ in the model), the government efficiency index from the "Worldwide Governance Indicators" ($GE_{c,t}$). Main religion fixed effects ($MR_c$) are also added. Finally other observable individual and country characteristics are added to the regression ($X_{i,t,c}$) in particular this include area fixed effects.

The theoretical model predicts that more religious people should participate more often to church ($\theta_1 \geq 0$). Furthermore we should expect that the size of the welfare state to be negatively correlated with participations decision of the individuals ($\theta_2 \leq 0$). The model predicts is that religious individuals should react much less to changes in the size of the welfare state with respect to non-religious ones ($\theta_3 \geq 0$). Looking at country-specific characteristics the share of religious individuals should have a positive influence on participation decisions ($\theta_4 \geq 0$) while government efficiency should be negatively correlated ($\theta_5 \leq 0$).

Table 2 contains OLS regression results with robust standard errors confirm the general results of the model. Column (1) of the Table contains the most basic regression where individual participation decision are regressed on observable individual characteristics, time fixed effect and religiosity, the size of the welfare state and the interaction between them. In column (2) observable country characteristics are added. Column (3) estimates the preferred specification that is shown in equation 4. Finally column (4) includes the estimation of equation 4 but on the full sample that include also countries without any main religion while column (5) includes country fixed effects but only countries that are observed more than one time.

The preferred specification in column (3) shows how the level of religiosity is positively correlated to participation decisions of individuals while the size of welfare state spending negatively. Importantly the interaction coefficient ($\theta_3$) is positive. In the light of the model this would mean that when deciding whether to participate or not to church activities religious people react less strongly at changes in the size of the welfare state. Added to this the sign of the coefficient link to the share of religious individuals in a country ($\theta_4$) and government efficiency ($\theta_5$) are of the right sign.

To have an idea of the size of this effects if we interpret the regressions of column (3) a one standard deviation increase in $W_{c,t}$, that is equivalent to the an increase in 5.2 percentage points in welfare spending as a percentage of GDP, implies a 3.7 percentage points less in the probability of participating to church activities for non-religious individuals while of 2.2 percentage points decrease for religious individuals. Finally a one standard deviation increase in government efficiency, implies a 4.5 percentage points decrease in the probability of participating to church activities. Qualitatively similar results are found in column (4) and (5) when including the full sample or controlling for country fixed effects but quantitatively the effects of changes in the size of the welfare state are even higher.

Interpreting all these results in the light of proposition 1 is possible to gain further insight in the economic importance of the welfare state in determining participation decision. Proposition 1 shows

Tab. 2: Participation to Church: OLS regression

| | Model | (1) Basic Model | (2) Country Char. | (3) Preferred | (4) Full Sample | (5) Country FE |
|---|---|---|---|---|---|---|
| Religiosity ($\tau$) | + | 0.440*** | 0.398*** | 0.396*** | 0.406*** | 0.223*** |
| | | (0.0171) | (0.0185) | (0.0194) | (0.0170) | (0.0251) |
| Welfare Spending (t) | - | -1.393*** | -1.121*** | -0.702*** | -0.860*** | -1.093*** |
| | | (0.0573) | (0.0733) | (0.116) | (0.105) | (0.226) |
| Welfare Spending * Religiosity | + | 0.325*** | 0.271*** | 0.276*** | 0.275*** | 1.019*** |
| | | (0.0785) | (0.0840) | (0.0887) | (0.0788) | (0.112) |
| Share Religious Individuals (q) | + | | 0.315*** | 0.000492 | 0.183*** | |
| | | | (0.0162) | (0.0256) | (0.0205) | |
| Goverment Efficiency ($\alpha$) | - | | -0.00562 | -0.0455*** | -0.0357*** | |
| | | | (0.00515) | (0.00953) | (0.00872) | |
| Individual Characteristics | | Yes | Yes | Yes | Yes | Yes |
| Time FE | | Yes | Yes | Yes | Yes | Yes |
| Area FE | | No | No | Yes | Yes | No |
| Main religion FE | | No | No | Yes | Yes | No |
| Country FE | | No | No | No | No | Yes |
| Observations | | 42429 | 37703 | 37703 | 51474 | 29773 |
| $R^2$ | | 0.358 | 0.365 | 0.383 | 0.355 | 0.404 |

