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DEPARTMENT OF ECONOMICS

UNDERSTANDING GOVERNMENT SPENDING AND PREFERENCES FOR REDISTRIBUTION

DOCTOR OF PHILOSOPHY DISSERTATION

KYRIAKOS P. PETROU

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KYRIAKOS P. PETROU

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The present doctoral dissertation was submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy of the University of Cyprus. It is a product of original work of my own, unless otherwise mentioned through references, notes, or any other statements.

Kyriakos P. Petrou

Abstract

The present dissertation has two main objectives. Firstly, to uncover the determinants that drive government spending, and secondly, to understand how preferences for redistribution are formed.

In the first chapter, using country data for the period 1970 to 2010, we investigate nine alternative theories that determine government size, taking into account theory uncertainty. By theory uncertainty we mean that any given theory of government expenditure does not logically exclude other theories from also being relevant. Therefore, no a-priori justification exists for focusing on a specific subset of determinants. We propose a novel Bayesian model averaging method in linear regression systems that allows for endogeneity. Our findings suggest that government size and its components are explained by multiple mechanisms that work simultaneously but differ in their impact and importance. In particular, for general government total expenditure we find decisive evidence for the demography theory. In the case of central government total expenditure, we find that income inequality and macroeconomic policy play a decisive role, in addition to demography. Our results are in agreement with the variance decomposition analysis. The determinants that have a high posterior inclusion probability explain more than 5% of the various expenditures components variation.

In the second chapter, we focus on the formation of preferences for redistribution and study how they are affected by social identity. Using individual data form the General Social Survey, we employ the linear social interaction model with socioeconomic network structure to study the impact of social identity on a range of socioeconomic beliefs, including preferences for redistribution, beliefs on abortion, attitudes, discrimination, government duties, legal system, politics, and religion. We find strong evidence that social identity, in the form of endogenous social interactions, plays a major role in the formation of preferences for redistribution and a range of socioeconomic beliefs.

In the third chapter, we investigate the presence of parameter heterogeneity and multiple regimes in the preferences for redistribution. We use data from the World Values Survey and we use the structural threshold regression model to allow for the endogeneity of the threshold variable. We find substantial evidence for the presence of multiple regimes in the formation of preferences for redistribution. In particular, we find that the mechanisms that generate multiple regimes are the mean country beliefs on redistributions, trust, fairness, the level of development, human capital, inequality, political institutions, religion, government stability and corruption.

Περίληψη

Η παρούσα διδακτορική διατριβή έχει δύο κύριους στόχους. Πρώτον, να μελετήσει τους παράγοντες που εξηγούν τις κυβερνητικές δαπάνες, και δεύτερον, να κατανοήσει το πως διαμορφώνονται οι προτιμήσεις για την αναδιανομή του πλούτου.

Στο πρώτο κεφάλαιο, χρησιμοποιώντας δεδομένα από διάφορες χώρες για την περίοδο 1970-2010, ερευνούμε εννιά διαφορετικές θεωρίες που επηρεάζουν το μέγεθος την κυβέρνησης, λαμβάνοντας υπόψιν την αβεβαιότητα της θεωρίας (theory uncertainty). Με τον όρο αβεβαιότητα της θεωρίας εννοούμε ότι οποιαδήποτε θεωρία η οποία επεξηγεί τις κυβερνητικές δαπάνες δεν μπορεί να αποκλείσει κάποια άλλη θεωρία από το να είναι σχετική. Άρα δεν υπάρχει μια εκ των προτέρων αιτιολόγηση για να επικεντρωθούμε σε κάποιο συγκεκριμένο υποσύνολο καθοριστικών παραγόντων που επεξηγούν τις κυβερνητικές δαπάνες. Προτείνουμε μια νέα μέθοδο Bayesian Model Averaging, για γραμμικά συστήματα παλινδρόμησης, η οποία επιτρέπει την ύπαρξη ενδογένειας των μεταβλητών. Τα ευρήματα μας υποδηλώνουν ότι οι συνολικές κυβερνητικές δαπάνες και οι διάφορες κατηγορίες τους μπορούν να εξηγηθούν μέσω πολλαπλών μηχανισμών που λειτουργούν ταυτοχρόνως, αλλά έχουν διαφορετική επίδραση σε ότι αφορά το μέγεθος και την σημαντικότητα τους. Συγκεκριμένα, για τις συνολικές δαπάνες της γενικής κυβέρνησης βρίσκουμε ότι η θεωρία που σχετίζεται με τα δημογραφικά στοιχεία της χώρας παίζει καθοριστικό παράγοντα στην διαμόρφωση τους. Σε ότι αφορά τις συνολικές δαπάνες της κεντρικής κυβέρνησης βρίσκουμε οτι καθοριστικό παράγοντα στη διαμόρφωση τους, εκτός από την θεωρία που σχετίζεται με τα δημογραφικά στοιχεία της χώρας, παίζουν οι θεωρίες αναφορικά με την εισοδηματική ανισότητα και την μακροοικονομική πολιτική. Τα αποτελέσματα αυτά είναι σύμφωνα με την ανάλυση διακύμανσης (variance decomposition analysis). Κάθε ένας από τους καθοριστικούς παράγοντες, με υψηλή ύστερη πιθανότητα ένταξης (posterior inclusion probability), εξηγεί πάνω από 5% της διακύμανσης των κυβερνητικών δαπανών.

Στο δεύτερο κεφάλαιο, επικεντρωνόμαστε στον τρόπο διαμόρφωσης των προτιμήσεων αναδιανομής του πλούτου και μελετούμε πως αυτές επηρεάζονται από την κοινωνική ταυτότητα του ατόμου. Χρησιμοποιώντας δεδομένα από το General Social Survey και το γραμμικό μοντέλο κοινωνικών αλληλεπιδράσεων με την χρήση της κοινωνικοοικονομικής δομής του δικτύου, μελετούμε την επίδραση της κοινωνικής ταυτότητας του ατόμου πάνω σε μια σειρά κοινωνικοοικονομικών πεποιθήσεων συμπεριλαμβανομένων των προτιμήσεων για αναδιανομή, των πεποιθήσεων για την έκτρωση, τις διακρίσεις, τις κυβερνητικές υποχρεώσεις, το νομικό σύστημα, το πολιτικό σύστημα και τη θρησκεία. Βρίσκουμε ισχυρές ενδείξεις ότι η κοινωνική ταυτότητα του ατόμου, με την μορφή ενδογενών κοινωνικών αλληλεπιδράσεων παίζει πολύ σημαντικό ρόλο τόσο στη διαμόρφωση των προτιμήσεων για αναδιανομή όσο και μιας σειράς κοινωνικοοικονομικών πεποιθήσεων.

Στο τρίτο κεφάλαιο, ερευνούμε την παρουσία ετερογένειας των παραμέτρων και πολλαπλών

καθεστώτων στις προτιμήσεις για αναδιανομή. Χρησιμοποιούμε δεδομένα από την World Values Survey και το μοντέλο structural threshold regression, το οποίο επιτρέπει την παρουσία ενδογένειας στη μεταβλητή που διαχωρίζει το δείγμα. Βρίσκουμε σημαντικές ενδείξεις για την παρουσία πολλαπλών καθεστώτων στη διαμόρφωση των προτιμήσεων για αναδιανομή. Συγκεκριμένα, βρίσκουμε ότι οι μηχανισμοί που παράγουν πολλαπλά καθεστώτα είναι οι μέσες πεποιθήσεις των χωρών όσον αφορά την αναδιανομή, την εμπιστοσύνη, τη δικαιοσύνη, το επίπεδο ανάπτυξης, το ανθρώπινο κεφάλαιο, την ανισότητα, τους πολιτικούς θεσμούς, τη θρησκεία, την κυβερνητική σταθερότητα και τη διαφθορά.

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To my parents, Petros and Soulla.
For everything I am...

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Introduction

The three traditional roles of the government are the provision of public goods, stabilization and redistribution. The recent global economic crisis has generated an intense debate amongst policy makers and academics about the size of government as a means to achieve these roles. We contribute in this debate primarily in two ways. Firstly, we uncover the robust determinants of government spending. Secondly, we focus on the size of the redistributive government, which depends on the demand for redistribution, that is, the willingness of individuals to tax the rich more heavily and transfer resources to the poor. Specifically, in Chapter 1 we investigate the theories of government size. Chapters 2 and 3 focus on formation of preferences for redistribution. Chapter 1 has given rise to a joint paper with Andros Kourtellos and Alex Lenkoski while Chapters 2 to 3 have generated a number of joint papers with Andros Kourtellos.

In Chapter 1 we uncover the theories for the formation of government size. Economic theory has proposed a wide range of alternative theories and hypotheses that determine government size. The most important hypotheses are: (i) centralization; (ii) conflict; (iii) country size; (iv) demography; (v) globalization; (vi) income inequality; (vii) macroeconomic policy; (viii) political institution; and (ix) Wagner's law. Despite the volume of theoretical and empirical literature on the determinants of government size, the results are mixed. We posit that the main cause of this problem is model uncertainty arising from theory uncertainty: any given theory of government expenditure does not logically exclude other theories from also being relevant and therefore, there is no a priori justification for focusing on a specific subset of determinants. We propose a novel Bayesian model averaging method to perform model averaging in linear regression systems, which allows for endogeneity. The estimates do not depend on a particular model specification but rather use information from all candidate models. Model averaging integrates out the uncertainty over models, by taking the weighted average of model-specific estimates, where the weights reflect the evidentiary support for each model given the data.

Using country data we employ a 5-year period unbalanced panel of 91 countries from 1971 to 2010. Our findings suggest that government size and its components are explained by multiple mechanisms that work simultaneously, but differ in their impact and importance. Furthermore, we find that the differential impact of the various theories also depends on the specific measure of government size. In particular, for general government total expenditure, we find decisive evidence for the demography theory, and strong evidence for globalization and political institution theories. In the case of central government total expenditure, we find that income inequality and macroeconomic policy play a decisive role, in addition to demography. This paper contributes to the literature of government size by assessing the strength of the empirical relevance of the aforementioned theories by taking into account model uncertainty. Our second contribution involves a novel BMA approach that develops an Instrumental Variable Bayesian Model Averaging (IVBMA) with priors defined in economic theory space.

In Chapter 2 we investigate the formation of preferences for redistribution and a set of various socioeconomic beliefs. There is one class of models, which focuses on preferences for redistribution and shows how economic beliefs can explain the differences on the size and role of the government across countries. Theory suggests that socioeconomic beliefs can shape both individual behavior and institutional outcomes, which in turn determine a country's economic performance. We study how social identity affects preferences for redistribution and more generally socioeconomic beliefs. Social identity is defined as the component of an individual's self-concept which is due to the individual's perceived membership in a relevant social group. Our main hypothesis is that preferences for redistribution and beliefs are interdependent in the sense that they are influenced by the preferences and characteristics of others. These social influences occur in "neighborhoods" that emerge in a social space spanned by meaningful "social distances", such as the similarity between the characteristics of individuals.

Using individual data from the General Social Survey, we employ the linear social interaction model with a socioeconomic network structure to study the impact of social identity on a range of beliefs and attitudes, including preferences for redistribution, beliefs about abortion, attitudes, discrimination, government duties, legal system, politics, and religion. Our identification strategy relies on exploiting past information as well as social distances by assuming that an individual's beliefs and preferences are formed during a critical past period of the life cycle and in turn affect current beliefs and preferences thereafter.

When the "neighborhoods" are based on parental education, race and religion, we find strong evidence that social identity plays a major role in the formation of preferences for redistribution and in a range of socioeconomic beliefs. We contribute to the existing literature primarily by taking into account the presence of social interactions in the preferences for redistribution and socioeconomic beliefs which suggested by a growing literature on the economics of social identity. Our second contribution addresses the "reflection problem", relying on exploiting past information as well as socioeconomic distances.

In Chapter 3 we investigate the presence of multiple regimes in preferences for redistribution. One prominent theory of preferences for redistribution is based on the political economy and in particular on majority voting. Meltzer and Richard (1981) suggest that, in majority ruling societies where the decisive voter is the voter with the median income and that the median voter's cost of taxation is proportional to his/her own income while the benefits are proportional to the mean income, poor people have an incentive to vote for more redistribution. Other important channels are the beliefs about the fairness of social competition, religion, family ties, education, and the ideology.

However, empirical evidence for the Meltzer and Richard hypothesis is mixed, mainly due to the fact that preferences for redistribution is complicated concept, which is not well captured by the median voter assumption. There is a large literature that proposes the existence of multiple regimes in regards to the preferences for redistribution process. In general, empirical evidence establishes linear associations. This, however, does not identify the mechanisms of preferences for redistribution, since it focuses on linear or generalized linear models while the theory implies non-linear mechanisms of multiple equilibria and threshold-type models.

Using individual data for 51 countries, we model parameter heterogeneity and investigate the presence of multiple regimes in preferences for redistribution, using the structural threshold regression model, which allows for the endogeneity of the threshold variable. We find substantial evidence for the presence of multiple regimes in the formation of preferences for redistribution. The mechanisms that generate multiple regimes are the mean country beliefs on redistribution, trust, fairness, the level of development, human capital, inequality, political institutions, religion, government stability and corruption. Finally, we find that countries with high inequality and high demand for redistribution are the ones with low productivity, low human capital and schooling, and high beliefs for the importance of God. Countries with high inequality and low demand for redistribution are the ones where people believe they do not have a great deal of freedom of choice and control over the way life turns out. This chapter contributes to the literature by providing evidence on deep nonlinearities. In particular, our analysis complements existing studies by providing evidence of threshold-type models that aim at capturing the parameter heterogeneity in the cross-country mechanism of the preferences for redistribution.

Chapter 1

Measuring the Strength of the Theories of Government Size

1.1 Introduction

A fundamental question in the public finance literature is what are the determinants of the size of the government. For many nations, including the most developed ones, government expenditure constitutes a large share of the GDP - world average 28%, G7 average 40%, and EU average 43% over the period of 1970 to 2010 - and thus, characteristics of such activities cannot be left unexplained. Government expenditure is also characterized by substantial heterogeneity even amongst the most developed countries. For example, for 168 countries over the period of 1970 to 2010, the expenditure of the general government ranges from 6% for Guinea-Bissau to 61% for Denmark on average. Notably, among the high income countries, Singapore, Japan and Chile average 17%, 20% and 24%, respectively while Israel, the Netherlands, and Denmark average 56%, 57% and 61%, respectively. More importantly, governments may adopt policies that either extend government expenditure because of concerns about the welfare of citizens, or limit government spending due to concerns about the unsustainability of the public debt trajectory. For instance, the central government will reduce its spending if it believes that the centralized provision of public goods such as education or healthcare is a major factor of government size. Such policies however, like the recent debate in the US on Obamacare, may have substantial implications on redistribution and inequality in the long run. Hence, uncovering the substantial factors of government expenditure is not simply a matter of characterization of the cross-country patterns of government size, but also informs policy makers about the impact of their policies.

By now, there exists a large literature that has proposed and tested a wide range of alternative theories and hypotheses that determine the long run demand and supply of government size. Shelton (2007) identifies at least 8 distinct theories of government expenditure that have been tested by several studies using various proxy variables.[1] To this list, we add two more theories. However, both theory and empirics have not provided convincing answers about the determinants of government expenditure.

The earliest theory of the size of government, *Wagner's Law*, traces back to the late 19th century when Adolf Wagner argued that government size increases with economic development. One of the most salient theories of government expenditure, however, is based on the seminal work of Rodrik (1998), who establishes the connection between *Globalization* and government size.[2] Rodrik argues that trade openness generates demand for insurance to compensate for the risk exposure to international markets. Epifani and Gancia (2009) proposed an alternative demand channel that relies on terms-of-trade externality whereby trade decreases the cost of taxation. Openness can also have a negative impact via a supply channel. Specifically, the government has incentives to increase efficiency and competitiveness by reducing the size of the government in order to keep mobile capital within national borders (Garrett and Mitchell (2001)). An additional theory is *Income Inequality*, which is based on the work of Meltzer and Richard (1981) who hypothesize that income inequality can generate demand for more redistribution and a larger government since the median voter has less income than the mean, which creates an incentive to vote for more redistribution. In contrast, when majority voting models account for capital market imperfections, ideology or the prospect of upward mobility, inequality may negatively affect redistribution (Saint-Paul (2001), Roemer (1998), and Benabou and Ok (2001)).

Furthermore, *Country Size* can negatively affect the share of government in GDP when there are fixed costs and economies of scale linked to partial or complete non-rivalry in the supply of public goods (e.g., Alesina and Wacziarg (1998)). Wallis and Oates (1988) and many others emphasize the importance of *Centralization*, which implies that an increase in fiscal decentralization will lead to an increase in the size of lower-level government (state and local) and to a decrease in the size of higher-level government. Another strand of literature has developed a theory of *Political Institutions* that links the different types of representative democracy and the composition of government expenditure (Persson, Roland, and Tabellini (1998), Persson and Tabellini (1999), Milesi-Ferretti, Perotti, and Rostagno (2001)). Other theories include *Ethnic*

[1] In Shelton (2007) political rights, electoral rules and government type are identified as different theories. In our baseline formulation we combine those under the theory of political institutions because they all refer to institutions constraining government and elite expropriation but also consider various robustness exercises (Acemoglu and Johnson (2005)).

[2] The first evidence of a relationship between trade and government expenditure were documented by Cameron (1978).

Fractionalization, which proposes a link between ethnic fragmentation and measures of public goods (Alesina, Devleeschauwer, Easterly, Kurlat, and Wacziarg (2003));[3] *Conflict* which links increases in government size with expenditure on defense (Eterovic and Eterovic (2012)); *Demography* which suggests the relevance of population growth, urbanization and the shares of dependants; and *Macroeconomic Policy*, besides trade policies, which relates to public debt, inflation and foreign direct investment with government expenditure (Rodrik (1998), Dreher, Sturm, and Ursprung (2008)).[4]

This paper contributes to the literature of government size by assessing the strength of the empirical relevance of the aforementioned theories, by taking into account model uncertainty. We posit that a major source of model uncertainty is due to the problem of theory uncertainty.[5] By the term theory uncertainty we mean that there exist multiple channels of transmission, due to various theories, and these channels are mutually compatible, that is, the validity of one theory of government expenditure (e.g., globalization) does not logically exclude other theories (e.g., country size) from also being relevant. This implies that there is no a priori justification for including a particular set of theories and their proxies in the regression model. Put differently, if one ignores this problem, results are likely to be fragile. The estimated effects could change dramatically in magnitude, lose their statistical significance, or even switch signs depending on which other variables are included in or excluded from the regression equation. For example, while Rodrik (1998) emphasizes the importance of globalization as a determinant of government expenditure, Wallis and Oates (1988), using a different set of determinants, argue that decentralization is the main reason for differences in government size among countries. An obvious alternative is to condition on all theories and include all possible determinants, as suggested by Shelton (2007). This approach is also known as the "kitchen-sink" and is often used to evaluate the relative evidentiary support of competing theories. One problem with this approach is that the largest model can potentially include many irrelevant covariates yielding a poor description of the underlying stochastic phenomenon. Another possible alternative is to consider all possible models. But this is rather infeasible and also raises the question of how to summarize information across all relevant models. Even if each theory is sufficiently described by only one variable, it means there are 2^9 possible models. So, how should one deal with the issue of model uncertainty?

To address the issue of model uncertainty, we propose a Bayesian Model Averaging (BMA) approach (e.g., Raftery, Madigan, and Hoeting (1997)). While these methods

[3] We do not include Ethnic Fractionalization because it is measured by time invariant variables and its effect is absorbed by fixed effects.

[4] Appendix Table B1 presents a summary of the empirical literature on the determinants of government size.

[5] Brock and Durlauf (2001) coined the term theory uncertainty due to openendedness of theories in the context of economic growth.

have been widely applied in other areas of economics, especially in the area of empirical growth, they are novel to this literature. BMA constructs estimates that do not depend on a particular model specification but rather use information from all candidate models. In particular, a BMA estimate is a weighted average of model specific estimates where the weights are given by the posterior model probabilities. This implies that the BMA estimates do not depend on a particular model specification but are instead conditional on the model space, which is generated by the set of all plausible determinants of the dependent variable.[6]

Our second contribution involves a novel BMA approach that develops an Instrumental Variable Bayesian Model Averaging (IVBMA) with priors defined in economic theory space. In particular, our method introduces BMA in linear models with endogenous regressors. Our method builds on a Gibbs sampler for the IV framework, similar to that discussed in Rossi, Allenby, and McCulloch (2006). While direct model comparisons are intractable, we introduce the notion of a conditional Bayes factor (CBF), first discussed by Dickey and Gunel (1978) and employed in a seemingly unrelated regression context by Holmes, Denison, and Mallick (2002). The CBF compares two models in a nested hierarchical system, conditional on parameters not influenced by the models under consideration. A key feature of the CBF is that for both outcome and instrumental equations, it is exceedingly straightforward to calculate and it essentially reduces to the normalizing constants of a multivariate normal distribution. This leads to a procedure in which model moves are embedded in a Gibbs sampler, which we term Markov Chain Monte Carlo Model Composition (MC3)-within-Gibbs. Based on this order of operations, IVBMA is then shown to be only trivially more difficult than a Gibbs sampler that does not incorporate model uncertainty and thus appears to have limited issues regarding mixing.

Our approach differs from the literature in several ways. Early attempts to account for endogeneity in the context of BMA were made by Durlauf, Kourtellos, and Tan (2011) who proposed a two-stage least squares Bayesian model averaging method (2SLS-BMA) for the case of just-identification and extended by Lenkoski, Eicher, and Raftery (2014) to over-identification by allowing for model uncertainty in both first and second stage models and by Morales-Benito (2112) to dynamic panel data. The weights of these methods rely on an approximation of the posterior probability of each model by the exponential of the Bayesian information criterion. This approximation is justified when a unit information prior for parameters is assumed as in Kass and Wasserman (1995).

[6] BMA has been successfully applied to address model uncertainty in the context of growth regressions by constructing estimates conditional not on a single model, but on a model space whose elements span a range of potential determinants (e.g., Brock and Durlauf (2001a); Fernández, Ley, and Steel (2001); Sala-i Martin, Doppelhofer, and Miller (2004); Durlauf, Kourtellos, and Tan (2008); Masanjala and Papageorgiou (2008); Malik and Temple (2009); Magnus, Powell, and Prufer (2010); Mirestean and Tsangarides (2016); Moral-Benito (2016)).

Chen, Mirestean, and Tsangarides (2016) proposed a limited information BMA approach, based on a method of moments methodology which avoids strong distributional assumptions. Koop, Léon-Gonzalez, and Strachan (2012) develop a fully Bayesian methodology that does not utilize approximations to integrated likelihoods. They develop a reversible jump Markov chain Monte Carlo (RJMCMC) algorithm, which extends the methodology of Holmes, Denison, and Mallick (2002). The authors then show that the method is able to handle a variety of priors, including those of Drèze (1976), Kleibergen and van Dijk (1998) and Strachan and Inder (2004). However, as the authors note, direct application of RJMCMC leads to significant mixing difficulties and relies on a complicated model move procedure that has similarities to simulated tempering to escape local model modes. Leon-Gonzalez and Montolio (2015) extend the approach of Koop, Léon-Gonzalez, and Strachan (2012) to dynamic panel data models.

Our proposed method allows for priors defined in theory space to account for the fact that the strength of several competing theories simultaneously is assessed using multiple proxy variables. Typical model priors are likely to inflate the probability of those theories which are associated with more variables. To deal with this problem, Brock and Durlauf (2001a) proposed a hierarchical prior, which was extended by Durlauf, Kourtellos, and Tan (2011), who considered a hierarchical dilution prior. More recently, Magnus and Wang (2014) proposed a hierarchical weighted least squares method to address these uncertainties. Following Durlauf, Kourtellos, and Tan (2011) we extend the idea of hierarchical priors with dilution to the context of IVBMA using a more accurate sampling strategy.

Moreover, when working with a large system of equations subject to endogeneity and instrumentation, there is a natural concern that the instrument assumptions may not hold. There are a host of frequentist-type hypotheses that have been proposed to examine the instrument conditions, the most familiar of which to applied researchers is the test of Sargan (1958). There have been, to our knowledge, no similar checks of instrument validity proposed in the Bayesian IV literature outside of the approximate method advocated in Lenkoski, Eicher, and Raftery (2014). We propose a new check of instrument validity, also based on CBFs, which appears to be the Bayesian analogue of the Sargan test. This method is able to integrate seemlessly with the IVBMA framework and offers a check of instrument validity.

The main finding of the paper is that government size and its components are explained by multiple mechanisms that work simultaneously but differ in their impact and importance. To this nuanced characterization adds the fact that the differential impact of the various theories also depends on the specific measure of government size. In particular, for general government total expenditure we find decisive evidence for the demography theory, strong evidence for the globalization and political institution theories, positive evidence for Wagner's law, centralization, income inequality and macroeconomic policy theories, and weak evidence for the country size and conflict theories. Interestingly enough, in the case of central government total expenditure, we find that income inequality and macroeconomic policy play a decisive role in addition to demography. However, the theories of globalization, political institution, and Wagner's law appear to have a weaker impact on central government compared to that on general government. The results for both total government expenditure and the components are consistent with the variance decomposition analysis. In particular, we find that almost 80% of the total variation in general government is explained by demography and political institution theories. In the case of central government, demography appears to be the only dominant theory, explaining 32% of total variation.

A similar pattern emerges in our investigation of the components of both general and central level of government. In particular, we find at least strong evidence that the components related to public goods expenditure (public order and safety, health and education expenditures) are affected by the centralization, demography, globalization, and Wagner's law theories. For the components related to social protection expenditure we find strong evidence for all theories except from the centralization, conflict, and country size theories. Finally, for the components related to the operation of the government (compensation of employees, general public services and economic affairs) we find strong evidence for the majority of the theories, with the exception of centralization, conflict, and globalization theories. In the case of the central government, we find similar results but with the following notable differences. For the components related to public goods expenditure, macroeconomic policy, and political institution theories play an important role, while centralization and globalization do not. For the components related to social protection expenditure we find strong evidence only for the demography theory.

The paper is organized as follows. Section 1.2 proposes our econometric methodology, Instrumental Variable Bayesian Model Averaging (IVBMA) approach. We start by describing the standard instrumental variable model in the context of the Bayesian approach. Then, we incorporate model uncertainty and assess the validity of the instruments. Section 1.3 describes our data and the variables we use to measure the various theories. In Section 1.4, we present the main results of the paper, the variance decomposition analysis, the channel of transmission analysis, and other investigations for robustness. Finally, Section 1.5 presents our conclusions.

1.2 Methodology: IVBMA

We investigate the drivers of government expenditure using the linear instrumental variables (IV) model. For each country j, government expenditure over the time interval $t-1$ to t is assumed to follow

$$gov_{jt} = \boldsymbol{Y}_{1jt}^{'}\boldsymbol{\beta}_1 + u_j + v_t + \epsilon_{jt} \tag{1.1}$$

where $j = 1, 2, ..., n_t$, $t = 1, 2, ..., T$, $\boldsymbol{Y}_{1jt}$ is a $(R-1)\times 1$ vector of endogenous variables, and instrumental variables given by the lagged values of the endogenous variables, $E(\boldsymbol{Y}_{1jt-1}'\epsilon_{jt}) = 0$. u_i and v_t denote the fixed and time effects, respectively. We assume that ϵ_{jt} is $i.i.d$ across countries and time and that u_i, v_t, and e_{jt} are mutually orthogonal.

Define $u_j = \boldsymbol{d}_j'\boldsymbol{u}$ with $\boldsymbol{d}_j = (\boldsymbol{d}_{j1}, ..., \boldsymbol{d}_{jn_t})'$, $\boldsymbol{u} = (u_1, ..., u_{n_t})'$, where $d_{ji} = 1$ if $j = i$ and 0 otherwise and $d_{ts} = 1$ if $t = s$ and 0 otherwise. Similarly, we can define the time effects $v_t = \breve{\boldsymbol{d}}_t'\boldsymbol{v}$. Let $\boldsymbol{W}_{jt} = (\boldsymbol{d}_j', \breve{\boldsymbol{d}}_t')'$ and $\boldsymbol{X}_{i1} = (\boldsymbol{Y}_{1jt}, \boldsymbol{W}_{jt}')'$. Then, by pooling time and countries we can also express the above model (1.1) as

$$gov_i = \boldsymbol{X}_{i1}^{'}\boldsymbol{\beta}_1 + \epsilon_{i1} \tag{1.2}$$

1.2.1 The Instrumental Variable Model

Following Chao and Phillips (1998), we express the linear IV model in equation (1.1) using the limited information formulation of the R-equation simultaneous equations model.

$$Y_{ir} = \boldsymbol{X}_{ir}^{'}\boldsymbol{\beta}_r + \epsilon_{ir} \tag{1.3}$$

where $r \in \{1, \ldots, R\}$ denotes the R equations in the system and $i \in \{1, \ldots, n\}$ a set of $i.i.d.$ observations. Thus, each covariate vector $\boldsymbol{X}_{ir}$ has length p_r and is formed such that $\boldsymbol{X}_{i1} = (Y_{i2}, \ \ldots \ Y_{iR}, \ W_{i1}, \ \ldots \ W_{iq})'$ while $\boldsymbol{X}_{ir} = (Z_{i1}, \ \ldots \ , Z_{is}, \ W_{i1}, \ \ldots \ W_{iq})'$ for $, r > 1$. W_{iq} where $q \in \{1, \ldots, Q\}$ denotes the included exogenous variables, $E(W_{iq}'\epsilon_{ir}) = 0$ while Z_{is} where $s \in \{1, \ldots, S\}$ denotes the excluded instrumental variables from equation 1, $E(Z_{is}'\epsilon_{is}) = 0$. In our context, $R = 20$, $Y_{i1} = gov_i$ denotes the government expenditure, Y_{ir} for $r \in \{2, \ldots, R\}$ consists of all the time varying determinants of government expenditure, Z_{is} consists of the one-period lag of the endogenous variables such that the system is just identified equation-by-equation, $s = R - 1$, and W_{iq} consists time and country fixed effects.

Letting $\boldsymbol{\epsilon}_i = (\epsilon_{i1}, \ldots, \epsilon_{iR})'$, we assume

$$\boldsymbol{\epsilon}_i \sim \mathcal{N}_R(0, \boldsymbol{K}^{-1}). \tag{1.4}$$

When $K_{1r} \neq 0$ for a given $r > 1$, this implies a lack of conditional independence between the residuals for the response and the associated endogenous variable. This contaminates inference on $\boldsymbol{\beta}_1$ if unaccounted for, necessitating the existence of instruments $\boldsymbol{Z}_i$ that do not appear in $\boldsymbol{X}_{i1}$ and a joint estimation of the parameters in (1.3) and (1.4).

We proceed by discussing the Bayesian estimation of these parameters under standard conjugate priors, following the developments of Rossi, Allenby, and McCulloch (2006). Accordingly, with each parameter vector, we assume $\boldsymbol{\beta}_r \sim \mathcal{N}(0, \mathbb{I}_{p_r})$ and $\boldsymbol{K} \sim \mathcal{W}(3, \mathbb{I}_R)$ where $\boldsymbol{K} \sim \mathcal{W}(\delta, \boldsymbol{D})$ represents a Wishart distribution with density

$$pr(\boldsymbol{K}|\delta, \boldsymbol{D}) \propto |\boldsymbol{K}|^{(\delta-2)/2} \exp\left(-\frac{1}{2} tr(\boldsymbol{K}\boldsymbol{D})\right) \mathbf{1}_{K \in \mathbb{P}_R}$$

where $\mathbb{P}_R$ is the cone of $R \times R$ symmetric positive definite matrices.

Let $\boldsymbol{\theta} = \{\boldsymbol{\beta}_1, \ldots, \boldsymbol{\beta}_R, \boldsymbol{K}\}$ represent the collection of parameters to be estimated. Denote the data $\mathcal{D} = \{\boldsymbol{Y}, \boldsymbol{X}_1, \ldots, \boldsymbol{X}_R\}$, where $\boldsymbol{Y}$ is the $n \times R$ matrix of responses and endogenous variables and each $\boldsymbol{X}_{(r)}$ is an $n \times p_r$ matrix. Our goal is to then determine the posterior distribution $pr(\boldsymbol{\theta}|\mathcal{D})$. Rossi, Allenby, and McCulloch (2006) discuss estimation of this model for the case when $R = 2$ and note that it is not possible to directly evaluate this posterior. However, approximate inference may be performed via Gibbs sampling.

Fix r and suppose that $\boldsymbol{K}$ and all $\boldsymbol{\beta}_t$ for $t \neq r$ are given. Note, by properties of standard normal variates that $\epsilon_{ir}|\boldsymbol{K}, \{\boldsymbol{\beta}_t\}_{t\neq r} \sim \mathcal{N}\left(\mu_{ir}, K_{rr}^{-1}\right)$ where $\mu_{ir} = -\sum_{t\neq r} \frac{K_{rt}}{K_{rr}} \left(Y_{it} - \boldsymbol{X}_{it}\boldsymbol{\beta}_t\right)$. Set $\tilde{Y}_{ir} = Y_{ir} - \mu_{ir}$ and thus note that $\tilde{Y}_{ir} \sim \mathcal{N}(\boldsymbol{U}_{ir}\boldsymbol{\beta}_r, K_{rr}^{-1})$.

The act of conditioning, therefore, turns the original system into a simple linear regression problem and via standard results (see e.g. Rossi, Allenby, and McCulloch (2006) we have that

$$\boldsymbol{\beta}_r|\boldsymbol{K}, \{\boldsymbol{\beta}_t\}_{t\neq r} \sim \mathcal{N}\left(\hat{\boldsymbol{\beta}}_r, \boldsymbol{\Omega}_r^{-1}\right) \tag{1.5}$$

where $\boldsymbol{\Omega}_r = K_{rr}\boldsymbol{X}_r'\boldsymbol{X}_r + \mathbb{I}_{p_r}$ and $\hat{\boldsymbol{\beta}}_r = K_{rr}\boldsymbol{\Omega}_r^{-1}\boldsymbol{X}_r'\tilde{\boldsymbol{Y}}_r$.

Finally, suppose that all $\boldsymbol{\beta}_r$ are given, then

$$\boldsymbol{K} \sim \mathcal{W}(\delta + n, \boldsymbol{E} + \mathbb{I}_R) \tag{1.6}$$

where $\boldsymbol{E} = \sum_{i=1}^n \boldsymbol{\epsilon}_i\boldsymbol{\epsilon}_i'$, with each $\boldsymbol{\epsilon}_i$ computed relative to the current state of $\boldsymbol{\beta}_1, \ldots, \boldsymbol{\beta}_R$.

Equations (1.5) and (1.6) thereby give the full conditionals necessary for the Gibbs sampler. We note that our approach differs slightly from that of Rossi, Allenby, and McCulloch (2006), in that their Gibbs sampler features a more involved manner of updating the instrumental covariates $\boldsymbol{\beta}_2$. However, the two approaches evaluate the same posterior distribution. We find that the approach above leads to easier implementation and description and therefore we prefer it to extending that of Rossi, Allenby, and McCulloch (2006) to multiple endogenous variables.

1.2.2 Incorporating Model Uncertainty

We outline our method for incorporating model uncertainty into the estimation of the framework (1.3) and (1.4). In order to explain the motivation behind our CBF approach, we first review some basic results from classic model selection problems. We then show how the concept of Bayes Factors can be usefully embedded in a Gibbs sampler yielding CBFs. These CBFs are then shown to yield straightforward calculations.

1.2.2.1 Bayes Factors

In a general framework, incorporating model uncertainty involves considering a collection of candidate models $\mathcal{I}$, using the data $\mathcal{D}$. Each model I consists of a collection of probability distributions for the data $\mathcal{D}$, $\{pr(\mathcal{D}|\psi), \psi \in \Psi_I\}$ where Ψ_I denotes the parameter space for the parameters of model I and is a subset of the full parameter space Ψ.

By letting the model become an additional parameter to be assessed in the posterior, we aim to calculate the posterior model probabilities given the data $\mathcal{D}$. By Bayes' rule

$$pr(I|\mathcal{D}) = \frac{pr(\mathcal{D}|I)pr(I)}{\sum_{I' \in \mathcal{I}} pr(\mathcal{D}|I')pr(I')}, \tag{1.7}$$

where $pr(I)$, denotes the prior probability for model $I \in \mathcal{I}$.

The integrated likelihood $pr(\mathcal{D}|I)$, is defined by

$$pr(\mathcal{D}|I) = \int_{\Psi_I} pr(\mathcal{D}|\psi)pr(\psi|I)d\psi, \tag{1.8}$$

where $pr(\psi|I)$ is the prior for ψ under model I, which by definition has all its mass on Ψ_I.

One possibility for pairwise comparison of models is offered by the Bayes factor (BF), which is in most cases defined together with the posterior odds (Kass and Raftery (1995)). The posterior odds of model I versus model I' is given by $\frac{pr(I|\mathcal{D})}{pr(I'|\mathcal{D})} = \frac{pr(\mathcal{D}|I)}{pr(\mathcal{D}|I')}\frac{pr(I)}{pr(I')}$, where $\frac{pr(\mathcal{D}|I)}{pr(\mathcal{D}|I')}$ and $\frac{pr(I)}{pr(I')}$ denote the Bayes factor and the prior odds of I versus I', respectively.

When the integrated likelihood (1.8) and thus, the BF can be computed directly, a straightforward method for exploring the model space, Markov Chain Monte Carlo Model Composition (MC3), was developed by Madigan and York (1995).

MC3 determines posterior model probabilities by generating a stochastic process that moves through the model space $\mathcal{I}$ and has equilibrium distribution $pr(I|\mathcal{D})$. Given the current state $I^{(s)}$, MC3 proposes a new model I' according to a proposal distribution $q(\cdot|\cdot)$, calculates

$$\alpha = \frac{pr(\mathcal{D}|I')pr(I')q(I^{(s)}|I')}{pr(\mathcal{D}|I^{(s)})pr(I^{(s)})q(I'|I^{(s)})}$$

and sets $I^{(s+1)} = I'$ with probability $\min\{\alpha, 1\}$ otherwise setting $I^{(s+1)} = I^{(s)}$.

It should be stressed that moving between models via the MC3 approach constitutes a valid MCMC transition. This feature is critical in the development below, in that MC3 moves may be nested inside larger structures in a manner similar to Gibbs updates.

1.2.2.2 Model Determination for Two-Staged Problems

We now consider the incorporation of model uncertainty into the system (1.3). This involves considering a separate model space $\mathcal{M}_r$ for each equation in the system. A given model $M_r \in \mathcal{M}_r$ thus restricts certain elements of $\boldsymbol{\beta}_r$ to zero and we write $\boldsymbol{\beta}_{M_r}$ to indicate the non-zero elements of $\boldsymbol{\beta}_r$ according to M_r. Furthermore, we let Λ_{M_r} be the subspace of $\mathbb{R}^{p_r}$ spanned by $\boldsymbol{\beta}_{M_r}$.