*Note:* The table reports the OLS estimates and robust standard errors (in brackets). The dependent variable in all specification is a participation to church dummy that takes value one if the individual goes to church. Religiosity is a dummy that takes value one if the individual declares himself as religious. Total welfare is the public expenditure in welfare as a percentage of GDP. Share of religious individuals is the percentage of religiosious individuals in a country-year that have the religiosity dummy equal to one. Government efficiency is the first principal component of the "Government Effectiveness", "Regulatory Quality" and "Corruption" indexes with mean zero and standard deviation of 1. Area and main religion fixed effects can be seen in Table 1. In Column (5) only observations coming from countries that are observed at least twice are used. The share of religious individuals, government efficiency, GRI and SHI are not added to the regressors in this column as they are almost collinear with country fixed effects. * p-value<0.10, ** p-value<0.05, *** p-value<0.01

how change in welfare should influence participation decisions only for country with intermediate levels of welfare state (in the the model this are countries with a size of the welfare state around $\hat{t}$). So we should expect that the size of the effect of changes of the size of the welfare state on participation decision are even higher for countries with middling size of the welfare state.

Tab. 3: Participation to Church: OLS Regression, Redistribution as a Proxy of Welfare

|  | Model | (1) Basic Model | (2) Country Char. | (3) Preferred | (4) Full Sample | (5) Country FE |
|---|---|---|---|---|---|---|
| Religiosity ($\tau$) | + | 0.438*** | 0.391*** | 0.371*** | 0.329*** | 0.265*** |
|  |  | (0.00742) | (0.00785) | (0.00845) | (0.00740) | (0.0117) |
| Redistribution (t) | - | -1.019*** | -0.612*** | -0.582*** | 0.368*** | -0.860*** |
|  |  | (0.0456) | (0.0615) | (0.126) | (0.0798) | (0.176) |
| Redistribution * Religiosity | + | 0.596*** | 0.345*** | 0.526*** | 0.363*** | 1.275*** |
|  |  | (0.0596) | (0.0627) | (0.0689) | (0.0591) | (0.0914) |
| Share Religious Individuals (q) | + |  | 0.490*** | 0.0826*** | 0.258*** |  |
|  |  |  | (0.0140) | (0.0240) | (0.0168) |  |
| Goverment Efficiency ($\alpha$) | - |  | 0.0148*** | -0.00494 | -0.00350 |  |
|  |  |  | (0.00375) | (0.00566) | (0.00505) |  |
| Individual Characteristics |  | Yes | Yes | Yes | Yes | Yes |
| Time FE |  | Yes | Yes | Yes | Yes | Yes |
| Area FE |  | No | No | Yes | Yes | No |
| Main religion FE |  | No | No | Yes | Yes | No |
| Country FE |  | No | No | No | No | Yes |
| Observations |  | 55598 | 49854 | 49854 | 70670 | 37230 |
| $R^2$ |  | 0.330 | 0.361 | 0.382 | 0.374 | 0.412 |

*Note:* The table reports the OLS estimates and robust standard errors (in brackets). The dependent variable in all specification is a participation to church dummy that takes value one if the individual goes to church. Religiosity is a dummy that takes value one if the individual declares himself as religious. Redistribution measure the difference between pre and post taxes Gini index. Share of religious individuals is the percentage of religiosious individuals in a country-year that have the religiosity dummy equal to one. Government efficiency is the first principal component of the "Government Effectiveness", "Regulatory Quality" and "Corruption" indexes with mean zero and standard deviation of 1. Area and main religion fixed effects can be seen in Table 1. In Column (5) only observations coming from countries that are observed at least twice are used. The share of religious individuals, government efficiency, GRI and SHI are not added to the regressors in this column as they are almost collinear with country fixed effects. * p-value<0.10, ** p-value<0.05, *** p-value<0.01

Additionally in Table 3 the same regression specification as in equation 4 is estimated. In this table redistribution as defined by SWIID is used as a measure of the size of the welfare state and also observations coming from non-OECD countries are used. Qualitatively similar results are obtained but for the government efficiency coefficient. This may be partly explained by the fact that redistribution measures not only the government expenditure but also its efficiency in using this resources. Looking at the economic importance of this redistribution measure in determining participation to church activities a one standard deviation increase in the distance between pre and

post tax Gini indexes implies a 3.5 percentage points decrease in the probability of participating to church activities for secular individuals while only a 0.3 percentage points decrease for religious individuals.

The results of both tables are robust to changes in the econometric estimation methodology as probit. Furthermore estimating the standard deviations of the parameters with clustering at the district level do not vary the significance of most of the parameters. Results for probit regression and different clustering techniques are respectively reported in Table 6 and Table 7 found in the appendix.

## 5.5   Preferences Over the Size of the Welfare State and Religiosity

For studying the determinants of the preferences over the size of the welfare state I merge 1990, 1996 and 2006 waves of the ISSP that includes 32 countries (almost 65000) observations. Table 4 presents the list of countries and some of the country characteristics. As in the previous empirical exercise we can observe how there is a substantial variation in the share of religious individuals. Furthermore both the mean and the standard deviation (not reported) of the preferences for additional welfare (PAW) vary through countries.

The goal of this exercise is to take the main testable of the model to the data. The preferred specification has the following form:

$$PAW_{i,c,t} = \delta_1 r_{i,c,t} \, + \, \delta_2 X_{i,t,c} \, + \, \epsilon_{i,t} \tag{5}$$

Where as before $i$ identifies the individual $c$ the country and $t$ the survey year. As a dependent variable $PAW_{i,c,t}$ measures the preferences for additional welfare. The higher this number is the more welfare individual $i$ wants with respect to how much is given in country $c$ at time $t$. The independent variables are $r_{i,c,t}$, a dichotomous variable that takes value one if individual $i$ is religious ($\tau = R$). The variable $X_{i,t,c}$ contains the observable individual and country specific characteristics that have been previously listed. In particular this include government effectiveness (in the model $\alpha$), main religion and area fixed effects. The results of Lemma 1 predicts that more secular individuals should have a higher $PAW_{i,c,t}$ ($\delta_1 \leq 0$) .

Table 5 contains the results of the OLS estimations of equation 5. Column (1) presents the results of an estimation where only individual characteristics are controlled for. In column (2) regressors that identifies the observable characteristics describe before are added. Finally column (3) has the preferred specification where area and main religion fixed effects are added. Column (4) presents the estimation results of equation 5 on the full sample. Finally, column (5) reports the results of a regression including country fixed effects. The results show how the model is consistent with the observed correlations. in particular religious individuals have in average lower preferences for additional welfare than than secular ones. Looking at the preferred regression in column (3) we can see how being religious decreases your preferences for additional welfare by around 5% of a standard deviation. Comparing the effects of religiosity the effect of personal income on the preferences over the size of the welfare state we can see how the effect of religiosity is sizable. Personal and family income has been shown to be a very good predictor of preferences over the size of the welfare state [Ravallion and Lokshin (2000); Corneo and Grüner (2002); Alesina and Giuliano (2009)]. Being religious instead of secular has a higher effect that passing from the first to the third quartile of the income distribution of your country, that has and effect of decreasing the preferences for additional welfare by around 3.9% of a standard deviation. Additionally is important to notice Proposition 2 says that in some occasions secular and religious individuals agree on the optimal