Ideally, we would be able to incorporate model uncertainty into this system in a manner analogous to that described above. Unfortunately,

$$pr(\mathcal{D}|M_1, \dots M_R) = \int_{\mathbb{P}_R}\int_{\Lambda_{M_1}} \cdots \int_{\Lambda_{M_R}} pr(\mathcal{D}|\{\boldsymbol{\beta}_{M_r}\}_{r=1}^R, \boldsymbol{K})pr(\boldsymbol{K})\prod_{r=1}^R pr(\boldsymbol{\beta}_{M_r})d\boldsymbol{\beta}_{M_1} \cdots d\boldsymbol{\beta}_{M_R} d\boldsymbol{K}$$

cannot be directly calculated in any obvious manner. Therefore, an implementation of MC3 on the product space of $\mathcal{M}_1 \times \cdots \times \mathcal{M}_R$ is infeasible. What we show below, however, is that embedding MC3 within the Gibbs sampler, and therefore calculation using CBFs to move between models, offers an extremely efficient solution. CBFs were originally discussed in Dickey and Gunel (1978) in an unrelated context.

Given the system (1.3), fix r and suppose that $\boldsymbol{\theta}_{-r} = \{\boldsymbol{K}, \{\boldsymbol{\beta}_t\}_{t\neq r}\}$ is given. Now consider comparing two models $M_r, L_r \in \mathcal{M}_r$. Finally, suppose that the prior over models $\mathcal{M}_r$ is set independently of $\boldsymbol{\theta}_{-r}$. We thus have

$$\frac{pr(M_r|\mathcal{D},\boldsymbol{\theta}_{-r})}{pr(L_r|\mathcal{D},\boldsymbol{\theta}_{-r})} = \frac{pr(\mathcal{D}|M_r,\boldsymbol{\theta}_{-r})}{pr(\mathcal{D}|L_r,\boldsymbol{\theta}_{-r})} \times \frac{pr(M_r)}{pr(L_r)} \tag{1.9}$$

and thus the conditional posterior odds depends on calculating a Bayes factor conditional on the current state of $\boldsymbol{\theta}_{-r}$.

Calculating the relevant terms in (1.9) is straightforward. We note, in particular that $pr(\mathcal{D}|M_r,\boldsymbol{\theta}_{-r}) = \int_{\Lambda_{M_r}} pr(\mathcal{D}|\boldsymbol{\beta}_{M_r},\boldsymbol{\theta}_{-r}) pr(\boldsymbol{\beta}_{M_r}|M_r) d\boldsymbol{\beta}_{M_r}$ which is, in essence, an integrated likelihood for model M_r conditional on fixed values of $\boldsymbol{\theta}_{-r}$. In Appendix A we show that

$$\int_{\Lambda_{M_r}} pr(\mathcal{D}|\boldsymbol{\beta}_{M_r},\boldsymbol{\theta}_{-r}) d\beta_{M_r} \propto |\boldsymbol{\Omega}_{M_r}|^{-1/2} \exp\left(\frac{1}{2}\hat{\boldsymbol{\beta}}'_{M_r}\boldsymbol{\Omega}_{M_r}\hat{\boldsymbol{\beta}}_{M_r}\right). \tag{1.10}$$

where $\hat{\boldsymbol{\beta}}_{M_r}$ and $\boldsymbol{\Omega}_{M_r}$ are defined in Appendix A, but are exactly analogous to the $\hat{\boldsymbol{\beta}}_r$ and $\boldsymbol{\Omega}_r$ discussed in section 1.2.1, relative to the subspace Λ_{M_r}.

The power of this result is that the model M_r and the associated parameter $\boldsymbol{\beta}_{M_r}$ may then be updated in a block. In particular, we note that

$$pr(\boldsymbol{\beta}_r, M_r|\boldsymbol{\theta}_{-r},\mathcal{D}) = pr(\boldsymbol{\beta}_r|M_r,\boldsymbol{\theta}_{-r},\mathcal{D}) \times pr(M_r|\boldsymbol{\theta}_{-r},\mathcal{D}). \tag{1.11}$$

Since MC3 constitutes a valid MCMC transition in the model space $\mathcal{M}_r$, we may first attempt to update M_r via (1.9) and then subsequently resample β_{M_r} via (1.5). By cycling through all R equations in (1.3) in this manner, and then subsequently updating $\boldsymbol{K}$ we have proposed a computationally efficient estimation strategy for incorporating model uncertainty in IV frameworks.

1.2.3 Assessing Instrument Validity

A critical assumption for the estimates of $\boldsymbol{\beta}_1$ to have appropriate inferential properties is that the instrumental variables $\boldsymbol{Z}$ must be valid. In other words, $E[\boldsymbol{Z}_i'\epsilon_{i1}|\epsilon_{i2},\ldots,\epsilon_{iR}] = \mathbf{0}$. Many tools exist for evaluating the validity of this assumption in frequentist settings, the most popular of which in the applied community is the test of Sargan (1958). To our knowledge, consideration of similar assessments in a Bayesian setting have not been explored, beyond the approximate test proposed in Lenkoski, Eicher, and Raftery (2014). We show that a Bayesian assessment of instrument validity can be proposed, borrowing many of the ideas above and merging these with the spirit of the Sargan test.

Suppose that all residuals and $\boldsymbol{K}$ were known. Let $\boldsymbol{\varsigma}$ be such that $\varsigma_i = \epsilon_{i1} + \sum_{r=2}^{R} \frac{K_{1r}}{K_{11}} \epsilon_{ir}$. The essential notion of the Sargan test is to consider the model $\varsigma_i = \boldsymbol{Z}_i'\boldsymbol{\xi} + \eta_i, \quad \eta_i \sim \mathcal{N}(0, \tau^{-1})$ and test whether $\boldsymbol{\xi} \neq \boldsymbol{0}$. The mechanics of the Sargan test ultimately rely on assymptotic theory and Lenkoski, Eicher, and Raftery (2014) discusses its poor performance in low sample size environments.

Our approach is to model this in a Bayesian context. In particular, we consider two models: J_0, which states that $\boldsymbol{\xi} = \boldsymbol{0}$, and J_1, which puts $\boldsymbol{\xi} \in \mathbb{R}^q$. We then aim to determine whether $pr(J_0|\mathcal{D})$ is large, indicating instrument validity. Note that this can be represented as the following marginalization

$$pr(J_0|\mathcal{D}) = \int pr(J_0|\boldsymbol{\varsigma}, \mathcal{D}) pr(\boldsymbol{\varsigma}|\mathcal{D}) d\boldsymbol{\varsigma} \tag{1.12}$$

Let $\{\boldsymbol{\theta}^{(1)}, \ldots, \boldsymbol{\theta}^{(S)}\}$ be an MCMC sample of $pr(\boldsymbol{\theta}|\mathcal{D})$ and $\{\boldsymbol{\varsigma}^{(1)}, \ldots, \boldsymbol{\varsigma}^{(S)}\}$ be the associated realization of $\boldsymbol{\varsigma}$ from each MCMC draw. This draw then enables us to approximate (1.12) with $\int pr(J_0|\boldsymbol{\varsigma}, \mathcal{D}) pr(\boldsymbol{\varsigma}|\mathcal{D}) d\boldsymbol{\varsigma} = \frac{1}{S} \sum_{s=1}^{S} pr(J_0|\boldsymbol{\varsigma}^{(s)}, \mathcal{D})$.

Note that $pr(J_0|\boldsymbol{\varsigma}^{(s)}, \mathcal{D}) = \frac{1}{1 + \frac{pr(J_1|\varsigma^{(s)}, \mathcal{D})}{pr(J_0|\varsigma^{(s)}, \mathcal{D})}}$ and therefore we have reduced the problem of assessing $pr(J_0|\mathcal{D})$ to that of evaluating a number of CBFs. At this juncture, note that

$$pr(J_0|\varsigma^{(s)}, \mathcal{D}) \propto pr(\varsigma^{(s)}|J_0, \mathcal{D}) pr(J_0) = \int_0^\infty pr(\varsigma^{(s)}|\tau, \mathcal{D}) pr(\tau) d\tau pr(J_0),$$

while

$$pr(J_1|\varsigma^{(s)}, \mathcal{D}) \propto pr(\varsigma^{(s)}|J_1, \mathcal{D}) pr(J_1) = \int_0^\infty \int_{\mathbb{R}^q} pr(\varsigma^{(s)}|\tau, \boldsymbol{\xi}, \mathcal{D}) pr(\boldsymbol{\xi}, \tau) d\boldsymbol{\xi} d\tau pr(J_1).$$

Evaluation of these integrals therefore, requires the specification of priors $pr(\tau)$ under J_0 and $pr(\boldsymbol{\xi}, \tau)$ under J_1. Under model J_0, we propose the standard prior $\tau \sim \Gamma(1/2, 1/2)$ which yields

$$pr(J_0|\varsigma^{(s)}, \mathcal{D}) \propto \left(\frac{1}{2} + \frac{\boldsymbol{\varsigma}^{(s)\prime} \boldsymbol{\varsigma}^{(s)}}{2} \right)^{-(n+1)/2}. \tag{1.13}$$

For J_1 we use the prior $\tau \sim \Gamma(1/2, 1/2)$ and $\boldsymbol{\xi}|\tau \sim \mathcal{N}(0, \tau^{-1}\mathbb{I}_q)$ which yields

$$pr(J_1|\varsigma^{(s)}, \mathcal{D}) \propto |\Xi|^{-1/2} \left(\frac{1}{2} + \frac{(\varsigma^{(s)} - \boldsymbol{Z}\hat{\boldsymbol{\xi}}^{(s)})'(\varsigma^{(s)} - \boldsymbol{Z}\hat{\boldsymbol{\xi}}^{(s)})}{2} \right)^{-(n+1)/2} \tag{1.14}$$

where $\Xi = \tau(\boldsymbol{Z}'\boldsymbol{Z} + \mathbb{I}_q)$ and $\hat{\boldsymbol{\xi}} = \tau \Xi^{-1} \boldsymbol{Z} \boldsymbol{\varsigma}^{(s)}$.

This approach offers similar performance to the test of Sargan (1958) and has the desirable features that it is a fully Bayesian approach (as opposed to the approximate test of Lenkoski, Eicher, and Raftery (2014)), which can be directly embedded in the Gibbs sampling procedures outlined above. Much work can still be done on this diagnostic.

1.2.4 Priors in Theory Space

As discussed in the Introduction, several competing theories are simultaneously tested and each theory has a number of variables which serve as potential proxies. Model space priors which do not account for these multiplicity issues are liable to overestimate the probability of those theories which are associated with the largest number of variables, since the collection of models, including at least one constituent, is greater than the set of models with few variables. A number of model space priors have been proposed to correct this feature.

In equation r of (1.3) suppose that there are T_r different theories. Let $t \in \{1, \ldots, T_r = 9\}$ denote one such theory with p_{tr} potential variables included. $\mathcal{M}_{tr}$ is the model space defined by theory t where $M_{tr} \in \mathcal{M}_{tr}$ when $M_{tr} \subset \{1, \ldots, p_{tr}\}$ with the restriction that $M_{tr} \neq \emptyset$. Finally, let $\boldsymbol{X}_{r,M_{tr}}$ be those columns of $\boldsymbol{X}_r$ associated with the model M_{tr}.

Setting priors in theory space is then performed hierarchically. Let $\gamma_{tr} \in \{0, 1\}$ be a binary indicator denoting whether theory t is relevant for equation r. We first set a probability $pr(\gamma_{tr} = 1)$ dictacting our prior belief that theory t is relevant, which in practice is typically chosen to be 0.5.

Subsequent to setting the prior overall probability that theory t holds, we then set individual model-level probabilities inside each theory. The simplest prior that corrects for mulitiplicity issues simply divides each theory by its size. In particular

$$pr(M_{rt}) = \frac{1}{2^{p_{rt}} - 1} pr(\gamma_{rt} = 1)$$

Since there are $2^{p_{rt}} - 1$ models in $\mathcal{M}_{rt}$ we see that this prior places equal probability on each model in $\mathcal{M}_{rt}$ while still presevering the structure that theory t has total prior probability $pr(\gamma_{rt} = 1)$. Since this prior probability can be explicitly stated, it should be noted the model search procedures discussed above could function with minor modifications.

In practice, multiple measurements that represent the same theory are likely to be highly correlated and various priors have been proposed which account for this feature. Let $\varsigma_{M_{rt}} = |C_{M_{rt}}|$ be the determinant of the correlation matrix $C_{M_{rt}}$ defined by $\boldsymbol{X}_{r,M_{rt}}$.

The dilution prior of Durlauf, Kourtellos, and Tan (2011) is defined by

$$pr(M_{rt}) = \frac{\varsigma_{M_{rt}}}{\sum_{M'_{rt}\in\mathcal{M}_{rt}} \varsigma_{M'_{rt}}} pr(\gamma_{tr}=1) \tag{1.15}$$

We note that this construction still preserves the feature that the total probability of theory t is $pr(\gamma_{rt}=1)$ but places different weights on each model in $\mathcal{M}_{rt}$ according to the degree to which the constituent variables are correlated, with greater weight placed on sets of less correlated variables.

This construction is worthwhile to consider, but complicates the straightforward implementation of the IVBMA algorithm discussed in Section 1.2.2.2. This is because, in general, the denominator of (1.15) is unknown and thus when attempting to transition from a model $M_{rt}\in\mathcal{M}_{rt}$ to $\emptyset$ (i.e. the model where theory t is not entertained) would require the evaluation of this denominator.

To alleviate this complication, we instead use the auxiliary variable γ_{rt} directly in each step of the sampler. Rewriting (1.3) we have

$$Y_{ir} = \sum_{t=1}^{T_r} \gamma_{rt}(\boldsymbol{X}^{'}_{r,M_{rt}}\boldsymbol{\theta}_{rt}) + \epsilon_{ir} \tag{1.16}$$

where $\gamma_{rt}\in\{0,1\}$, $\theta_{rt}\in\Theta_{M_{rt}}$, $M_{rt}\in\mathcal{M}_{rt}$, $\boldsymbol{\epsilon}_i\sim\mathcal{N}(0,\boldsymbol{K}^{-1})$. and $\theta_{rt}\in\Theta_{M_{rt}}\subset\mathbb{R}^{p_{rt}}$ has zeros according to the model M_{rt}. Let $\boldsymbol{M}_r=\{M_{1r},\ldots,M_{T_r r}\}$ be the collection of theory level models for theory r write $\boldsymbol{\theta}_r\in\Theta_{\boldsymbol{M}_r}\subset\mathbb{R}^{p_r}$ to be the concatenation of parameter vectors where each subset associated with a given theory t has the approriate zeros according to M_{tr}. Posterior inference can then proceed by sampling, in turn, the pair

$$pr(\gamma_{rt}, M_{rt}|\cdot) = pr(\gamma_{rt}|M_{rt},\cdot)pr(M_{rt}|\cdot) \tag{1.17}$$

for $t=1,\ldots,T_r$, and $r=1,\ldots,R$ instead of the original sampling of M_r in Section 1.2.2.2. Since any potential M_{rt} has the same denominator in (1.15), this term drops out of pairwise comparisons.

In practice, resampling M_{rt} is performed by first forming

$$\tilde{\boldsymbol{Y}}_{tr} = \boldsymbol{Y}_r - \sum_{s\neq t}\boldsymbol{U}^{(r)'}_{M_{sr}}\boldsymbol{\theta}_{rs} + \sum_{q\neq r}\frac{K_{qr}}{K_{rr}}(\boldsymbol{Y}_q - \boldsymbol{U}^{(q)'}\boldsymbol{\theta}_q).$$

A neighboring M'_{rt} is then proposed, following the logic of 1.17, $\hat{\boldsymbol{\beta}}_{\boldsymbol{M_{rt}}}$ and $\boldsymbol{\Omega}_{M_{rt}}$ are caculated using $\tilde{\boldsymbol{Y}}_{tr}$ and $\boldsymbol{X}_r$, which is combined with the prior probability $pr(M_{rt})$ to move between the two competing models.

After resampling the M_{rt} term, γ_{rt} is updated via $pr(\gamma_{rt} = 1|M_{rt}, \cdot) = \frac{u_1 pr(\gamma_{rt}=1)}{u_1 pr(\gamma_{rt}=1)+pr(\gamma_{rt}=0)}$ where u_1 is calculated as in 1.10. If γ_{rt} is sampled to be 1, a parameter vector $\boldsymbol{\theta}_{rt} \in \Theta_{M_{rt}}$ is resampled according to $\hat{\boldsymbol{\beta}}_{M_{rt}}$ and $\boldsymbol{\Omega}_{M_{rt}}$.

This sampling strategy, which relies heavily on the auxiliary variables γ_{rt}, allows for complicated priors to be elicited inside a theory, without concern for the missing prior denominator that would be necessary to directly compare a model $M_{rt} \in \mathcal{M}_{rt}$ to the null model $\emptyset$ associated with the theory being invalid. Instead, by consistently updating which model $M_{rt} \in \mathcal{M}_{rt}$ is to be compared to $\emptyset$ through the use of γ_{rt} we are able to move both inside theory space and to turn off theories using roughly the same CBF machinery as above.

1.2.5 Extensions to Generalized Linear Models

The developments in Sections 1.2.1 and 1.2.2 implicitly assume a continuous response with Gaussian errors. However, in the context of a random effects framework, it is straightforward to extend these developments to alternative sampling models. Let g be a link function such that for the response Y_i, $E[Y_{i1}] = g^{-1}(\boldsymbol{X}_i 1' \boldsymbol{\beta}_1 + \epsilon_{i1})$ while the remaining Y_{ir} have forms given by (1.3) and the residual vector $bs\epsilon_i$ remains distributed according to a $\mathcal{N}(0, \boldsymbol{K}^{-1})$ distribution. The term ϵ_{i1} is no longer observable (even when $\boldsymbol{\beta}_1$) and is often referred to as a random effect. However, in a Gibbs sampling framework these factors may be incorporated in additional parameters to be determined in the posterior. Therefore, we now aim to determine the posterior distribution $pr(\{M^{(r)}\}_{r=1}^R, \{\boldsymbol{\beta}_r\}_{r=1}^R, \boldsymbol{K}, \boldsymbol{\epsilon}_1|\mathcal{D})$. Appendix A shows how such an MCMC can be conducted in the case where Y_i is has a Poisson likelihood.

1.3 Measurement Issues

We employ a 5-year period unbalanced panel of 91 countries from 1971 to 2010.[7] The data are averaged over 5 years to avoid business cycle effects. To form five year panels from annual data, we took the arithmetic averages of the available annual values for each variable. The countries and observations vary by the category of expenditure used. For the total government expenditures we have information on 91 countries, while for the various components we have information on 80 countries. Details about the countries can be found in Appendix Table B2.

[7] We extend Shelton (2007) in two dimensions, time and determinants. Shelton (2007) uses a 5-year period unbalanced panel of a similar set of countries from 1971 to 2000. We use the same set of government expenditure components, but we use a much broader set of determinants.

1.3.1 Government Expenditure

We measure government size in complementary ways, one by general expenditure and the other by central government expenditure. Government expenditure is further classified by economic or functional classification. For the economic classification of expenditure, we use expenses for "Compensation of employees" and "Use of goods". For the functional classification of expenses we use expenses for "General public services", "Defence", "Public order and safety", "Economic affairs", "Health", "Education" and "Social protection".[8] The source for the share of government expenditure to GDP is the IMF's Government Financial Statistics database (GFS). Information on total government expenditure and its components can be found in Appendix Table B3, and the summary statistics in Appendix Table B5.

1.3.2 Determinants

The determinants of government expenditure are organized into nine different theories: *Centralization*, *Conflict*, *Country Size*, *Demography*, *Globalization*, *Income Inequality*, *Macroeconomic Policy*, *Political Institution* and *Wagner's Law*, as discussed in the introduction. Measuring these theories results in 19 proxies from several databases.[9] Additionally, in every model we include a constant, time, and country fixed effects.

For *Centralization* we use the ratio of central to general total government expenditure from GFS. We proxy *Conflict* using the warfare score. We use the natural logarithm of the population and the natural logarithm of the country's land area in square kilometers to proxy *Country Size*. For *Demography* we use the share of people younger than 15 years old and older than 64 years old to the working age population, the share of urban population to total population and population growth. We proxy *Globalization* with trade openness and *Income Inequality* with the Gini coefficient for gross inequality. *Macroeconomic Policy* is proxied by the share of central government debt to GDP, the natural logarithm of FDI liabilities stock, and inflation. For *Political Institution* we use the combined polity score, the political competition index, the political rights index, the presidential system dummy, and the plurality dummy. Finally, for *Wagner's Law* we use the natural logarithm GDP per capita. Information on all the determinants can

[8] Following Persson and Tabellini (1999) and Shelton (2007), expenditure of public good is the sum of public order and safety, health and education expenditures.

[9] The Database of Political Institutions (DPI), the Freedom House (FH) database, the Historical Public Debt Database (HPDD), the IMF's Government Financial Statistics database (GFS),Lane and Milesi-Ferretti (2007), the Major Episodes of Political Violence database (MEPV), Penn World Table 8 (PWT), Political Regime Characteristics and Transitions, the 1800-2013 database of the Polity IV Project (PRCT), the Polity IV Project (PIV), Solt (2009) and the World Development Indicators database (WDI).

be found in Appendix Table B4, the summary statistics in Appendix Table B6, and correlations in Appendix Table B7.

1.4 Results

In this section we present the results for our baseline results as well as a number of additional investigations that aim at providing a sensitive and in-depth analysis. First, we present the posterior inclusion probability (PIP) of the theories and the determinants, the posterior mean, and posterior standard deviation of the determinants, for both general and central government expenditures.

We are interested in three posterior summaries of each coefficient, namely the posterior inclusion probability $pr(\beta_r \neq 0|\mathcal{D})$, the posterior mean $E(\beta_r|\mathcal{D})$ and the posterior standard deviation $sd(\beta_r|\mathcal{D})$. IVBMA returns a MCMC sample of size S which can be used to approximate these posterior summaries. In particular

$$\begin{aligned} pr(\beta_r \neq 0|\mathcal{D}) &= S^{-1}\sum_{s=1}^{S} 1\{r \in \mathcal{M}^{(s)}) \\ E(\beta_r|\mathcal{D}) &= S^{-1}\beta_r^{(s)} \\ sd(\beta_r|\mathcal{D}) &= \left(S^{-1}\sum_{s=1}^{S}(\beta_r^{(s)} - E(\beta_r|\mathcal{D}))^2 \right)^{1/2} \end{aligned}$$

Using the notation of section 1.2.4, suppose that $\gamma_t^{(s)}$ is the binary indicator where $\gamma_t^{(s)} = 1$ implies that theory t is present in model $M^{(s)}$, then the PIP of theory t is

$$pr(\gamma_t = 1|\mathcal{D}) = S^{-1}\sum_{s=1}^{S}\gamma_t^{(s)}$$

The larger the probability of the non-zero effect, the larger the evidence in favor of the covariate r being part of the true theory. Following Kass and Raftery (1995) and Eicher, Henn, and Papageorgiou (2012) we interpret the values of PIP as follows: $PIP < 50\%$ indicates lack of evidence for an effect, $50\% \leq PIP < 75\%$ indicates weak evidence for an effect, $75\% \leq PIP < 95\%$ indicates positive evidence for an effect, $95\% \leq PIP < 99\%$ indicates strong evidence for an effect, and $PIP \geq 99\%$ indicates decisive evidence for an effect.

Second, in order to identify the contribution of each theory and determinant to the variation of total expenditure (and in its components), we construct a variance decomposition analysis. Third, we present results for the channels of transmission, in order to cast more light on the importance and the magnitude of the various theories. This analysis can also serve as a robustness for our theory priors. Fourth, we investigate the effect of the recent economic crisis. Last but not least, we provide a deeper investigation on the effect of globalization.

1.4.1 Total Government Expenditure and Components

The PIPs of the theories and determinants are presented in Tables 1.1 and 1.2, respectively. Tables 1.3 and 1.4 present the posterior means and the posterior standard deviations of the determinants, for the general and central government expenditures, respectively. The first column of the tables shows the theories; the second column presents results for total expenditure; and the remaining columns present results for the components.

1.4.1.1 General Government

Results suggest that the theory of demography has a decisive impact on general government total expenditure and strong evidence for the theories of globalization and political institution. We also find positive evidence for Wagner's law, centralization, income inequality and macroeconomic policy theories and some weak evidence for the country size and conflict theories.

In particular, the posterior inclusion probability of the demography theory is 0.998. As seen from Table 1.2, column 2, and Table 1.3 this is due to the decisive effect, with a positive posterior mean, of the ratio of the population older than 64 ($PIP = 0.998$), the ratio of the population younger than 15 years old ($PIP = 0.957$), and the population growth ($PIP = 0.848$). The effect of demography on total government expenditure pertains to its effects on the components. More precisely, demography theory has a decisive role for public goods expenditure (health and education) through the share of the population younger than 15 and older than 64. This is consistent with the explanation of Cassette and Paty (2010), that the share of the population over 65 constitutes an interest group with high political power, voting for social benefits programs, such as health. Population growth has a negative effect on the use of goods and services, social protection and public goods expenditure. Given the fixed cost (establishing a set of institutions) and the economies of scale linked to partial or complete non-rivalry in the supply of public goods, the population growth decreases the expenditure as a % of GDP.

Results suggest that globalization plays a strong role for the total expenditure with PIP equal to 0.956. This evidence pertains to decisive evidence, with positive posterior mean, of globalization, with positive posterior mean, on the public goods expenditure (through education), strong evidence, with positive posterior mean, on the use of goods and services expenditure and positive evidence on the social protection expenditure. Our results are generally consistent to those of Rodrik (1998), who finds that globalization increases inequality and economic insecurity, which, from the demand side of the political market, create incentives for government to compensate the losers, mainly through income transfer programs and economic policy activism. Our results are generally consistent with these findings, since we find a positive effect on both the direct (social protection) and indirect (public goods) form of transfer.[10]

We also find strong evidence for the political institution theory, with $PIP = 0.953$. Specifically, we find positive evidence for the political competition index, the political right index, and the democracy index. The positive effect of the democracy index on total expenditure (through the general public services and education expenditures) is consistent with Alesina and Wacziarg (1998). They find that democracies have higher government size due to the fixed cost in building democratic institutions, and the existence of social and redistribution policies. In contrast, we find a negative effect on the social protection expenditure, which is a direct form of redistribution. This can be explained by the presence of many pressure groups in democracies, which may lead to greater heterogeneity of preferences and thus, lower levels of redistribution. Instead, our results seem to support the political competition theory by Eterovic and Eterovic (2012), that the increase in political competition is likely to decrease government expenditure, which is found in our results for the general public services expenditure.[11] Shelton (2007) argues that as political rights become more open, more social and redistribution policies that take place. Again our results are consistent with this.

Furthermore, we find positive evidence for Wagner's law, centralization, income inequality and macroeconomic policy theories, and weak evidence for the country size and conflict theories. Our results are consistent with Wagner's Law theory, as suggested by the positive posterior mean for total expenditure and the public goods and the social protection expenditures.[12] The positive posterior mean of the centralization

[10] A more detailed analysis follows in Section 1.4.4.2.

[11] As Eterovic and Eterovic (2012) state there are at least four reasons why enhanced political competition is likely to decrease government expenditure: (1) the theory of fiscal illusion, (2) enhanced political competition allows more pressure groups to be catered to in the political calculus, (3) political competition enhances political accountability, and (4) in societies with severe restrictions on political competition (dictatorship) political leaders need to spend substantial public funds on securing and maintaining power.

[12] Wagner's law suggests that as states grow wealthier they simultaneously grow more complex, increasing the need for public regulatory and protective action to ensure the smooth operation of a modern, specialized economy. Additionally, it postulates that certain public goods, such as education and health, are luxury goods, which means that the demand for those goods increases more than

theory is consistent with the Brennan and Buchanan (1980) hypothesis.[13]

Finally, the negative posterior mean of the Gini coefficient is in contrast to the majority voting hypothesis (Meltzer and Richard (1981)).The literature suggests that inequality may negatively affect redistribution, if we take into account capital market imperfections (e.g., Roemer (1998), Benabou (1996) and Benabou (2000)), in the presence of high intergenerational mobility (Benabou and Ok (2001)) or if redistribution is accomplished by a public provision of goods and services rather than by transfers (Grossmann (2003)). We find strong evidence for the effect of Gini on social protection expenditure. This results suggest a deeper investigation of the mechanism that drives this. Additionally, we find strong evidence for the effect of inequality on economic affairs expenditure. Economic affairs contain, among other, expenses on labor affairs, fuel and energy, manufacturing, transport and communication. Those can be considered as a form of public goods.

1.4.1.2 Central Government

As in the case of the general government, we find that the majority of the proposed theories provide us with at least positive evidence on the central government expenditure. Compared with the general government, in addition to demography, we find decisive evidence for the theories of macroeconomic policy and income inequality on central government total expenditure. Central government includes expenditures of political authority that extends over the entire territory of the country.

Macroeconomic policy theory decisively affects total government with PIP equal to 1, through inflation ($PIP = 1$) and FDI liabilities ($PIP = 0.971$). Consistent with Zakaria and Shakoor (2011), we find a negative effect of inflation on total expenditure. This can be explained by the shrinking size of the formal sector or the reductions of the real value of government revenues, which limit the government's ability to spend. Importantly, our results do not support the hypothesis of the reduction of government size in order to increase competitiveness to attract FDI, given that we find a positive effect on central government total expenditure. This comes through an increase in general public services and public order and safety, which includes expenditure on executive and legislative organs, financial, fiscal and external affairs and expenditure on police protection services and law courts, which are the main mechanism in attracting and preserving foreign direct investments. The weak evidence of FDI on general government expenditure suggest that FDI related policies are adopted in the central

proportionally as income rises. Finally, Shelton (2007) indicate that richer countries have a bigger fraction of people over 64 years old, who demand more social protection.

[13] Brennan and Buchanan (1980) suggest that an increase in fiscal centralization will lead to more total government spending.

government and lower levels (state or local).

We also find decisive evidence, with positive posterior mean, for the income inequality theory, with $PIP = 1$, indicating that as inequality increases, so does the government size. Interestingly, we only find weak evidence of the effect of income inequality on the components. As in the case of general government, the Meltzer and Richard (1981) hypothesis is not supported, since we do not find any effect on neither social protection nor public goods expenditure. Given that total expenditure is the summation of the various components, we can conclude that the summation of the weak evidence of the effect of income inequality on the components provide the decisive evidence of the effect on total expenditure. In particular we get a small positive effect on the components (use of goods and services, economic affairs, public order and safety, health, and education expenditures), which summing those we end up with the positive effect on total expenditure. Given that general government is the summation of central and local government then the effect of inequality on general government economic affairs and social protection expenditures, comes from the local level, since in the central level we do not find any effect.

For the rest of the theories, results are similar to those relating to the general government. Specifically, we find decisive evidence for the demography theory, positive evidence for the centralization, political institution, globalization, and country size theories, and weak evidence for Wagner's law and conflict theories. Finally, we find notable differences between general and central government on the effect of urbanization and the presidential dummy. For the former, we find a positive posterior mean on public goods and social protection expenditure, which support the Ferris, Park, and Winer (2008) hypothesis.[14] Additionally, the negative effect on both general public services and economic affairs expenditure, can be explained by economies of scales, since government expenditure on administration, regulation, and operation are gathered in urban regions. The negative posterior mean of the presidential dummy on the use of goods and services, general public services and public goods expenditure (similar results with the general government) is consistent with Baraldi (2008).[15]

1.4.1.3 Instrument Validity

In order for the inference to be reliable for interpretation, it is critical that the instrumental variables are valid. As proposed in Section 1.2.3, we can evaluate the validity of the instrument using an approach similar in performance to the test of Sargan (1958)

[14]They suggest that as urbanization increases, a greater demand for government services is expected if education and health are mainly public responsibilities.

[15]He suggest that in presidential regimes government tends to be more efficient due to the competition between the policy makers.

which has the desirable features that it is a fully Bayesian approach.

In the bottom part of Tables 1.3 and 1.4 we present the p-value of our approach, under the null of no validity of the instruments, for general and central government, respectively. For both the general and the central government total expenditures and its components we reject the null hypothesis. This result provides strong evidence that the instruments we use are valid across all cases.

1.4.1.4 Summary of the Main Findings

The main finding is that the effect of the proposed theories on government expenditure is multidimensional. We find substantial evidence that total expenditure and its components are explained by different theories. However, the effect of the various theories differs in terms of its significance, size and the specific measure of government size. On the one hand, for general government total expenditure we find decisive evidence for the demography theory and strong evidence for the theories of globalization and political institution. On the other hand, for the central government total expenditure we find decisive evidence for the demography, macroeconomic policy, and income inequality theories.

In the next section, we present the results for the variance decomposition analysis.

1.4.2 Variance Decomposition

In this section, we develop a variance decomposition analysis, in order to determine the contribution of each theory in explaining the variation of total expenditure and its components. Firstly, we compute the posterior mean of each theory t: $\hat{T}_t = X_{t,1}\hat{\beta}_{t,1} + X_{t,2}\hat{\beta}_{t,2} + ... + X_{t,p}\hat{\beta}_{t,p}$, where $\hat{\beta}_{t,j}$ is the set of estimates for the coefficients of the determinants for theory t. Following Klenow and Rodriguez-Clare (1997), we decompose the variance of each theory:

$$1 = \sum_{i=t}^{T_r} \frac{Cov(gov_j, \hat{T}_t)}{Var(gov_j)} + \frac{Cov(gov_j, \hat{e}_t)}{Var(gov_j)}, t = ., \ldots, T_r$$

The results from BVS are presented in Table 1.5. For robustness in Appendix Table B8, we present the results of using CVS as an alternative decomposition method, finding similar results.[16]

[16]BVS is calculated as the share of the covariance between the posterior mean of theory t and of expenditure category j, to the variance of expenditure category j: $BVS = \frac{cov(\hat{T}_{r\,t}, gov_j)}{var(gov_j)}$. CVS is calculated as the share of the posterior mean of theory t to the variance of expenditure category j:

The variation of general government total expenditure is mainly explained by the demography theory (40.3%), the political institution theory (38.3%), the centralization theory (22.6%), and the income inequality theory (6.7%). Furthermore, the globalization (3.4%) and Wagner's law theory (3%), seem to explain only a small part of the total expenditure variation. For the central government total expenditure, only the demography theory explains a large fraction of the variation (32%). One notable difference is that, while the macroeconomic policy and income inequality theories exhibited a decisive role in terms of PIP, their impact in terms of their ability to explain the variation of expenditure is small, suggesting that the effect is significant but small in magnitude. With the exception of the conflict and the country size theories, all others explain a fraction between 3% and 9% of the variation of central government total expenditure. Importantly, our results show that country and time heterogeneity do not explain the variation of total expenditure, neither on the general nor the central level.

In sum, our results are in agreement with the results from the posterior inclusion probability. The determinants that have a high PIP explain more than 5% of the various expenditures components variation.

1.4.3 Channels of Transmission Analysis

In this section we consider two complementary investigations to identify and explain the mechanisms that underlie the estimated relationships between the various theories and government expenditure. First, we exclude a theory from the model space one at a time in a similar fashion as the mediation analysis, but rather than focusing on individual variables, here, the unit of analysis are the theories and their proxies. In such an analysis, the hypothesis is that an underlying theory transmits its effect to government expenditure directly as well as indirectly via a mediator theory. For example, political institutions can affect government expenditure directly or indirectly via their effect on globalization. By excluding globalization from the model space we can assess its mediation role vis-a-vis the other theories of the government expenditure using a posterior odds ratio analysis. For any two given theories i and j, $i \neq j$ we estimate

$$\frac{PIP^{i}}{PIP^{i,-j}} + \frac{\Delta PIP^{i,-j}}{PIP^{i,-j}} = 1, \tag{1.18}$$

where PIP^i is the posterior inclusion probability of theory i in the baseline model, which gives us the direct effect of theory i on government expenditure, $PIP^{i,-j}$ is the posterior inclusion probability of theory i after we exclude the theory j and $\Delta PIP^{i,-j} = PIP^{i,-j} - PIP^i$ is the difference of the two, which gives us the mediation effect.

$CVS = \frac{var(\hat{T}_{rt})}{var(gov_j)}$ Gibbons, Overman, and Pelkonen (2014).

The posterior inclusion probabilities of the theories and the decomposition into direct and mediation effects are presented in Table 1.6. Additionally, in Appendix Tables B9 and B10 we present the direct and the mediation effect of the posterior inclusion probabilities and the posterior mean of the determinants, respectively. As described in the basic model analysis, for the general government total expenditure, only the demography theory has a PIP higher than 99%. This effect is mainly driven by the share of the population younger than 15 and older than 64. When we exclude any other theory, we always find the same decisive evidence for the effect, indicating a very small mediation effect. Examining the individual variable, we find that the mediation effect is much higher both in terms of PIP and posterior mean. For example, excluding the macroeconomic policy theory, we find that the PIP for the share of the population younger than 15 drops from 0.957 to 0.027 and the share of the population older than 64 drops from 0.998 to 0.051. In addition, the posterior mean becomes almost zero, from 0.183 and 1.588 for share of population younger than 15 and older than 64, respectively.

For the theories with a PIP higher than 95% (globalization, and political institution) in the baseline model, we find that, with the exception of centralization and political institution theories, excluding any theory causes a decrease of the PIP in globalization to less than 75% and a sharp decrease of its posterior mean (in some cases the effect of trade openness becomes negative). In contrast, the exclusion of any theory causes a small positive mediation effect on the political institution theory, meaning that the PIP, increases. This is true for all cases with the exception of the case which we exclude demography hypothesis and find that PIP decreases form 0.953 to 0.804. The mediation effect on the PIP of the determinants is relatively higher than the mediation effect on the PIP of the theories.

The results for the central government total expenditures and its components are generally similar. In the baseline model we find decisive evidence for the effect of demography, income inequality, and macroeconomic policy theories. The mediation effect of the PIP of the macroeconomic policy theory is big only for the cases in which we exclude either the centralization or the demography theory. This is mainly due to the sharp decrease of PIP and posterior mean of FDI and inflation. For the demography and income inequality the mediation effects in PIP are relatively large, in the sense that the initial PIP of the theories change substantially with the exclusion of the majority of the theories.

In sum, this analysis shows that most of the theories affect government expenditure directly as well as indirectly. In particular, while globalization theory has a big effect on general government expenditure, in terms of PIP and posterior mean, it also has a big indirect effect through the majority of the other theories. This is also true for the overall effect of the demography and income inequality theories on central government expenditure. Finally, we find that the indirect effect of macroeconomic policy theory comes form the centralization and the demography theories.

Second, we undertake an alternative investigation that conditions on a treatment theory to be always present in all models and then ask the question of how model uncertainty with respect to the remaining theories, which are viewed as controls, influence the effect of the treatment theory. Results for the PIP of the theories are presented in Table 1.7 and for the determinants in Table B9. For both general and central government total expenditure we find that the impact of conditioning on a theory to always be included in the model space is quite substantial. For example, in the case of the general government total expenditure, when we condition Wagner's law theory to be included in the model space we find that while the PIP of the demography hypothesis drops from 0.998 to 0.703 ($\Delta PIP^{i,-j} = -0.295$), the PIP of the macroeconomic policy hypothesis rises from 0.796 to 0.995 ($\Delta PIP^{i,-j} = 0.199$).

Overall, this analysis highlights the presence of model uncertainty and the vital role of BMA in order to obtain valid inference. This analysis also illustrates that while the BMA does not depend on individual models, it does depend on the model space. To ensure correct specification of the model space we included in the analysis all the relevant theories to the best of our knowledge.