Tab. 4: Summary Statistics

| Country | % Religious | Main Religion | PAW | Alpha | Area |
|---|---|---|---|---|---|
| Australia | 0.78 | No Main Religion | -0.39 | 0.90 | Anglosaxon |
| Bulgaria | 0.99 | Orthodox | 0.50 | -1.73 | East Europe |
| Canada | 0.84 | No Main Religion | -0.48 | 0.92 | Anglosaxon |
| Chile | 0.89 | Catholicism | 0.82 | 0.36 | Latin America |
| Croatia | 0.93 | Catholicism | 0.70 | -0.84 | East Europe |
| Cyprus | 1.00 | Orthodox | 0.01 | 0.43 | Cyprus |
| Czech Republic | 0.48 | Catholicism | -0.28 | -0.24 | East Europe |
| Denmark | 0.88 | Protestantism | -0.16 | 1.38 | Rest of Europe |
| Finland | 0.84 | Protestantism | -0.10 | 1.24 | Rest of Europe |
| France | 0.64 | Catholicism | -0.67 | 0.34 | Latin Europe |
| Germany | 0.72 | No Main Religion | -0.29 | 0.80 | Rest of Europe |
| Hungary | 0.93 | Catholicism | 0.31 | -0.24 | East Europe |
| Ireland | 0.97 | Catholicism | 0.49 | 0.83 | Anglosaxon |
| Italy | 0.95 | Catholicism | 0.03 | -0.42 | Latin Europe |
| Japan | 0.37 | Buddism | -0.24 | 0.10 | Asia |
| Latvia | 0.60 | No Main Religion | 0.55 | -0.74 | East Europe |
| Netherlands | 0.61 | No Main Religion | -0.48 | 0.97 | Rest of Europe |
| New Zealand | 0.70 | Protestantism | -0.32 | 1.12 | Anglosaxon |
| Norway | 0.91 | Protestantism | -0.24 | 0.93 | Rest of Europe |
| Poland | 0.92 | Catholicism | 0.43 | -0.59 | East Europe |
| Portugal | 0.93 | Catholicism | 0.62 | -0.08 | Latin Europe |
| Russia | 0.72 | Orthodox | 0.77 | -1.97 | East Europe |
| Slovenia | 0.78 | Catholicism | 0.06 | -0.07 | East Europe |
| South Africa | 0.85 | No Main Religion | 0.67 | -0.58 | Anglosaxon |
| South Korea | 0.60 | No Main Religion | 0.11 | -0.39 | Asia |
| Spain | 0.82 | Catholicism | 0.38 | 0.02 | Latin Europe |
| Sweden | 0.77 | Protestantism | -0.22 | 0.93 | Rest of Europe |
| Switzerland | 0.88 | No Main Religion | -0.69 | 0.96 | Rest of Europe |
| United States | 0.88 | No Main Religion | -0.20 | 0.68 | Anglosaxon |
| Uruguay | 0.74 | Catholicism | 0.65 | -0.66 | Latin America |
| Venezuela | 0.87 | Catholicism | 0.87 | -2.62 | Latin America |

Tab. 5: Preference for Additional Welfare: The Effects of Religiosity

|  | Model | (1) Basic Model | (2) Country Char. | (3) Preferred | (4) Full Sample | (5) Country FE |
|---|---|---|---|---|---|---|
| Religiosity | - | 0.130*** | -0.0481*** | -0.0515*** | -0.0591*** | -0.0620*** |
|  |  | (0.0129) | (0.0133) | (0.0131) | (0.00974) | (0.0153) |
| Individual Characteristics |  | Yes | Yes | Yes | Yes | Yes |
| Time FE |  | Yes | Yes | Yes | Yes | Yes |
| Area FE |  | No | No | Yes | Yes | No |
| Main religion FE |  | No | No | Yes | Yes | No |
| Country FE |  | No | No | No | No | Yes |
| Observations |  | 35480 | 31776 | 31776 | 55361 | 21121 |
| $R^2$ |  | 0.082 | 0.227 | 0.255 | 0.237 | 0.246 |

*Note:* The table reports the OLS estimates and robust standard errors (in brackets). The dependent variable in all specification the first principal component of preferences for additional welfare in health, education, old age pensions and unemployment benefits. PAW has mean zero and standard deviation of 1. Religiosity is a dummy that takes value one if the individual declares himself as religious. Share of religious individuals is the percentage of religiosious individuals in a country-year that have the religiosity dummy equal to one. Area and main religion fixed effects can be seen in Table 4. In Column (5) only observations coming from countries that are observed at least twice are used. The share of religious individuals, government efficiency, GRI and SHI are not added to the regressors in this column as they are almost collinear with country fixed effects. * p-value<0.10, ** p-value<0.05, *** p-value<0.01

size of the welfare state. Only when the government is very efficient ($\alpha$ is high) we should observe discrepancies between the preferences of the size of the welfare state between religious and secular individuals. Interpreting the empirical results with this in mind we can look at the coefficient attach to the religiosity regressor as the average between a very negative coefficient that happens for countries with a high $\alpha$ and a coefficient of 0 that happens when $\alpha$ is low. In other words the effect of religiosity on preferences over the size of the welfare state may be much higher in some countries.

Notice that estimating standard deviations of the parameters with clustering at the district level do not vary the significance of most of the parameters. Results are reported in Table 8 found in the appendix.

## 6 Conclusions

This paper argues that the competition between religious organizations and the welfare state influences participation to religious services, preferences on the welfare state and religiosity of the individual. I first build a model where church provides goods and services as a club Individuals have heterogeneous evaluations of the religious good. One of the most important features of the model that drives most of the results is that the good provided by the church and the welfare state answer to similar need.