1.4.4 Further Results

1.4.4.1 Global Economic Crisis

The recent global economic crisis began in 2007 with a crisis in the subprime mortgage market in the USA, developed into a full-blown international banking crisis in 2008 by spreading into the majority of countries. It raises the question of whether it affects either the government expenditure or the determinants of those. In order to answer this we construct the interaction of each determinant with the final period (2006-2010) dummy and treat this as an additional theory, named *Crisis*. In Table 1.8 we present the posterior probability of the crisis theory probability, as well as the posterior probability of the other theories and in Appendix Table B11 we present the posterior probability of the determinants.

Firstly, we observe that the crisis theory has a very small posterior probability for both the general and central government total expenditures and their components, indicating that government size was not affected by the economic crisis. One explanation might be that the crisis has a lagged effect that is not captured by our data, since the final year of our sample is 2010. So, the inclusion of the crisis hypothesis does not affect the main results.

1.4.4.2 Globalization

Here, we provide an in-depth analysis of globalization using a smaller sample. As argued by Rodrik (1998) the exposure to risk of the more open to trade economies can be mitigated by increasing the "safe" government sector. Following Rodrik (1998) we use the terms of trade variability as proxy of risk. The interaction term of trade openness and terms of trade variability measure the external risk for an open economy.[17] The inclusion of these additional terms limit our sample substantially (85 countries and 219 observations), which explains the reason we opted not to consider this in the baseline sample.

In Table 1.9 and Appendix Table B12 we present the PIP of the theories and the variables, respectively. We find a decisive effect with PIP equal to 1 for the globalization theory on the general government total expenditure. While the PIP of the interaction term is equal to 1, indicating decisive evidence for the effect, the posterior mean is negative. Additionally, the PIP of the interaction term on both social protection and public goods expenditures indicates that neither matters (PIP is 0.003 and 0.038, respectively). In the case of central government level, we find decisive evidence for the effect of globalization on public goods expenditure. The PIP of the interaction term is 1, but the posterior mean is negative. These results do not support the explanation of Rodrik (1998), who finds a positive effect.

1.4.4.3 BMA and Classical Analysis

In addition to the structural analysis based on IV, we present BMA results that do not account for the endogeneity of the determinants.

We employ Bayesian Model Averaging (BMA) without taking into account the endogeneity of the regressors.[18] The results for both the general and central government expenditures are presented in Appendix Table B13. There is a big difference between the IVBMA and BMA results, suggesting that ignoring the endogeneity of the regressors can lead us to incorrect conclusions.

For comparison we also provide least square and instrumental variable results. In the Appendix Table B14, we present the least squares and instrumental variable estimation

[17] Rodrik (1998) finds a positive and statistically significant coefficient for the interaction terms.

[18] For more information on the BMA estimation see Kass and Raftery (1995) and Raftery, Madigan, and Hoeting (1997).

for the largest model (including all proxies, time and country fixed effect) and the instrumental variable estimation for the best three models, based on the posterior model probabilities. Results show that the "kitchen-sink" model that uses all regressors, estimated either by least square or by instrumental variable, for both the general and the central government expenditures, yields very different determinants for the government expenditure. Nevertheless, given that the posterior model probability is approximately zero, this implies that this model is not reliable for inference.

Another common concern is that our model space is dominated by few models. The top three models yields posterior probability 0.031, 0.031 and 0.029 for the general government total expenditure and 0.074, 0.068 and 0.041 for the central government total expenditure, suggesting that our results do not suffer from this problem.

1.5 Conclusion

By now there exists a large literature on the size of government that proposed and tested a wide range of alternative theories and hypotheses that determine the long run demand and supply of government size. Yet, both theory and empirics have not provided convincing answers about the determinants of government expenditure. This paper contributes to the literature of government size by assessing the strength of the empirical relevance of those theories by taking into account model uncertainty.

To address the issue of model uncertainty, we propose a novel BMA approach that develops an Instrumental Variable Bayesian Model Averaging with priors defined in economic theory space to account for the fact that the strength of several competing theories is simultaneously assessed using multiple proxy variables. In particular, our method introduces BMA in linear models with endogenous regressors.

For general government we find decisive evidence for the demography theory, strong evidence for the globalization and political institution theories, positive evidence for Wagner's law, centralization, income inequality and macroeconomic policy theories and weak evidence for the country size and conflict theories. For the central government we find decisive evidence for the macroeconomic policy, income inequality, and demography theories, positive evidence for the centralization, political institution, globalization, and country size theories, and weak evidence for Wagner's law and conflict theories. These results are robust with the variance decomposition and the channels of transmission analyses. Furthermore, we do not find any effect of the recent economic crisis on either the total expenditures and its components. Finally, we do not find evidence for the explanation of Rodrik (1998), who suggests that the link between government expenditure and globalization is based on the exposure to risk of the country.

Furthermore, the investigation of the formation of the components of government expenditure suggests that different categories are affected by different theories. Using this, we can conclude that the use of only total expenditure may lead us to incomplete and misleading results. The most robust theories, in the sense that they affect both total and the various components, are the demography theory for the general government level and demography, macroeconomic policy, and political institution theories for the central government level. The variance decomposition analysis suggests that the variation of total expenditure and its components is mainly explained by the robust theory we find. Furthermore, results from the channels of transmission analysis go to the same direction as in the baseline model. Additionally, the analysis provides evidence that the Bayesian Model Averaging estimation is extremely useful in models in which there is no a priori justification for particular set of theories and their proxies.

1.6 Tables

Table 1.1: **Posterior Probability of the Theories**

The table provides the IVBMA posterior inclusion probability for the different theories for general and central government total expenditures and components. Time and country fixed effects (unreported) are included in each model.

	Total Expenditure	**Compensation of Employees**	**Use of Goods and Services**	**General Public Services**	**Defense**	**Public Order and Safety**	**Economic Affairs**	**Health**	**Education**	**Social Protection**	**Public Goods**
	Panel A: General Government										
Centralization	0.805	0.032	0.207	0.021	0.011	0.006	0.032	1.000	1.000	0.421	0.994
Conflict	0.607	0.285	0.147	0.485	0.787	0.159	0.137	0.345	0.139	0.437	0.378
Country Size	0.654	0.398	0.971	0.924	0.241	0.488	0.307	0.410	0.995	0.355	0.221
Demography	0.998	0.665	0.999	0.747	0.710	0.148	0.827	0.954	0.942	0.833	1.000
Globalization	0.956	0.369	0.984	0.205	0.159	0.304	0.486	0.047	0.946	0.815	1.000
Income Inequality	0.796	0.372	0.737	0.348	0.240	0.034	0.977	0.335	0.173	0.929	0.150
Macroeconomic Policy	0.796	0.940	0.690	0.997	0.954	0.176	0.132	0.098	0.203	1.000	0.333
Political Institution	0.953	0.557	0.354	1.000	0.703	0.175	0.192	0.164	0.882	0.858	0.499
Wagner's Law	0.863	0.913	0.767	0.802	0.438	0.217	0.502	1.000	1.000	0.846	1.000
	Panel B: Central Government										
Centralization	0.899	0.980	1.000	0.578	0.020	0.388	0.036	0.095	0.824	0.023	0.561
Conflict	0.617	0.422	0.228	0.257	0.863	0.143	0.105	0.103	0.103	0.382	0.418
Country Size	0.764	0.897	0.429	0.236	0.118	0.344	0.872	0.272	1.000	0.108	0.630
Demography	0.996	0.762	0.580	0.985	0.918	0.034	0.940	0.933	0.997	1.000	0.910
Globalization	0.813	0.541	0.391	0.067	0.207	0.038	0.938	0.459	0.593	0.142	0.317
Income Inequality	1.000	0.675	0.253	0.170	0.854	0.376	0.582	0.699	0.119	0.574	0.550
Macroeconomic Policy	1.000	1.000	0.045	1.000	0.925	0.835	0.952	0.003	0.350	0.226	0.789
Political Institution	0.853	0.831	0.999	1.000	0.488	0.828	0.538	0.511	0.894	0.654	1.000
Wagner's Law	0.717	0.870	0.591	0.874	0.526	0.371	0.817	0.503	0.758	0.470	0.983

Table 1.2: **Posterior Probability of the Determinants**

The table provides the IVBMA posterior inclusion probability for the different determinants for general and central government total expenditures and components. Time and country fixed effects (unreported) are included in each model.

	Total Expenditure	**Compensation of Employees**	**Use of Goods and Services**	**General Public Services**	**Defense**	**Public Order and Safety**	**Economic Affairs**	**Health**	**Education**	**Social Protection**	**Public Goods**
					Panel A: General Government						
Centralization	0.806	0.032	0.206	0.022	0.010	0.005	0.033	1.000	1.000	0.422	0.994
Warfare Score	0.601	0.292	0.143	0.476	0.784	0.160	0.137	0.346	0.140	0.433	0.379
Land Area	0.525	0.400	0.971	0.923	0.238	0.487	0.072	0.012	0.988	0.024	0.223
Population	0.504	0.097	0.143	0.051	0.006	0.008	0.311	0.413	0.994	0.356	0.038
Dependency Share < 15	0.957	0.637	0.021	0.736	0.704	0.002	0.015	0.929	0.942	0.007	1.000
Dependency Share > 64	0.998	0.658	0.998	0.660	0.002	0.002	0.021	0.004	0.003	0.009	0.913
Urbanization	0.014	0.557	0.022	0.646	0.704	0.002	0.810	0.003	0.867	0.007	0.010
Population Growth	0.848	0.537	0.920	0.051	0.012	0.145	0.798	0.954	0.030	0.834	1.000
Trade Openness	0.958	0.366	0.985	0.199	0.161	0.305	0.487	0.046	0.947	0.813	1.000
Gross Inequality	0.798	0.369	0.741	0.347	0.243	0.034	0.976	0.337	0.171	0.929	0.148
Central Government Debt	0.602	0.688	0.006	0.997	0.004	0.163	0.102	0.077	0.141	0.903	0.282
FDI Liabilities	0.736	0.930	0.691	0.041	0.008	0.169	0.004	0.094	0.196	0.977	0.320
Inflation	0.793	0.001	0.002	0.002	0.954	0.001	0.131	0.086	0.000	1.000	0.003
Democracy Score	0.887	0.018	0.294	0.999	0.001	0.164	0.004	0.169	0.764	0.833	0.007
Political Competition Index	0.924	0.513	0.018	0.996	0.691	0.168	0.151	0.004	0.805	0.006	0.009
Presidential Systems	0.132	0.072	0.056	0.190	0.653	0.159	0.018	0.009	0.877	0.744	0.035
Plurality Systems	0.137	0.469	0.341	0.869	0.619	0.004	0.170	0.008	0.754	0.806	0.502
Political Rights Index	0.896	0.520	0.019	0.017	0.700	0.001	0.005	0.004	0.856	0.820	0.015
GDP per Capita	0.868	0.910	0.766	0.808	0.437	0.217	0.499	1.000	0.999	0.847	1.000
					Panel B: Central Government						
Centralization	0.899	0.981	1.000	0.577	0.020	0.388	0.036	0.096	0.824	0.025	0.561
Warfare Score	0.616	0.426	0.227	0.262	0.859	0.140	0.108	0.105	0.105	0.383	0.414
Land Area	0.550	0.055	0.427	0.018	0.074	0.007	0.856	0.008	0.949	0.109	0.633
Population	0.696	0.897	0.074	0.234	0.079	0.342	0.584	0.272	1.000	0.007	0.095
Dependency Share < 15	0.028	0.011	0.010	0.981	0.004	0.035	0.022	0.887	0.996	0.001	0.018
Dependency Share > 64	0.993	0.010	0.529	0.008	0.882	0.001	0.029	0.898	0.005	1.000	0.906
Urbanization	0.978	0.763	0.011	0.944	0.003	0.001	0.928	0.767	0.911	0.891	0.906
Population Growth	0.073	0.040	0.545	0.062	0.917	0.001	0.904	0.018	0.997	0.902	0.039
Trade Openness	0.814	0.542	0.392	0.065	0.210	0.039	0.938	0.464	0.592	0.134	0.315
Gross Inequality	1.000	0.673	0.253	0.167	0.853	0.376	0.583	0.696	0.119	0.575	0.554
Central Government Debt	0.804	1.000	0.044	0.999	0.924	0.002	0.007	0.002	0.001	0.191	0.015
FDI Liabilities	0.971	0.944	0.004	0.994	0.834	0.825	0.951	0.003	0.344	0.209	0.788
Inflation	1.000	0.001	0.001	0.001	0.001	0.828	0.001	0.002	0.300	0.000	0.003
Democracy Score	0.008	0.734	0.006	0.003	0.001	0.798	0.002	0.501	0.864	0.008	0.019
Political Competition Index	0.821	0.799	0.010	0.944	0.471	0.002	0.509	0.507	0.004	0.009	1.000
Presidential Systems	0.777	0.061	0.999	1.000	0.020	0.756	0.035	0.468	0.888	0.040	0.983
Plurality Systems	0.090	0.769	0.078	0.184	0.017	0.827	0.447	0.450	0.031	0.651	0.081
Political Rights Index	0.018	0.764	0.887	0.965	0.472	0.813	0.524	0.003	0.005	0.015	0.025
GDP per Capita	0.719	0.868	0.595	0.873	0.525	0.367	0.822	0.508	0.759	0.474	0.983

Table 1.3: **Posterior Mean and Posterior Standard Deviation - General Government**

The table provides the IVBMA posterior mean and posterior standard deviation (in parenthesis) for the different determinants for general government total expenditure and components. Time and country fixed effects (unreported) are included in each model. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Total Expenditure	**Compensation of Employees**	**Use of Goods and Services**	**General Public Services**	**Defense**	**Public Order and Safety**	**Economic Affairs**	**Health**	**Education**	**Social Protection**	**Public Goods**
Centralization	0.407	0.000	-0.007	0.000	0.000	0.000	-0.001	-0.050***	-0.047***	0.162	-0.089***
	(0.638)	(0.005)	(0.015)	(0.003)	(0.001)	(0.000)	(0.004)	(0.008)	(0.010)	(0.296)	(0.018)
Warfare Score	0.297	-0.046	0.003	-0.120	0.310	0.009	0.009	-0.044	0.010	-0.027	-0.086
	(0.696)	(0.123)	(0.047)	(0.171)	(0.263)	(0.024)	(0.044)	(0.073)	(0.037)	(0.303)	(0.155)
Land Area	0.343	-0.078	0.510***	0.353**	0.043	0.065	0.031	0.001	0.372***	0.004	0.028
	(0.644)	(0.198)	(0.186)	(0.165)	(0.111)	(0.079)	(0.119)	(0.014)	(0.118)	(0.044)	(0.114)
Population	-0.219	-0.061	-0.053	0.006	0.000	-0.002	0.018	-0.064	-0.480***	0.043	-0.024
	(0.525)	(0.191)	(0.141)	(0.049)	(0.010)	(0.019)	(0.090)	(0.092)	(0.134)	(0.289)	(0.128)
Dependency Share < 15	0.183	0.048	0.000	0.040	0.028	0.000	0.000	0.028	0.038***	0.000	0.159***
	(0.147)	(0.055)	(0.003)	(0.033)	(0.024)	(0.000)	(0.004)	(0.017)	(0.014)	(0.002)	(0.022)
Dependency Share > 64	1.588**	0.205	0.279***	0.067	0.000	0.000	0.001	0.000	0.000	0.000	0.031
	(0.767)	(0.185)	(0.085)	(0.076)	(0.002)	(0.001)	(0.012)	(0.003)	(0.002)	(0.007)	(0.069)
Urbanization	0.000	0.012	0.000	-0.004	0.015	0.000	-0.023	0.000	-0.008	0.000	0.000
	(0.004)	(0.018)	(0.002)	(0.035)	(0.012)	(0.000)	(0.016)	(0.001)	(0.009)	(0.001)	(0.003)
Population Growth	0.080	-0.058	-0.174	-0.021	0.001	-0.003	-0.383	-0.752***	-0.006	-0.838	-3.176***
	(0.993)	(0.369)	(0.408)	(0.130)	(0.018)	(0.042)	(0.319)	(0.266)	(0.048)	(0.625)	(0.555)
Trade Openness	0.399	0.006	0.025***	0.001	-0.001	0.002	0.005	0.000	0.011***	0.305*	0.023***
	(0.459)	(0.009)	(0.007)	(0.004)	(0.006)	(0.002)	(0.007)	(0.001)	(0.004)	(0.184)	(0.005)
Gross Inequality	-2.816	0.016	0.041	-0.014	0.011	0.000	0.069***	0.013	0.004	-0.995**	0.004
	(1.839)	(0.034)	(0.032)	(0.029)	(0.039)	(0.001)	(0.025)	(0.022)	(0.013)	(0.487)	(0.016)
Central Government Debt	0.008	-0.005	0.000	0.042***	0.000	0.000	0.000	0.000	0.000	-0.181	-0.003
	(0.014)	(0.008)	(0.000)	(0.008)	(0.000)	(0.001)	(0.002)	(0.001)	(0.001)	(0.208)	(0.013)
FDI Liabilities	0.163	-0.544*	-0.234	0.006	0.000	0.002	-0.001	0.015	-0.045	-0.504	-0.050
	(0.628)	(0.295)	(0.209)	(0.051)	(0.007)	(0.034)	(0.011)	(0.057)	(0.112)	(0.388)	(0.134)
Inflation	1.482	0.000	0.000	0.000	-0.109*	0.000	-0.005	0.000	0.000	1.243***	0.000
	(1.084)	(0.000)	(0.000)	(0.000)	(0.057)	(0.000)	(0.014)	(0.002)	(0.000)	(0.304)	(0.000)

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Table 1.3 continued

	Total Expenditure	Compensation of Employees	Use of Goods and Services	General Public Services	Defense	Public Order and Safety	Economic Affairs	Health	Education	Social Protection	Public Goods
Democracy Score	1.445	-0.006	-0.008	0.607***	0.000	-0.007	0.000	0.009	0.053	-0.115	0.000
	(1.429)	(0.050)	(0.033)	(0.177)	(0.004)	(0.023)	(0.006)	(0.030)	(0.099)	(0.342)	(0.005)
Political Competition Index	1.620	0.021	-0.005	-0.908**	0.085	0.015	0.006	0.001	0.136	0.001	0.001
	(1.110)	(0.150)	(0.045)	(0.377)	(0.098)	(0.048)	(0.036)	(0.014)	(0.169)	(0.023)	(0.014)
Presidential Systems	-0.116	-0.051	-0.075	-0.329	-0.259	-0.009	-0.011	-0.001	-0.840*	-0.130	-0.017
	(0.432)	(0.249)	(0.315)	(0.718)	(0.327)	(0.092)	(0.105)	(0.024)	(0.447)	(0.539)	(0.119)
Plurality Systems	-0.085	0.127	0.144	-0.451	-0.101	-0.001	-0.009	-0.001	-0.075	-0.678	-0.144
	(0.338)	(0.346)	(0.289)	(0.455)	(0.241)	(0.020)	(0.135)	(0.025)	(0.243)	(0.662)	(0.335)
Political Rights Index	0.977	0.181	-0.003	0.001	0.298	0.000	0.000	0.000	0.444	0.453	-0.002
	(0.883)	(0.328)	(0.037)	(0.045)	(0.250)	(0.003)	(0.015)	(0.009)	(0.348)	(0.510)	(0.028)
GDP per Capita	0.408	1.131	-0.385	0.287	0.048	0.000	0.126	0.805***	0.765***	0.808	1.541***
	(1.260)	(0.702)	(0.399)	(0.421)	(0.166)	(0.043)	(0.188)	(0.149)	(0.198)	(0.744)	(0.265)
Sargan p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Observations	414	398	398	356	347	281	354	358	358	346	281

Table 1.4: **Posterior Mean and Posterior Standard Deviation - Central Government**

The table provides the IVBMA posterior mean and posterior standard deviation (in parenthesis) for the different determinants for general government total expenditure and components. Time and country fixed effects (unreported) are included in each model. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Total Expenditure	**Compensation of Employees**	**Use of Goods and Services**	**General Public Services**	**Defense**	**Public Order and Safety**	**Economic Affairs**	**Health**	**Education**	**Social Protection**	**Public Goods**
Centralization	-0.993	-0.749***	0.054***	0.030	0.000	0.006	0.001	0.002	0.040*	0.000	0.040
	(0.738)	(0.242)	(0.011)	(0.029)	(0.002)	(0.008)	(0.004)	(0.006)	(0.022)	(0.002)	(0.039)
Warfare Score	-0.190	0.158	-0.027	-0.039	0.155*	0.008	0.002	-0.006	0.002	-0.070	-0.200
	(0.615)	(0.351)	(0.070)	(0.105)	(0.086)	(0.025)	(0.032)	(0.026)	(0.029)	(0.116)	(0.367)
Land Area	0.115	0.001	0.116	0.004	0.000	0.002	0.344*	-0.001	0.295**	-0.003	-0.181
	(0.545)	(0.056)	(0.181)	(0.034)	(0.030)	(0.017)	(0.183)	(0.009)	(0.142)	(0.034)	(0.220)
Population	-0.660	-0.664*	-0.031	-0.037	-0.003	-0.053	-0.065	-0.033	-0.672***	-0.001	-0.061
	(0.785)	(0.352)	(0.122)	(0.107)	(0.031)	(0.087)	(0.126)	(0.067)	(0.138)	(0.019)	(0.207)
Dependency Share < 15	0.000	0.000	0.000	0.066***	0.000	0.000	0.001	-0.014	0.085***	0.000	0.000
	(0.006)	(0.002)	(0.002)	(0.024)	(0.001)	(0.001)	(0.004)	(0.020)	(0.032)	(0.001)	(0.002)
Dependency Share > 64	0.519***	0.000	0.039	0.000	0.040	0.000	0.003	0.079	0.000	0.702***	-0.647
	(0.179)	(0.007)	(0.075)	(0.008)	(0.039)	(0.001)	(0.018)	(0.066)	(0.004)	(0.063)	(0.402)
Urbanization	0.536	-0.204	0.000	-0.032	0.000	0.000	-0.037*	-0.002	0.005	0.019	0.204
	(0.442)	(0.209)	(0.001)	(0.069)	(0.000)	(0.000)	(0.020)	(0.007)	(0.011)	(0.013)	(0.129)
Population Growth	-0.002	0.000	0.181	-0.023	0.653**	0.000	-0.428	-0.002	-1.374***	-0.282	0.000
	(0.099)	(0.054)	(0.290)	(0.125)	(0.316)	(0.002)	(0.304)	(0.023)	(0.346)	(0.337)	(0.056)
Trade Openness	-0.672	-0.057	0.006	0.000	0.001	0.000	0.020***	0.002	0.006	0.000	0.003
	(0.581)	(0.097)	(0.008)	(0.002)	(0.003)	(0.001)	(0.007)	(0.003)	(0.006)	(0.002)	(0.014)
Gross Inequality	4.225***	-0.368	0.007	-0.003	-0.036*	0.018	0.022	0.023	0.000	-0.026	0.034
	(0.537)	(0.496)	(0.017)	(0.017)	(0.020)	(0.028)	(0.024)	(0.020)	(0.012)	(0.028)	(0.057)
Central Government Debt	0.014	1.773***	0.000	0.032***	0.012***	0.000	0.000	0.000	0.000	0.002	0.000
	(0.020)	(0.219)	(0.003)	(0.007)	(0.005)	(0.000)	(0.000)	(0.000)	(0.000)	(0.005)	(0.001)
FDI Liabilities	0.781	-0.258	-0.001	0.517**	0.023	0.091	-0.375**	0.000	0.071	-0.034	0.419
	(0.622)	(0.271)	(0.025)	(0.217)	(0.082)	(0.078)	(0.154)	(0.006)	(0.126)	(0.091)	(0.325)
Inflation	-2.407***	0.000	0.000	0.000	0.000	-0.015	0.000	0.000	-0.001	0.000	0.000
	(0.549)	(0.000)	(0.000)	(0.000)	(0.000)	(0.013)	(0.000)	(0.000)	(0.003)	(0.000)	(0.000)

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Table 1.4 continued

	Total Expenditure	Compensation of Employees	Use of Goods and Services	General Public Services	Defense	Public Order and Safety	Economic Affairs	Health	Education	Social Protection	Public Goods
Democracy Score	-0.001	-0.073	0.000	0.000	0.000	0.001	0.000	-0.086	-0.093	0.000	0.003
	(0.022)	(0.275)	(0.004)	(0.009)	(0.000)	(0.046)	(0.004)	(0.107)	(0.127)	(0.005)	(0.022)
Political Competition Index	0.469	0.563	0.000	-0.005	0.057	0.000	0.052	0.176	0.000	0.000	1.524***
	(0.676)	(0.548)	(0.010)	(0.229)	(0.086)	(0.001)	(0.094)	(0.209)	(0.008)	(0.006)	(0.470)
Presidential Systems	-0.596	-0.012	-1.713***	-2.921***	-0.007	0.042	-0.013	-0.133	-0.816*	-0.009	-1.128**
	(0.865)	(0.144)	(0.413)	(0.537)	(0.063)	(0.177)	(0.094)	(0.253)	(0.452)	(0.098)	(0.551)
Plurality Systems	-0.011	0.576	0.034	-0.212	-0.002	-0.450*	-0.044	-0.063	-0.005	-0.325	-0.036
	(0.205)	(0.609)	(0.156)	(0.478)	(0.036)	(0.269)	(0.213)	(0.179)	(0.059)	(0.363)	(0.155)
Political Rights Index	0.003	0.236	-0.006	-0.618	0.118	0.136	0.206	0.000	0.000	0.001	-0.009
	(0.068)	(0.534)	(0.158)	(0.484)	(0.174)	(0.111)	(0.256)	(0.006)	(0.010)	(0.018)	(0.066)
GDP per Capita	0.447	0.665	-0.233	-0.014	0.104	-0.027	0.366	0.065	0.421	-0.127	-1.545**
	(0.847)	(0.715)	(0.355)	(0.827)	(0.159)	(0.085)	(0.268)	(0.175)	(0.367)	(0.232)	(0.643)
Sargan p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Observations	414	398	398	356	347	281	354	358	358	346	281

Table 1.5: **Variance Decomposition**

The table presents the role of each theory in explaining the variation of the general and central government total expenditures and components, using the Balanced Variance Share (BVS) described in section 1.4.2.

	Total Expenditure	**Compensation of Employees**	**Use of Goods and Services**	**General Public Services**	**Defense**	**Public Order and Safety**	**Economic Affairs**	**Health**	**Education**	**Social Protection**	**Public Goods**
					Panel A: General Government						
Centralization	22.63	0.00	0.91	0.01	0.00	0.01	0.05	14.16	12.42	18.92	14.47
Conflict	0.70	0.13	0.01	0.18	7.64	0.24	0.07	0.90	0.15	0.15	0.70
Country Size	0.04	1.32	0.09	1.55	0.34	1.93	0.21	0.56	7.45	0.00	0.14
Demography	40.32	6.39	21.66	0.93	5.18	4.58	4.61	1.79	14.87	8.01	3.10
Globalization	3.36	0.83	4.37	0.10	0.22	7.53	0.76	0.03	5.27	4.60	3.42
Income Inequality	6.67	0.15	0.30	0.22	0.62	10.03	1.07	0.37	0.04	21.82	0.01
Macroeconomic Policy	0.28	2.31	2.90	12.18	0.52	0.93	1.23	0.90	1.43	3.00	1.09
Political Institution	38.33	1.00	0.36	7.52	2.38	0.49	0.02	1.27	4.67	9.75	0.47
Wagner's Law	2.96	11.26	5.41	0.95	0.05	3.14	0.50	35.87	23.55	12.38	34.02
Time Fixed Effects	0.02	1.00	1.99	1.48	3.41	20.87	5.27	1.69	2.43	0.01	2.41
Country Fixed Effects	1.23	13.05	27.40	11.59	47.34	36.11	29.35	25.57	32.05	3.62	13.71
					Panel B: Central Government						
Centralization	4.66	36.91	4.24	0.30	0.01	4.68	0.09	0.01	11.75	0.04	4.38
Conflict	0.56	0.16	0.07	0.06	3.97	0.08	0.02	0.13	0.02	0.48	1.10
Country Size	1.88	8.28	0.64	0.01	0.00	4.19	3.86	0.45	13.13	0.00	3.98
Demography	32.03	3.03	0.36	3.08	4.87	0.03	10.07	22.27	7.59	82.53	4.46
Globalization	5.71	10.44	1.56	0.00	0.54	0.32	6.46	0.94	4.92	0.02	1.27
Income Inequality	2.87	6.45	0.16	0.03	2.05	3.67	0.94	0.12	0.04	0.83	1.05
Macroeconomic Policy	8.81	5.17	0.10	13.28	8.08	2.19	13.25	0.01	0.60	0.83	1.78
Political Institution	5.94	1.45	6.24	14.26	0.41	4.69	1.69	1.95	1.46	0.88	9.60
Wagner's Law	3.36	2.98	0.85	0.03	0.20	0.77	6.83	2.65	0.95	2.51	11.85
Time Fixed Effects	0.03	0.90	6.45	0.84	3.06	3.57	4.16	1.87	2.55	0.32	0.42
Country Fixed Effects	1.75	6.20	27.74	14.51	46.70	69.00	24.40	53.50	33.42	7.75	19.02

Table 1.6: **Channels of Transmission Analysis - Posterior Probability of Theories - Dropping Theories**

The table provides the IVBMA posterior inclusion probability for the different theories for general and central government total expenditures when we exclude the various theories one-by-one. Time and country fixed effects (unreported) are included in each model.

	PIP^i	$PIP^{i,-j}$									$\Delta PIP^{i,-j}$								
		Theory Drop									**Theory Drop**								
	Baseline	**Centralization**	**Conflict**	**Country Size**	**Demography**	**Globalization**	**Income Inequality**	**Macroeconomic Policy**	**Political Institution**	**Wagner's Law**	**Centralization**	**Conflict**	**Country Size**	**Demography**	**Globalization**	**Income Inequality**	**Macroeconomic Policy**	**Political Institution**	**Wagner's Law**
Panel A: General Government																			
Centralization	0.805		1.000	0.273	0.970	0.986	0.843	0.998	1.000	0.082		0.195	-0.532	0.164	0.181	0.038	0.192	0.195	-0.723
Conflict	0.607	0.627		0.792	0.826	0.542	0.751	0.543	0.814	0.599	0.020		0.185	0.219	-0.065	0.144	-0.064	0.207	-0.008
Country Size	0.654	0.746	0.478		0.450	0.454	0.750	0.436	0.932	0.834	0.092	-0.176		-0.204	-0.200	0.096	-0.218	0.278	0.180
Demography	0.998	0.996	0.974	0.975		0.981	0.955	1.000	0.999	0.997	-0.002	-0.024	-0.023		-0.017	-0.043	0.002	0.001	-0.001
Globalization	0.956	0.981	0.701	0.359	0.173		0.387	0.176	0.933	0.233	0.025	-0.255	-0.597	-0.784		-0.569	-0.780	-0.023	-0.724
Income Inequality	0.796	1.000	1.000	0.978	0.519	0.990		0.415	0.958	0.995	0.204	0.204	0.182	-0.277	0.194		-0.382	0.162	0.199
Macroeconomic Policy	0.796	1.000	1.000	0.875	0.583	1.000	1.000		0.793	0.999	0.204	0.204	0.079	-0.213	0.204	0.203		-0.003	0.203
Political Institution	0.953	0.991	1.000	1.000	0.804	0.963	0.956	1.000		0.972	0.039	0.047	0.047	-0.148	0.010	0.003	0.047		0.019
Wagner's Law	0.863	0.817	0.888	0.917	0.985	0.865	1.000	0.809	0.709		-0.046	0.025	0.054	0.122	0.002	0.137	-0.054	-0.154	
Panel B: Central Government																			
Centralization	0.899		0.930	0.990	0.350	1.000	1.000	0.999	0.970	1.000		0.031	0.091	-0.549	0.101	0.101	0.100	0.071	0.101
Conflict	0.617	0.982		0.928	0.428	0.749	0.557	0.532	0.633	0.926	0.364		0.311	-0.189	0.131	-0.060	-0.086	0.016	0.309
Country Size	0.764	0.219	0.565		1.000	0.384	0.627	0.495	0.757	0.998	-0.545	-0.199		0.236	-0.380	-0.138	-0.270	-0.007	0.234
Demography	0.996	0.164	0.976	0.773		1.000	0.951	0.593	0.634	1.000	-0.832	-0.020	-0.223		0.004	-0.045	-0.403	-0.363	0.003
Globalization	0.813	0.087	0.783	0.367	0.542		0.961	0.945	0.483	0.870	-0.726	-0.030	-0.447	-0.271		0.148	0.132	-0.330	0.057
Income Inequality	1.000	0.242	0.956	1.000	0.268	0.586		0.338	0.803	0.525	-0.758	-0.044	0.000	-0.732	-0.414		-0.662	-0.197	-0.475
Macroeconomic Policy	1.000	0.521	0.998	1.000	0.444	0.997	1.000		0.990	0.958	-0.479	-0.002	0.000	-0.556	-0.003	0.000		-0.010	-0.042
Political Institution	0.853	0.999	0.982	0.642	1.000	0.713	0.350	1.000		1.000	0.146	0.129	-0.211	0.147	-0.140	-0.503	0.147		0.147
Wagner's Law	0.717	1.000	0.888	0.639	0.997	0.998	0.683	1.000	0.736		0.283	0.170	-0.079	0.280	0.281	-0.035	0.283	0.019	

Table 1.7: **Channels of Transmission Analysis - Posterior Probability of Theories - Keeping Theories**

The table provides the IVBMA posterior inclusion probability for the different theories for general and central government total expenditures when keeping the various theories one-by-one. Time and country fixed effects (unreported) are included in each model.

	PIP^i	$PIP^{i,-j}$									$\Delta PIP^{i,-j}$								
		Theory Drop									**Theory Drop**								
	Baseline	**Centralization**	**Conflict**	**Country Size**	**Demography**	**Globalization**	**Income Inequality**	**Macroeconomic Policy**	**Political Institution**	**Wagner's Law**	**Centralization**	**Conflict**	**Country Size**	**Demography**	**Globalization**	**Income Inequality**	**Macroeconomic Policy**	**Political Institution**	**Wagner's Law**
Panel A: General Government																			
Centralization	0.805		1.000	0.993	0.692	0.466	0.398	1.000	0.796	0.974		0.195	0.188	-0.113	-0.340	-0.407	0.195	-0.009	0.169
Conflict	0.607	0.656		0.526	0.687	0.448	0.663	0.557	0.564	0.680	0.049		-0.081	0.080	-0.159	0.056	-0.050	-0.043	0.073
Country Size	0.654	0.994	0.610		0.490	0.534	0.727	0.717	0.898	0.802	0.340	-0.044		-0.164	-0.120	0.073	0.063	0.244	0.148
Demography	0.998	1.000	0.762	1.000		1.000	0.857	1.000	1.000	0.703	0.002	-0.236	0.002		0.002	-0.142	0.002	0.002	-0.295
Globalization	0.956	0.988	0.771	0.508	0.978		0.132	0.970	0.519	0.582	0.032	-0.185	-0.448	0.021		-0.824	0.014	-0.437	-0.374
Income Inequality	0.796	0.210	1.000	0.229	1.000	0.861		0.204	0.617	0.815	-0.587	0.204	-0.567	0.204	0.064		-0.592	-0.179	0.019
Macroeconomic Policy	0.796	0.746	1.000	0.960	1.000	0.466	0.491		0.755	0.995	-0.050	0.204	0.163	0.204	-0.331	-0.305		-0.041	0.199
Political Institution	0.953	1.000	0.749	0.989	0.978	1.000	0.999	1.000		0.966	0.047	-0.204	0.037	0.025	0.047	0.047	0.047		0.013
Wagner's Law	0.863	0.823	0.794	1.000	0.820	0.887	1.000	0.874	0.786		-0.040	-0.069	0.137	-0.043	0.024	0.137	0.011	-0.077	
Panel B: Central Government																			
Centralization	0.899		0.932	0.745	1.000	0.986	1.000	0.918	0.999	0.963		0.033	-0.154	0.101	0.087	0.101	0.019	0.100	0.064
Conflict	0.617	0.918		0.659	0.629	0.619	0.720	0.786	0.606	0.466	0.300		0.041	0.011	0.001	0.102	0.169	-0.011	-0.152
Country Size	0.764	0.416	0.409		1.000	0.939	0.897	0.709	0.890	0.581	-0.349	-0.355		0.236	0.175	0.133	-0.056	0.126	-0.183
Demography	0.996	1.000	1.000	0.992		1.000	0.628	0.954	0.963	0.682	0.003	0.004	-0.004		0.004	-0.368	-0.042	-0.034	-0.314
Globalization	0.813	0.526	0.291	0.688	0.994		0.114	0.919	0.616	0.981	-0.287	-0.522	-0.125	0.180		-0.699	0.106	-0.197	0.168
Income Inequality	1.000	0.271	0.493	0.880	1.000	0.721		1.000	0.602	0.155	-0.729	-0.507	-0.120	0.000	-0.279		0.000	-0.398	-0.845
Macroeconomic Policy	1.000	0.988	0.995	1.000	0.999	0.536	0.960		0.979	0.706	-0.012	-0.005	0.000	-0.001	-0.464	-0.040		-0.021	-0.294
Political Institution	0.853	0.898	0.997	0.999	1.000	1.000	0.987	0.910		1.000	0.045	0.144	0.146	0.147	0.147	0.134	0.057		0.147
Wagner's Law	0.717	0.981	0.933	0.695	0.888	0.910	1.000	0.769	0.881		0.264	0.215	-0.023	0.171	0.192	0.283	0.052	0.163	

Table 1.8: **Global Economic Crisis - Posterior Probability of Theories**

The table provides the IVBMA posterior inclusion probability for the different theories for general and central government total expenditures and components, taking into account the global economic crisis. Time and country fixed effects (unreported) are included in each model.