What happens in equilibrium is that while religious individuals will always go to church secular individuals would only participate if the welfare state is small enough. This happens because if

individuals live in a country with a big welfare state this services will crowd-out demand for goods and services provided by the church and secular individuals will no longer have an incentive to participate in it. Furthermore the model predicts that in countries that more efficiently transform taxes into high quality public goods we should observe lower participation rates.

Additionally the paper presents a model when individuals may also vote with a majority rule on the welfare state size. In this model more religious individuals will vote for a smaller welfare state. Low levels of welfare state will also be voted when the relative efficiency in providing good by the church with respect to the state is high.

I then make endogenous the type of each individuals. In the model every citizen have one offspring and the type of the offspring depends both on the type and the participation decision of the parent. In particular if an agent acts as its type prescribes (religious type go to church and secular types do not goes to church) then the offspring will be of the same type of the parent with a high probability. Instead if the opposite happens the offspring will be of the same type with much lower probability. The dynamics of this model show that the main driver of the secularization of a society is the relative efficiency of the state with respect to the church in providing goods.

Finally the results of the model are brought to the data by using international surveys on religiousness and preferences over the size of the welfare state. What I find is that many of the observed correlation found in the data are indeed compatible with model. First of all there is a negative correlation between church participation and the size of the welfare state and this is in absolute term higher for secular individuals. Furthermore government efficiency is negatively correlated with church participation while the share of religious individual has a positive correlation with participation. Looking empirically at the determinants of preferences over the size of the welfare state I show one of the main determinants is religiosity. Religiosity has an effect of similar magnitude as income and sex of the individual that previous papers has found to be important determinants of preferences for the size of the welfare state.

## 7 Appendix

### 7.1 Proof of Proposition 1

First notice that given Assumption 1, 2, 3religious individuals will always participate in church activities.

Even in the worst case scenario for a religious individual (nobody goes to church) the costs of going to church is lower than the gains.

Formally $U_R(1) = H(\alpha f(t), [g_2(0) + g_1(0)]) - t - 1 + \lambda > U_R(0) = H(\alpha f(t), g_1(0)) - t \; \forall t$

Given this result we can redefine the utility of a secular individuals as a function of its own participation decision $(p_i)$, the share of secular individuals that participate $(P_S)$.

$$U_S(p_i, p_S) = H(\alpha f(t), [g_1(q + (1-q)p_S) + g_2(q + (1-q)p_S)p_i]) - t - p_i$$

Adding g the global game noise to the previous game we end up with the following utility function:

$$G_S(p_i, p_S) = H(\alpha f(t), [g_1(q + (1-q)p_S) + g_2(q + (1-q)p_S)p_i]) - t - X_i p_i$$

Following Morris and Shin (2003) it can be shown that all the global game conditions are satisfied:

- A1: Action monotonicity comes directly from assumption 5

- A2: State monotonicity, A3: Strict Laplacian State monotonicity and A4: Limit Dominance come from the fact that the noise enters linearly the utility function $G$

- A5: Continuity comes directly from assumption 4

Then optimal strategy for secular individuals when $\sigma \to 0$ is:

$(p_S^*, p_R^*) = \begin{cases} (1,1) & if \; F(t, \alpha, q) < 0 \\ (0,1) & if \; F(t, \alpha, q) > 0 \end{cases}$

Where $F(t, \alpha, q) = \int_0^1 H(\alpha f(t), g_2(q + (1-q)p_S) - H(\alpha f(t), [g_2(q + (1-q)p_S) + g_1(q + (1-q)p_S)]) dp_S + 1$

Given Assumption 2 and 3 it can be shown that $\frac{\partial F(t, \alpha, q)}{\partial t} > 0$

So we can rewrite the optimal participation strategy as:

$(p_S^*, p_R^*) = \begin{cases} (1,1) & if \; t < \hat{t} \\ (0,1) & if \; t > \hat{t} \end{cases}$

Where $\hat{t} : \int_0^1 H(\alpha f(\hat{t}), g_2(q + (1-q)p_S) - H(\alpha f(\hat{t}), [g_2(q + (1-q)p_S) + g_1(q + (1-q)p_S)]) dp_S + 1$