	Total Expenditure	**Compensation of Employees**	**Use of Goods and Services**	**General Public Services**	**Defense**	**Public Order and Safety**	**Economic Affairs**	**Health**	**Education**	**Social Protection**	**Public Goods**
					Panel A: General Government						
Crisis	0.080	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Centralization	1.000	0.097	0.032	0.021	0.008	0.006	0.019	1.000	1.000	1.000	0.728
Conflict	0.630	0.313	0.364	0.308	0.944	0.279	0.147	0.189	0.148	0.774	0.522
Country Size	0.694	0.646	0.979	0.848	0.108	0.974	0.118	0.185	0.988	0.864	0.409
Demography	1.000	0.620	0.993	0.558	0.993	0.580	0.401	0.998	0.997	1.000	0.816
Globalization	0.993	0.292	0.933	0.322	0.030	0.840	0.299	0.573	0.957	0.173	0.628
Income Inequality	0.224	0.801	0.454	0.301	0.300	0.147	0.991	0.757	0.164	0.467	0.597
Macroeconomic Policy	0.100	0.201	0.561	0.022	1.000	0.009	0.006	0.176	0.907	0.023	0.997
Political Institution	0.999	0.553	0.695	0.993	0.814	0.534	0.098	0.525	0.218	1.000	0.883
Wagner's Law	0.662	0.921	0.970	0.712	0.405	0.379	0.182	0.971	0.991	0.911	0.704
					Panel B: Central Government						
Crisis	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.001	0.000	0.000	0.000
Centralization	0.942	0.836	0.694	0.049	0.013	0.510	0.548	0.190	1.000	0.017	0.619
Conflict	0.471	0.494	0.281	0.651	0.939	0.179	0.126	0.173	0.112	0.366	0.365
Country Size	0.390	0.939	0.329	0.282	0.099	0.576	0.296	0.522	1.000	0.087	0.922
Demography	0.254	0.656	0.454	1.000	1.000	0.313	0.305	0.442	0.550	1.000	0.953
Globalization	0.803	0.366	0.590	0.435	0.235	0.250	0.648	0.029	0.087	0.092	0.968
Income Inequality	0.201	0.374	0.587	0.702	0.889	0.068	0.512	0.405	0.528	0.976	1.000
Macroeconomic Policy	0.186	0.810	0.546	0.580	0.005	0.042	0.010	0.005	0.522	0.068	1.000
Political Institution	1.000	0.996	0.983	0.994	0.286	0.549	0.438	0.231	0.942	0.184	0.956
Wagner's Law	1.000	0.963	0.469	0.964	0.269	0.463	0.670	0.834	0.641	0.298	0.748

Table 1.9: **Globalization - Posterior Probability of Theories**

The table provides the IVBMA posterior inclusion probability for the different theories for general and central government total expenditures and components, taking into account the global economic crisis. Time and country fixed effects (unreported) are included in each model.

	Total Expenditure	**Compensation of Employees**	**Use of Goods and Services**	**General Public Services**	**Defense**	**Public Order and Safety**	**Economic Affairs**	**Health**	**Education**	**Social Protection**	**Public Goods**
						Panel A: General Government					
Centralization	0.229	0.237	0.039	0.149	0.013	0.085	0.027	0.050	0.017	0.171	0.695
Conflict	0.489	0.662	0.363	0.340	1.000	0.253	0.230	0.112	0.239	0.413	0.470
Country Size	0.616	0.664	0.990	0.456	0.138	0.764	0.156	0.465	0.663	0.292	1.000
Demographic	0.877	0.469	0.485	0.259	0.357	0.315	0.526	1.000	0.680	1.000	0.083
Globalization	1.000	1.000	0.747	0.876	0.075	0.606	0.105	0.516	0.174	0.355	0.042
Income Inequality	0.349	0.915	0.771	0.178	0.252	0.087	0.996	0.907	0.832	0.282	0.829
Macroeconomic	0.371	0.244	0.018	0.083	0.142	0.428	0.018	0.236	0.393	0.053	0.722
Political Institution	0.586	0.822	0.969	0.784	1.000	0.656	0.923	0.385	0.233	0.327	0.813
Wagner's Law	0.967	0.884	0.747	0.650	0.724	0.443	0.457	0.703	0.792	0.483	0.913
						Panel B: Central Government					
Centralization	0.863	0.254	0.018	0.138	0.009	0.944	0.057	0.069	0.916	0.061	1.000
Conflict	0.615	0.306	0.157	0.605	0.999	0.192	0.196	0.136	0.358	0.457	0.990
Country Size	0.949	0.438	0.996	0.627	0.198	0.699	0.254	0.349	0.992	0.308	0.917
Demographic	0.964	0.379	0.329	0.531	0.058	0.219	0.554	0.037	0.346	0.540	1.000
Globalization	0.188	1.000	1.000	0.057	0.022	0.035	0.773	0.091	0.960	0.136	1.000
Income Inequality	0.979	0.321	0.155	0.159	0.082	0.064	0.395	0.131	0.579	0.225	0.719
Macroeconomic	1.000	1.000	0.018	0.557	0.269	0.003	0.530	1.000	0.450	0.978	0.046
Political Institution	0.814	0.950	0.537	0.579	1.000	0.337	0.509	1.000	0.371	0.192	1.000
Wagner's Law	0.743	0.912	0.977	0.592	0.995	0.180	0.533	0.478	0.451	0.335	0.881

Chapter 2

The Role of Social Identity in Preferences for Redistribution and Beliefs

2.1 Introduction

Theory suggests that socioeconomic beliefs can shape both individual behavior and institutional outcomes, which in turn determine a country's economic performance. In particular, one class of models focuses on preferences for redistribution and shows how economic beliefs can explain differences in the size and role of the government across countries.

The basic theory that explains the demand for redistribution was proposed by Meltzer and Richard (1981) who emphasized the key roles of the median voter in majority rule societies along with the presence of inequality. Since then, a large range of models has proposed different mechanisms that generate demand for redistribution beyond income, including different past experiences in income mobility (Piketty (1995)), prospects of upward mobility (Benabou and Ok (2001)), education (Perotti (1996)), culture (Alesina and Glaeser (2005)), perception of fairness (Alesina and Angeletos (2005)), risk aversion (Sinn (1995)), religion (Scheve and Stasavage (2006)), ideology (Benabou and Tirole (2006), Alesina and Fuchs-Schundeln (2007)), and structure and the organization of the family (Alesina and Giuliano (2015)). Notable empirical studies include the works of Fong (2001) and Alesina and La Ferrara (2005) using US data, and Corneo and Gruner (2002) using data from several OECD countries. Alesina and Giuliano (2011) provide a comprehensive recent survey. In general, empirical evidence suggests that the preferences for redistribution are not only determined by personal characteristics but "macro" factors such as history, culture, ideology, and a perception of fairness play a major role in shaping those preferences. As a result preferences for redistribution vary substantially across countries.

In this paper, we study how social identity affects the preferences for redistribution and more generally socioeconomic beliefs. Using individual data from the General Social Survey (GSS), we provide evidence for the presence of endogenous and contextual social interaction effects. Our main hypothesis is that preferences for redistribution and beliefs are interdependent, in the sense that they are influenced by the preferences and characteristics of the others as well as their characteristics. As argued by Akerlof (1997) these social influences occur in "neighborhoods" that emerge in a social space spanned by meaningful "social distances", such as the similarities between the characteristics of individuals. The idea of social identity traces back to Tajfel (1978) who defined it as the component of an individual's self-concept which is due to the individual's perceived membership in a relevant social group.[1] The importance of social identity stems from its ability to affect incentives and economic outcomes in many areas of economics including consumption and savings, crime, education, labor supply, political economy, organizational behavior, inequality, and poverty.

We contribute to the existing literature in various ways. First, the presence of social interactions in the preferences for redistribution and socioeconomic beliefs is suggested by a growing literature on the economics of social identity. By social interactions in the present context, we refer to interdependencies among individuals that occur in a neighborhood in which the agent's preferences, beliefs, and constraints are directly affected by the characteristics and choices of others, rather than indirectly through the intermediation of markets and enforceable contracts. In a seminal paper, Akerlof and Kranton (2000) formally incorporate identity in a behavioral model, where agent preferences are structured by their choice of a social category. They show that the inclusion of identity can have important implications in the context of gender discrimination in the labor market, the household division of labor, and the economics of social exclusion and poverty. A number of papers focuses on some aspect of social identity and provide empirical evidence by focusing on different social distances such as race (Ainsworth-Darnell and Downey (1998), Luttmer (2001), Austen-Smith and Fryer (2005), Fryer (2006)), religious identity (Bisin, Patacchini, Verdier, and Zenou (2008)), class and national identity (Shayo (2009)), perceived group status (Klor and Shayo (2010)), social

[1] According to Tajfel (1978) social identity is based on three elements. The first element is that people are categorized into social categories by gender, ethnicity, occupation, etc. The second element refers to the idea that we identify with groups that we perceive ourselves to belong to. Self-concept has two parts. We think of ourselves as group member (social identity) and as a unique individual (personal identity). The third element is the idea of social comparison. That is, we compare ourselves with others to evaluate ourselves.

status (Fryer and Torelli (2010)), and names (Algan, Mayer, and Thoenig (2013)). A different approach is employed by Rabin (1994), Oxoby (2003) and Oxoby (2004) who emphasize that in certain situations individuals engage in costly dissonance reduction. For example, people living in poverty are likely to adapt and participate less in the labor force and engage in underclass behaviors to reduce dissonance. More recently, Benabou and Tirole (2011) proposed a cognitive approach that explicitly models identity as beliefs about one's deep values by modeling both the supply and demand sides of beliefs.[2]

Interestingly, with only few exceptions, the empirical literature conceptualizes social identity in terms of exogenous social interactions, which are captured by the functional role of the contextual characteristics of the "neighborhood". Contextual social interaction effects capture the tendency of an individual to behave in a certain way due to exogenous characteristics of the group such as the race of group or attitude toward work or economic status. While these contextual effects can capture externalities associated with social identity in certain cases, social identity cannot be fully explained by this functional approach since the aforementioned economic theory suggests that social identity is an emergent phenomenon due to unexpected outcomes of individuals' interactions.[3] As argued by Tajfel (1978), a key feature of social identity is that group membership alone is not sufficient for identification, because social identity emerges and hence, can be identified when the individual becomes at least partly a constitutive element of the group. For these reasons, in this paper, we argue that social identity is mainly the result of endogenous social interactions.

Endogenous effects occur when the tendency of an individual to behave in a certain way depends on the group behavior, while the choices are simultaneously determined. As argued by Manski (1993), this distinction is important because endogenous social interactions embody a social multiplier that works in the same way as the Keynesian multiplier and magnifies the differences in the average behavior between groups. Furthermore, the strength of endogenous effects is also connected to the number of multiple equilibria (see Brock and Durlauf (2001b)). Perhaps, one explanation for the lack of attention to the endogenous effects in the empirical literature are the identification issues involved in the linear-in-means model as documented by Manski (1993). This problem is known as the "reflection problem", which is another name for the simultaneity bias that results from the problem of disentangling the mutual influence individuals exhibit on each other's behavior.[4] Our second contribution addresses exactly this problem. To the best of our knowledge, this is the first empirical study that attempts to identify

[2]Costa-i Font and Cowell (2015) provides a recent survey.

[3]Notable exceptions are Chen and Xin Li (2009), Klor and Shayo (2010), and Charness, Cobo-Reyes, and Jimenez (2014) who use experimental data.

[4]Of course, this does not explain why the literature did not employ nonlinear models as those may aid identification; see for example Brock and Durlauf (2001b).

and estimate endogenous effects associated with social identity.

Our identification strategy relies on exploiting past information as well as socioeconomic distances by assuming that an individual's beliefs and preferences are formed during a critical past period of the life cycle, and in turn affect current beliefs and preferences. A similar identification strategy was employed by Giuliano and Spilimbergo (2014) who used a cross-regional variation in individual experiences during young ages to study the relationship between beliefs and the macroeconomic history. We differ in that we focus on social interactions and social identity. We assume that the social interaction occurs in "neighborhoods", which are structured by both socioeconomic and physical distances within regions using parental education, religion, and race when the individual was young.[5] In order to identify the critical age of the life cycle we rely on psychology, and more specific on the impressionable years hypothesis. The impressionable years hypothesis suggests that, attitudes, beliefs, and values are constructed in early adulthood and remain unaltered thereafter.[6]

Specifically, using GSS data we employ the linear social interaction model with socioeconomic network structure, to study the impact of social identity on a range of socioeconomic beliefs including preferences for redistribution, beliefs about abortion, attitudes, discrimination, government duties, legal system, politics, and religion. In contrast to the linear-in-means model, Bramoulle, Djebbari, and Fortin (2009) and Blume, Brock, Durlauf, and Jayaraman (2015) show that when the linear-in-means model is enriched with social network then it is generally identified.[7]

We find strong evidence that social identity in the form of endogenous social interactions plays a major role in the formation of preferences for redistribution. Particularly, when the "neighborhood" is based on parental education, race and religion, we find that an increase of the mean preferences that the individual faces in his/her "neighborhood", by one point will increase his/her preferences for redistribution by 0.119.[8] Furthermore, the endogenous effect becomes stronger, both in size and significance when the "neighborhood" is purely based on religion.

Although this is the baseline model, the evidence of endogenous social interactions is not limited to the preferences for redistribution, but extends to a range of socioeconomic

[5] Conley and Topa (2002) examines the spatial patterns of unemployment in Chicago, using social and economic distance metrics, measuring physical distance, travel time, and differences in ethnic and occupational distribution between locations. Fryer and Torelli (2010) focus on racial differences in the relationship between social status and academic achievement, where the social status for each student is the number of same-race friends within school, weighted by the social status of each friend.

[6] We provide a sensitivity analysis of our identification strategy by considering alternative ages.

[7] Durlauf and Ioannides (2010), Benhabib, Bisin, and Jackson (2011) and Jackson (2011) provide excellent recent surveys of various classes of social interaction models and their empirical applications.

[8] The variable preferences for redistribution is measured in a 1-5 scale, with higher values indicate higher preferences.

beliefs. We find a significant endogenous effect for socioeconomic beliefs. In terms of magnitude, the biggest effect is found in beliefs related to politics and discrimination of homosexuals. When the "neighborhood" is purely based on religion, the endogenous effect of almost all beliefs, becomes stronger.

The paper is organized as follows. Section 2.2 describes the data and the categorization of the beliefs we used. Section 2.3 presents the theoretical and the econometric model as well as the way we constructed the sociomatrix. In Section 2.4, we present the main results of the paper, and finally Section 2.5 presents our conclusions.

2.2 Data

We employ the General Social Survey (GSS), provided by the National Opinion Research Centre at the University of Chicago, which is conducted in order to monitor and explain trends and constants in attitudes, behaviours, and attributes. It is a nationally representative sample for the United States of America, conducted annually from 1972 to 1993 (with the exception of 1979, 1981 and 1992) with 1500 individuals on average and biannually from 1994 to 2014 with 2700 individuals on average. This is the only dataset that provides information on various beliefs, and the social environment of the individual from 1972.[9]

We investigate sixteen measures for beliefs, from eight different categories including abortion, attitudes, discrimination, government duties, legal system, politics, preferences for redistribution, and religion. To measure these beliefs we use the following questions:

1. *Preferences for Redistribution*: Whether the individual thinks that the government should do everything possible to improve the standard of living of all poor Americans and whether he/she thinks that people get ahead by their own hard work or by luck.
2. *Government Duties*: Whether the individual believes that the government should help people in paying for doctors and hospital bills and that the government should do more to solve the country's problems.
3. *Legal System*: Whether the individual is in favor of the death penalty for persons convicted of murder and if he/she thinks that the courts in this area deal too harshly with criminals.

[9]World Values Survey (WVS) do not provides information on parental characteristics and the European Social Survey (ESS) started in 2002.

4. *Discrimination*: Whether the individual believes that the government should give special treatment to African-Americans and if he/she thinks that the sexual relations between two adults of the same sex are wrong.

5. *Politics*: Whether the individual thinks of himself/herself as a Republican, or Democrat, or Independent, and where he/she places himself/herself in the extremely liberal to extremely conservative scale.

6. *Religion*: Whether the individual approves the rule that that no state or local government may require the reading of the Lord's Prayer or Bible verses in public schools and whether he/she believes that there is life after death.

7. *Abortion*: Whether the individual thinks it should be possible for a pregnant woman to obtain a legal abortion either if the woman wants it for any reason or if she became pregnant as a result of rape.

8. *Attitudes*: Whether the individual thinks that most people would try to be fair and that most people can be trusted.

All models control for age, gender, race, marital and employment status, education and income as well as region, region at the age of 16, time fixed effects and the interaction of region at the age of 16 fixed effects with time fixed effects. Those are consistent with the majority of the literature such as Alesina and Giuliano (2011), Giuliano and Spilimbergo (2014) and Olivera (2015). Information about the variables can be found in Appendix Table C1 and the descriptive statistics for our sample are presented in Appendix Table C2.

2.3 Methodology

2.3.1 Theoretical Framework

We employ the linear social interaction model, as described by Blume, Brock, Durlauf, and Jayaraman (2015). We assume that we have a set of individuals, $i, j = 1, \ldots, N$ living in different regions, $r = 1, \ldots, R$ at different time periods, $t = 1, \ldots, T$. Additionally, for those individuals we observe the regions in which they were living at early adulthood, $r_{16} = 1, \ldots, R_{16}$. Each individual is described by a vector of characteristics $(X_{i,r,t}, \epsilon_{i,r,t})$, where $X_{i,r,t}$ are publicly observed characteristics and ϵ_i are private characteristics observed only by the individual. Finally, for each individual we observe a measure of personal belief on various issues $Y_{i,r,t}$.

The utility of individual i, who lives at region r, at period t depends on his/her own beliefs and characteristics as well as on beliefs and characteristics of individuals j, who live at region r_{16}, the region where individual i lived at period $t-1$. Individual i chooses his beliefs in order to maximize his utility:

$$
\begin{aligned}
U_{i,r,t}(Y_{i,r,t}, Y_{j,r_{16},t-1}) = \\
&(\gamma X'_{i,r,t} + \epsilon_{i,r,t} + \delta \sum_j w_{ij} X'_{j,r_{16},t-1}) Y_{i,r,t} - \frac{1}{2} Y^2_{i,r,t} \\
&- \frac{\phi}{2} (Y_{i,r,t} - \sum_j w_{ij} Y_{j,r_{16},t-1})^2
\end{aligned}
\tag{2.1}
$$

where $\frac{\phi}{2}(Y_{i,r,t} - \sum_j w_{ij} Y_{j,r_{16},t-1})^2$ captures the endogenous effect, which is the squared distance between individual i's beliefs and the weighted average of the beliefs of all other individuals in i's group. We argue that the endogenous effect that comes from social pressure captures the concept of social identity. The parameter ϕ determines the rate of substitution between the private and the social components of utility. When $\phi = 0$ endogenous effects do not affect the behavior of the individual. The weighted average $\sum_j w_{ij} Y_{j,r_{16},t-1}$ is the network endogenous effect. A special case is when everyone carries the same weight in which case the last term reduces to a distance between individual i and the sample mean of the others. The term $\delta' \sum_j w_{ij} X_{j,r_{16},t-1}$ denotes contextual effects, which capture the direct influence of others' characteristics on i's beliefs. It is computed as the weighted average of the characteristics of all other individuals in i's group. Contextual effects are present if at least one element of the vector δ is non-zero. w_{ij} is the element of the $N \times N$ sociomatrix W, which captures the interaction effect, based on socioeconomic and physical distances, measures the strength of social ties between individual i and j. Finally, $\gamma X'_{i,r,t}$ captures individual effects.

The first-order conditions from the maximization of the utility function(Equation 2.1) imply:

$$
Y_{i,r,t} = \frac{\gamma}{1+\phi} X'_{i,r,t} + \frac{\delta}{1+\phi} \sum_j w_{ij} X'_{j,r_{16},t-1} + \frac{\phi}{1+\phi} \sum_j w_{ij} Y_{j,r_{16},t-1} + \frac{1}{1+\phi} \epsilon_{i,r,t} \tag{2.2}
$$

2.3.2 Econometric Model

The estimable equation of the first-order conditions (Equation 2.2) provide the linear-in-mean model:

$$
Y_{i,r,t} = \alpha X'_{i,r,t} + \beta \sum_j w_{ij} X'_{j,r_{16},t-1} + \lambda \sum_j w_{ij} Y_{j,r_{16},t-1} + \iota_r + \iota_{r_{16}} + \iota_t + \iota_{r_{16} \times t} + \epsilon_{i,r,t} \tag{2.3}
$$

where $Y_{i,r,t}$ measures individual i's belief, $\alpha X'_{i,r,t}$ captures individual's effects, $\beta \sum_j w_{ij} X'_{j,r_{16},t-1}$ captures contextual effects and $\lambda \sum_j w_{ij} Y_{j,r_{16},t-1}$ captures endogenous effects. The vectors $X_{i,r,t}$ and $X_{j,r_{16},t-1}$ contain individual characteristics such as age, gender, race, marital and employment status, education and income. All models include regional fixed effects (ι_r), and region at the age of 16 fixed effects ($\iota_{r_{16}}$) in order to control for regional unobserved heterogeneity. Moreover, we use time fixed effects (ι_t) to control for time unobserved heterogeneity, and the interaction of region at the age of 16 fixed effects with time fixed effects ($\iota_{r_{16} \times t}$) to control for specific region and time unobserved heterogeneity.