Deriving this with respect to $\alpha$ and using implicit function theorem we get:

$$\alpha f'(\hat{t}) \frac{\partial \hat{t}}{\partial \alpha} \int_0^1 H_1'(\alpha f(\hat{t}), g_2(q + (1-q)p_S) - H_1'(\alpha f(\hat{t}), [g_2(q + (1-q)p_S) + g_1(q + (1-q)p_S)]) dp_S$$

$$+ f(\hat{t}) \int_0^1 H_1'(\alpha f(\hat{t}), g_2(q + (1-q)p_S) - H_1'(\alpha f(\hat{t}), [g_2(q + (1-q)p_S) + g_1(q + (1-q)p_S)]) dp_S \quad = \quad 0$$

So given Assumption 2 and 3 $\frac{\partial \hat{t}}{\partial \alpha} < 0$

Again deriving this with respect to $q$ and using implicit function theorem we get:

$$\alpha f^{'}(\hat{t})\frac{\partial \hat{t}}{\partial q}\int_0^1 H_1^{'}(\alpha f(\hat{t}), g_2(q+(1-q)p_S) - H_1^{'}(\alpha f(\hat{t}), [g_2(q+(1-q)p_S) + g_1(q+(1-q)p_S)])dp_S$$

$$+ \int_0^1 (1-P_S)[g_2^{'}(q+(1-q)p_S)H_2^{'}(\alpha f(\hat{t}), g_2(q+(1-q)p_S) \quad -$$

$$-(g_2^{'}(q+(1-q)p_S) + g_1(q+(1-q)p_S))H_2^{'}(\alpha f(\hat{t}), [g_2(q+(1-q)p_S) + g_1(q+(1-q)p_S)]) \quad = \quad 0$$

So given Assumption2 and 3 $\frac{\partial \hat{t}}{\partial q} > 0$

## 7.2   Proof of Proposition 2

Finding $t_S^*$:

rewrite $U_{i,S}(t) = \begin{cases} H(\alpha f(t), g_1(1) + g_2(1)) - t - 1 & for\ t < \hat{t} \\ H(\alpha f(t), g_1(q)) - t & for\ t > \hat{t} \end{cases}$

Defining $U_{i,S}^A(t) = H(\alpha f(t), g_1(1) + g_2(1)) - t - 1$

Taking derivatives we have: $\frac{\partial U_{i,S}^A}{\partial t}(t) = \alpha f^{'}(t)H_1^{'}(\alpha f(t), g_1(1) + g_2(1)) - 1 < 0$ given Assumption 6

Defining $U_{i,S}^B(t) = H(\alpha f(t), g_1(q)) - t$

taking derivatives we have: $\frac{\partial U_{i,S}^B}{\partial t}(t) = \alpha f^{'}(t)H_1^{'}(\alpha f(t), g_1(q)) - 1$

Defining $\bar{t}: U_{i,S}^A(\bar{t}) = U_{i,S}^B(\bar{t})$

Then given Assumptions 3 , 2 and 6 then is easy to show $\hat{t} < \bar{t}$

Defining $\tilde{t}: \alpha f^{'}(\tilde{t})H_1^{'}(\alpha f(\tilde{t}), g_1(q)) - 1 = 0$ noticing in particular that $\frac{\partial U_{i,S}^A}{\partial t}(t) < \frac{\partial U_{i,S}^B}{\partial t}(t)$ $\forall t$ then

Then: $t_S^* = \begin{cases} 0 & U_{i.S}^A(0) > U_{i,S}^B(\tilde{t}) \\ \tilde{t} & U_{i.S}^A(0) < U_{i,S}^B(\tilde{t}) \end{cases}$

or alternatively: $t_S^* = \begin{cases} 0 & W(\alpha) > 0 \\ \tilde{t} & W(\alpha) < 0 \end{cases}$

Where $W(\alpha) = H(0, g_1(1) + g_2(1)) - H(\alpha f(\tilde{t}), g_1(q)) - 1 + \tilde{t}$

Given assumption 6 then $\frac{\partial \tilde{t}}{\partial \alpha} > 0$ and is easy to show that $\frac{\partial W}{\partial \alpha} < 0$

Finding $t_R^*$:

rewrite $U_{i,R}(t) = \begin{cases} H(\alpha f(t), g_1(1) + g_2(1)) - t - 1 + \lambda & for\ t < \hat{t} \\ H(\alpha f(t), g_1(q) + g_2(q)) - t - 1 + \lambda & for\ t > \hat{t} \end{cases}$

Defining $U_{i,R}^A(t) = H(\alpha f(t), g_1(1) + g_2(1)) - t - 1 + \lambda$

Taking derivatives we have: $\frac{\partial U_{i,R}^A}{\partial t}(t) = \alpha f^{'}(t)H_1^{'}(\alpha f(t), \beta g(1)) - 1 < 0$ given Assumptions 6

Defining $U_{i,R}^B(t) = H(\alpha f(t), g_1(q) + g_2(q)) - t - 1 + \lambda$

Notice that $U_{i,R}^A(t) > U_{i,R}^B(t)$

Then $t_R^* = 0$

## 7.3 Proof of Proposition 3

Can we have a stable equilibrium where $p_S^* = 1$?

Substituting in Definition 3 we get: $q_{t+1} = q_t h + c$

So a potential stable equilibrium is $q^* = \frac{c}{1-h}$ and is stable because $h < 1$

given that $p_S^* = 1$ when $t^* < \hat{t}$ and this happens when $q > \frac{1}{2}$ or $W(\alpha) > 0$, then this is always an equilibrium when either $q^* = \frac{c}{1-h} > \frac{1}{2}$ or $W(\alpha) > 0$.

Can we have a stable equilibrium where $p_S^* = 0$?

Substituting in Definition 3 we get: $q_{t+1} = q_t(c + h)$

So a potential stable equilibrium is $q^* = 0$ and is stable because $\mid c + h \mid < 1$

given that $p_S^* = 0$ when $t^* > \hat{t}$ and this happens when $q < \frac{1}{2}$ and $W(\alpha) < 0$ we have this stable equilibria if $W(\alpha) < 0$.

## 7.4   Robustness Check - Additional Regressions

Tab. 6: Participation to Church: PROBIT regression

|  | Model | (1) Basic Model | (2) Country Char. | (3) Preferred | (4) Full Sample | (5) Country FE |
|---|---|---|---|---|---|---|
| Religiosity ($\tau$) | + | 0.373*** (0.0169) | 0.313*** (0.0167) | 0.320*** (0.0169) | 0.329*** (0.0155) | 0.202*** (0.0204) |
| Welfare Spending (t) | - | -1.260*** (0.0518) | -0.986*** (0.0701) | -0.430*** (0.116) | -0.685*** (0.107) | -0.906*** (0.211) |
| Welfare Spending * Religiosity | + | 0.142* (0.0791) | 0.203*** (0.0773) | 0.176** (0.0779) | 0.200*** (0.0726) | 0.632*** (0.0914) |
| Share Religious Individuals (q) | + |  | 0.306*** (0.0157) | 0.00636 (0.0253) | 0.194*** (0.0208) |  |
| Goverment Efficiency ($\alpha$) | - |  | -0.00503 (0.00486) | -0.0407*** (0.00974) | -0.0322*** (0.00906) |  |
| Individual Characteristics |  | Yes | Yes | Yes | Yes | Yes |
| Time FE |  | Yes | Yes | Yes | Yes | Yes |
| Area FE |  | No | No | Yes | Yes | No |
| Main religion FE |  | No | No | Yes | Yes | No |
| Country FE |  | No | No | No | No | Yes |
| Observations | | 42429 | 37703 | 37703 | 51474 | 29773 |
| Pseudo $R^2$ | | | | | | |

*Note:* The table reports the PROBIT estimates and robust standard errors (in brackets). The dependent variable in all specification is a participation to church dummy that takes value one if the individual goes to church. Religiosity is a dummy that takes value one if the individual declares himself as religious. Total welfare is the public expenditure in welfare as a percentage of GDP. Share of religious individuals is the percentage of religiosious individuals in a country-year that have the religiosity dummy equal to one. Government efficiency is the first principal component of the "Government Effectiveness", "Regulatory Quality" and "Corruption" indexes with mean zero and standard deviation of 1. Area and main religion fixed effects can be seen in Table 1. In Column (5) only observations coming from countries that are observed at least twice are used. The share of religious individuals, government efficiency, GRI and SHI are not added to the regressors in this column as they are almost collinear with country fixed effects. * *p-value<0.10,* ** *p-value<0.05,* *** *p-value<0.01*

Tab. 7: Participation to Church: OLS regression (clustered errors at the distrcit level)

| | Model | (1) Basic Model | (2) Country Char. | (3) Preferred | (4) Full Sample | (5) Country FE |
|---|---|---|---|---|---|---|
| Religiosity ($\tau$) | + | 0.440*** | 0.398*** | 0.396*** | 0.406*** | 0.223*** |
| | | (0.0376) | (0.0389) | (0.0386) | (0.0350) | (0.0459) |
| Welfare Spending (t) | - | -1.393*** | -1.121*** | -0.702** | -0.860*** | -1.093** |
| | | (0.157) | (0.215) | (0.309) | (0.273) | (0.542) |
| Welfare Spending * Religiosity | + | 0.325* | 0.271 | 0.276* | 0.275* | 1.019*** |
| | | (0.169) | (0.165) | (0.164) | (0.153) | (0.194) |
| Share Religious Individuals (q) | + | | 0.315*** | 0.000492 | 0.183*** | |
| | | | (0.0480) | (0.0799) | (0.0622) | |
| Goverment Efficiency ($\alpha$) | - | | -0.00562 | -0.0455* | -0.0357 | |
| | | | (0.0128) | (0.0268) | (0.0223) | |
| Individual Characteristics | | Yes | Yes | Yes | Yes | Yes |
| Time FE | | Yes | Yes | Yes | Yes | Yes |
| Area FE | | No | No | Yes | Yes | No |
| Main religion FE | | No | No | Yes | Yes | No |
| Country FE | | No | No | No | No | Yes |
| Observations | | 42429 | 37703 | 37703 | 51474 | 29773 |
| $R^2$ | | 0.358 | 0.365 | 0.383 | 0.355 | 0.404 |

*Note:* The table reports the OLS estimates and robust clustered standard errors at the district level (in brackets). The dependent variable in all specification is a participation to church dummy that takes value one if the individual goes to church. Religiosity is a dummy that takes value one if the individual declares himself as religious. Total welfare is the public expenditure in welfare as a percentage of GDP. Share of religious individuals is the percentage of religiosious individuals in a country-year that have the religiosity dummy equal to one. Government efficiency is the first principal component of the "Government Effectiveness", "Regulatory Quality" and "Corruption" indexes with mean zero and standard deviation of 1. Area and main religion fixed effects can be seen in Table 1. In Column (5) only observations coming from countries that are observed at least twice are used. The share of religious individuals, government efficiency, GRI and SHI are not added to the regressors in this column as they are almost collinear with country fixed effects. * p-value<0.10, ** p-value<0.05, *** p-value<0.01

Tab. 8: Preference for Additional Welfare: The Effects of Religiosity (clustered errors at the district level)

|  | Model | (1) Basic Model | (2) Country Char. | (3) Prefferred | (4) Full Sample | (5) Country FE |
|---|---|---|---|---|---|---|
| Religiosity | - | 0.130*** | -0.0481*** | -0.0515*** | -0.0591*** | -0.0620*** |
|  |  | (0.0323) | (0.0150) | (0.0143) | (0.0139) | (0.0158) |
| Individual Characteristics |  | Yes | Yes | Yes | Yes | Yes |
| Time FE |  | Yes | Yes | Yes | Yes | Yes |
| Area FE |  | No | No | Yes | Yes | No |
| Main religion FE |  | No | No | Yes | Yes | No |
| Country FE |  | No | No | No | No | Yes |
| Observations |  | 35480 | 31776 | 31776 | 55361 | 21121 |
| $R^2$ |  | 0.082 | 0.227 | 0.255 | 0.237 | 0.246 |

*Note:* The table reports the OLS estimates and robust clustered errors at the district level (in brackets). The dependent variable in all specification the first principal component of preferences for additional welfare in health, education, old age pensions and unemployment benefits. PAW has mean zero and standard deviation of 1. Religiosity is a dummy that takes value one if the individual declares himself as religious. Share of religious individuals is the percentage of religiosious individuals in a country-year that have the religiosity dummy equal to one. Area and main religion fixed effects can be seen in Table 4. In Column (5) only observations coming from countries that are observed at least twice are used. The share of religious individuals, government efficiency, GRI and SHI are not added to the regressors in this column as they are almost collinear with country fixed effects. * p-value<0.10, ** p-value<0.05, *** p-value<0.01

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