Our identification strategy, overcomes the reflection problem of Manski (1993) by utilizing the past society behavior.[10] Based on the psychology literature, we assume that the current beliefs of an individual are formed during a critical past period of the life cycle. In the next section we describe the sociomatrix, which captures the lag structure of the endogenous and contextual effects.

2.3.3 Sociomatrix

The $N \times N$ sociomatrix W, which is the row-standardization of the $N \times N$ distance matrix D, in which its elements are:

$$w_{ij} = \frac{d_{ij}}{\sum_j d_{ij}}$$

The elements of the sociomatrix W, are non-negative ($w_{ij} \geq 0$), the main diagonal is equal to zero ($w_{ii} = 0$) and rows sums either to zero or to one ($\sum_j w_{ij} = 0$ or $\sum_j w_{ij} = 1$). The non-negative restriction imposes a preference for behavioral conformity. The restriction that the main diagonal is equal to zero ensures that only the other individuals' beliefs and characteristics affect the belief of i. The restriction that rows sum either to zero or to one means either that the individuals are "loners" (individuals with no social interaction effects) or that the individual's social interaction effect is the weighted average of the others' beliefs and characteristics (Blume, Brock, Durlauf, and Jayaraman (2015)).

The $N \times N$ distance matrix D, is the Hadamard product of three different $N \times N$ matrices:

$$D = D^{GD} \circ D^{P} \circ D^{SE} \tag{2.4}$$

where D^{GD} measures the geographic distance, D^{P} the time distance, and D^{SE} the

[10] Manski (1993) shows that in the linear-in-means model endogenous and contextual effects cannot be separated. Durlauf and Ioannides (2010) show that the reflection problem does not arise in linear models with dynamic forms of interactions.

socioeconomic distance between the individuals. The elements of the $N \times N$ distance matrix D are calculated as $d_{ij} = d_{ij}^{GD} \times d_{ij}^{P} \times d_{ij}^{SE}$.

The General Social Survey (GSS) provides information on where the individual was living when he/she was 16 years old. Using this, we can identify for each i individual all the j individuals that were in the same region with him/her when he/she was 16 years old.[11] The geographic distance matrix can be constructed using the formula:

$$d_{ij}^{GD} = \begin{cases} 1 & \text{if region of individual } i \text{ at age } 16 = \text{region of individual } j, \\ 0 & \text{Otherwise.} \end{cases}$$

Using the birth year of an individual, and the year in which the individual answers to the GSS survey we can identify for each i individual all the j individuals that participated in a GSS survey when i was at a specific age range, for example between 18 and 25 years old. The distance matrix, for the $18 - 25$ period, is constructed using the formula:

$$d_{ij}^{P} = \begin{cases} 1 \quad \text{if} & \begin{array}{c}\text{birthyear} \\ \text{of individual } i \\ +\,18\end{array} \leq \begin{array}{c}\text{year when} \\ \text{individual } j \text{ answer} \\ \text{the survey}\end{array} \leq \begin{array}{c}\text{birthyear} \\ \text{of individual } i \\ +\,25\end{array} \\ \\ 0 & \text{Otherwise} \end{cases}$$

In order to take into account the social environment that an individual faces, we use the available information in GSS about the father and the mother's education, race and religion. The social environment of individual i is based on those characteristics. For example, if we use the father's education, then the social environment of individual i is all individuals j with the same education as his/her father. The distance matrix, can be constructed using the formula[12]:

$$d_{ij}^{SE} = \begin{cases} 1 & \text{if the education of individual } i\text{'s father} = \text{education of individual } j, \\ 0 & \text{Otherwise.} \end{cases}$$

[11] We only have information on the region in which the individual lived at the age of 16 and not for the region in which the individual lived in each period of his/her life. We assume that the individual was living in the region in which he was living at 16 years old during various periods (Giuliano and Spilimbergo (2014)).

[12] One issue raised in the literature is the endogeneity of the weight matrix (the elements of W to be correlated with beliefs). A first attempt to address this is Lee and Qu (2015), which the use a two-stage IV estimation, a quasi-maximum likelihood estimation and a GMM approach. In all cases they used additional exogenous variables that determine the construction of the weight matrix's elements. In our case we the elements of the weight matrix are constructed from predetermined components (physical distance, time and race, religion and parents' education). Additionally, relaxing this makes difficult to find proper instruments due to data limitations.

Finally, we use the Euclidean distance formula for the endogenous and contextual effects, using the various social identity variables :

$$\tilde{Y}^{EuclideanDistance}_{j,r_{16},t-1} = \sqrt{\sum_k (\tilde{Y}^k_{j,r_{16},t-1})^2} \text{ and } \tilde{X}^{EuclideanDistance}_{j,r_{16},t-1} = \sqrt{\sum_k (\tilde{X}^k_{j,r_{16},t-1})^2} \quad (2.5)$$

where $\tilde{Y}_{j,r_{16},t-1} = \sum_j w_{ij} Y_{j,r_{16},t-1}$, $\tilde{X}_{j,r_{16},t-1} = \sum_j w_{ij} X_{j,r_{16},t-1}$ and k is father's education, mother's education, race, and religion.

For robustness we use the simple average in order to combine the endogenous and contextual effects:

$$\tilde{Y}^{SimpleAverage}_{j,r_{16},t-1} = \frac{\sum_k \tilde{Y}^k_{j,r_{16},t-1}}{4} \text{ and } \tilde{X}^{SimpleAverage}_{j,r_{16},t-1} = \frac{\sum_k \tilde{X}^k_{j,r_{16},t-1}}{4} \quad (2.6)$$

Figure 2.1 presents the boxplots of the endogenous effect of the various belief variables for the different periods of an individual's life cycle. Each panel, contains four different boxplots, reflecting the different variables we used in order to construct the socioeconomic matrices (father's education, mother's education, race and religion). At first sight, we see that when the mean belief is based on either race or religion, it is closer to the median than with the use of the father or the mother's education. Additionally, we find that for the majority of cases, the median is higher when the mean belief is based on religion.

2.4 Results

In this section we present the results from equation 2.3 for the preferences for redistribution and the set of the other socioeconomic beliefs. We begin by presenting the endogenous, contextual, and individual effects for the preferences for redistribution, following the psychology literature that assumes that the individual is affected at early adulthood, between the age of 18 to 25. Then, we extend our analysis to a large range of socioeconomic beliefs. Furthermore, we investigate the sensitivity of our identification strategy by considering alternative ages of life cycle. Finally, we present a special case of the results, in which the sociomatrix is based on race and religion.

Tables 2.1 and 2.2 present the endogenous, contextual, and individual effects for the preferences for redistribution and the various socioeconomic beliefs, respectively. Table 2.3 presents the endogenous effect for each of the components of the sociomatrix, the father and the mother's education, race and religion. Table 2.4 presents the endogenous effect measured during different periods of the life cycle. Finally, Table 2.5 presents the endogenous effect if social identity is based on race and religion.

The dependent variable in all cases is either binary or ordered. Nonetheless, we follow standard empirical literature and present the results based on the Least Squares estimation which are very similar, in terms of sign and significance, with the ordered logit (logit) and ordered probit (probit) estimations (e.g., Alesina and Giuliano (2011), Kerr (2014), Giuliano and Spilimbergo (2014), and Alesina and Giuliano (2015)).[13] Finally, in order to consider the within-group dependence in estimating standard errors, all models standard errors are clustered at the region-at-16 level.[14]

2.4.1 Preferences for Redistribution

Following Giuliano and Spilimbergo (2014) we measure preferences for redistribution, using two proxies, aiming to capture both a direct and an indirect form of preferences for redistribution. The direct form is measured by the question of whether each individual should take care of himself/herself or if the government should do everything possible to improve the standard of living of all the poor. The indirect form of redistribution is measured by the question of whether people get ahead by their own hard work or by luck and the help from others. This is closely related with preferences for redistribution since an individual who believes that hard work determines success, would prefer less redistribution, while an individual who believes that luck determines success, would prefer more.

Table 2.1 presents the baseline estimation of Equation 2.3 for both the direct (Column 2) and indirect (Column 3) form of preferences for redistribution. Our baseline results are based on a natural structure defined by the region where the individual lived, during the age of 18 to 25 using the Euclidean distance (Equation 2.5). So, in order to calculate the mean preferences for redistribution that the individual faces at the critical age of 18 to 25 we take into account all the individuals with the same education with his/her father, the same education with his/her mother, the same race, and the same religion denomination.

[13] Appendix Table C3 presents the results for the case in which we do not take into account neither social identity, nor social interactions. These are the results of Giuliano and Spilimbergo (2014).

[14] Because of the small number of clusters the asymptotic tests can over-reject. A solution to this is the use of the wild bootstrap procedure suggested by Cameron, Gelbach, and Miller (2008). The results for the endogenous effect with the use of wild bootstrap can be found in appendix table C6.

2.4.1.1 Endogenous Effect

Our main finding is that the endogenous social interaction effect is positive and statistically significant, using a sociomatrix based on a Euclidean distance of a vector of socioeconomic variables. This results indicate the importance of social identity in the formation of the preferences for redistribution. For both the direct and indirect forms of redistribution, the size of the effect indicates that an increase by one point in the mean preferences for redistribution in the "neighborhoods" of the individual, is related to an increase in preferences for redistribution of the individual by 0.12 points.[15]

For each proxy of the preferences for redistribution, we re-estimate Equation 2.3 using a sociomatrix that is based on the individual components of the Euclidean distance used, father and mother's education, race and religion. This analysis can be viewed as a decomposition of social identity. Table 2.3 shows only the endogenous effects.[16]

Religion seems to be the socioeconomic variable that affects social identity, for both the direct and the indirect form of redistribution, with coefficient 0.217 and 0.203, respectively. The effect is bigger in magnitude than the baseline results. The father's education appears to affect social identity only for the direct form of preferences for redistribution, while for the indirect form we find an effect of the mother's education. The use of all other socioeconomic variables does not provide a statistically significant endogenous effect.

In Appendix Table C7, we present the endogenous effect for the model, without the use of the use of the socioeconomic distance in the formation of social network.[17] The network structure is based only on geographical distance, so the network endogenous effects is the mean preference for redistribution of all the individuals in the region where i was living at the age of 18 to 25. The results suggest that the endogenous effect is not an important determinant of individual i's current beliefs for preferences for redistribution. The comparison between table 2.1 and Appendix Table C7 indicates the importance in the identification of social identity and network structure.

Finally, we investigate three additional specifications. Firstly, we combine the various socioeconomic variables using the simple average (Equation 2.6), instead of the Euclidean distance. Secondly, we only use individuals that at the time of the survey lived in the same region as the one when they were 16 years old. Finally, we follow Cameron, Gelbach, and Miller (2008) and use the wild bootstrap procedure. The results are pre-

[15]The variable preferences for redistribution is measured in a 1-5 scale, with higher values indicate higher preferences.

[16]Full results are available upon request

[17]This is the case where the $N \times N$ distance matrix D (and the relevant sociomatrix W) is the Hadamard product of D^{GD} and D^{P}, only (see equation 2.4).

sented in Tables C4, C5, and C6, respectively. For all cases the results are quite similar as in the baseline specification.

2.4.1.2 Contextual Effects

Contextual effects show the direct influence of others' characteristics on i's beliefs and are the weighted average of the characteristics of all other individuals in i's group. They can also be considered as neighbourhood effects, since they demonstrate how the neighbourhood (social group) of the individual affects his/her beliefs (Benabou (1993)). They are captured by the term $\beta' \sum_j w_{ij} X_{j,r_{16},t-1}$ in Equation 2.3.

We find that as the number of educated individuals increases in i's group the individual will prefer less direct redistribution. This is a form of social mobility, generated by neighbourhood interactions. We have similar results if blacks or married increase in i's group. For the indirect form of redistribution, we find that as the number of unemployed increases in i's group, the individual will increase his/her belief that luck determines success in life.

2.4.1.3 Individual Effects

Results for the individual effects are consistent with the literature. We find that women are more pro-redistribution and more supportive of government intervention than men (Alesina and La Ferrara (2005)). The literature suggests that individuals are more generous towards others who are racially similar to them (Luttmer (2001)), especially in cases in which they are part of the discriminated social group (Alesina and Glaeser (2005)). Results also support this idea, since we find that blacks prefer more redistribution. Countries with close family ties tend to have individuals that rely more on family than in government help (Alesina and Giuliano (2015)). This is consistent with the results we found that married individuals tend to oppose government redistribution. Furthermore, we find some evidence that support the idea proposed by Alesina and Fuchs-Schundeln (2007), that individuals who are recipients of a transfer program, such as unemployment compensation, will favor more government intervention. Consistent with the idea of the prospects of upward mobility due to higher education, we find that educated individuals prefer less redistribution (Perotti (1996)). Meltzer and Richard (1981) and the existing empirical literature, we expect wealthier individuals to prefer less redistribution and government interception. Our results are also consistent with Meltzer and Richard (1981) since we find a statistically significant effect of income. Results are similar between the direct and the indirect form of redistribution. However, we find two notable differences, which are consistent with Giuliano and

Spilimbergo (2014). Females tend to believe that hard work brings success in life and highly educated individuals tend to believe that luck brings success in life.

Next, we present our baseline results on a range of socioeconomic beliefs.

2.4.2 Other Socioeconomic Beliefs

Table 2.2 presents the results for the various socioeconomic beliefs from the estimation of Equation 2.3, at the age of 18 to 25, using the Euclidean distance.

2.4.2.1 Endogenous Effect

Results yield a significant endogenous effect for all the belief variables. The sign, the significance, and the fact that the endogenous effect is ranging between zero and one, provide enough evidence that the social identity of the individual is an important determinant for the formation of beliefs. Finally, we find that the biggest effect in terms of size, is for the beliefs on politics (Conservative vs Liberal) and for discrimination against homosexuals, with the endogenous effect being 0.803 and 0.596, respectively. The endogenous effect of all socioeconomic beliefs is higher than the one of the preferences for redistribution.

Column 3 of Table 2.3 presents the results if we decompose social identity into father and mother education, race and religion. At first sight we see that the statistically significant endogenous social interaction effects is largely associated with religion. The size of the endogenous effect is bigger, compared to the use of the other socioeconomic variables, for beliefs which are considered taboo by religion, for beliefs related to politics and for beliefs related to religion. We find that the endogenous effect is the biggest, in terms of size, for the beliefs on abortion, and the sexual relations between two adults of the same sex. This result was expected, based on the lasting views of the different religions that both abortion and homosexuality are prohibited. Interestingly, the endogenous effect for both political beliefs, is relatively more important, in terms of size, than with the use of other socioeconomic variables. This result provides some evidence for the close relationship between politics and religion, which is observed in both the USA and the majority of countries.

For the other three socioeconomic variables, we did not find a clear pattern, like we did in the case of religion. In the cases in which the father or the mother's education or race is used for the construction of the sociomatrix W, we find that the endogenous effect is statistically significant for some of the belief variables. When race determines the social group of the individual, we find that the endogenous effect is the biggest, in terms of size, for the beliefs related to the discrimination of African-Americans and on general trust. The sociomatrix which is based on the mother's education, provides a quite large endogenous effect on political beliefs, while, when the sociomatrix is based either on the mother's or the father's education, it suggests a big endogenous effect for fairness.

2.4.2.2 Contextual Effects

Results suggest that as the mean number of females, or blacks, or married or educated individuals increases in the group, individuals i tend to believe that people should take care of paying for doctors and hospital bills, that a country's problems should be left to individuals and private businesses to handle, and tend to be Republican/Conservatives. We find an opposite effect when unemployed or individuals with a higher income are prominent in the group.

In the case of legal system beliefs, we find that as the mean number of blacks, or married or highly educated individuals increases in the group, individual i tends to be in favour of the death penalty, while as the number of unemployed increases, the individual tends to oppose the death penalty. However, we find that as the number of females, or unemployed or educated increases in the group, individual i tends to believe that the level of punishment imposed by the courts is right, while as the percentage of married increases, individuals tend to believe that courts are too harsh with criminals.

For the beliefs related to discrimination, special treatment to African-Americans and homosexual relations, individuals tend to oppose them, in the case of an increase in females, or blacks, or highly educated individuals in the reference group. The same result for homosexuality is found in the case of an increase in married individuals. We get the opposite result when the number of unemployed or wealthier individuals increases.

As the number of females, or blacks or married increases in the group, individuals tend to disapprove of the United States Supreme Court's rule that no state or local government may require the reading of the Lord's Prayer or Bible verses in public schools, and also believe in an afterlife. We find that individuals tend to oppose the possibility for a legal abortion either if the woman wants it for any reason, or if she became pregnant as a result of rape, if the mean number of females, or blacks or married in i's group increases. The opposite result is found, if the mean number of unemployed increases.

Contextual effects do not seem to matter in the case of attitudes. The only exception is in the case of an increase in the number of individuals with tertiary education, in the group. In this case, individuals tend to believe that most people can be trusted.

2.4.2.3 Individual Effects

Women believe that it is the government's responsibility to help people pay for doctors and hospital bills and it should do more to solve the country's problems. As for the legal system, women are less in favor of the death penalty and tend to believe that the courts are too harsh with criminals. For beliefs related to discrimination, women support government special treatment towards African-Americans and sexual relations between adults of the same sex. Additionally, they tend to be more left-wing, and in our case more Democrat or Liberal. Also, women tend to disapprove of the United States Supreme Court rule that no state or local government may require the reading of the Lord's Prayer or Bible verses in public schools and also tend to believe in an afterlife. Finally, they are in favor of the possibility of a legal abortion if the woman wants it for any reason, but surprisingly, they are against it if the pregnancy is a result of rape.

Blacks support government intervention, and the special treatment of African-Americans, and they accept sexual relations between adults of the same sex. They oppose the death penalty and tend to believe that the courts are too harsh with criminals. Additionally, they tend to be more left-wing, in our case more Democrat or Liberal, and less supportive of religion. They approve of the rule that no state or local government may require the reading of the Lord's Prayer or Bible in public schools, they generally don't believe in an afterlife, and they support the possibility for a legal abortion if the woman wants it for any reason. Given the long history of discrimination towards African-Americans it is not a surprise that blacks tend to believe that most people would try to take advantage of them.

Married individuals tend to oppose government intervention, while in terms of beliefs for the legal system, they are in favor of the death penalty and think that the courts are not harsh enough with criminals. They oppose the special treatment of African-Americans, and are against sexual relations between two adults of the same sex. Notably, they are Republicans or Conservative and they disapprove of the rule for the Lord's Prayer or Bible being read in public schools and tend to believe in an afterlife. Additionally, for beliefs relative to family values, we find that married individuals tend to oppose the possibility for a pregnant woman to obtain a legal abortion, either for any reason or rape. Finally, in terms of attitudes, married people relatively to non-married people, believe that most people would try to be fair and that they can be trusted.

We find that the unemployed tend to believe that it is the government's responsibility to help individuals in paying for doctors and hospital bills, and that the government should do even more to solve the country's problems. Additionally, they oppose to the death penalty, disapprove of the rule for the Lord's Prayer or Bible being read in public schools, and tend to believe that most people cannot be trusted.

Educated individuals tend to believe that people should pay for doctors and hospital bills on their own, and that a country's problems should be left to individuals and private businesses. Also, they oppose to the death penalty, they see the courts' level of punishment as right, they believe that the government should not be giving special treatment to African-Americans, and they do not find sexual relations between two adults of the same sex wrong. We do not find enough evidence that education has any effect on political beliefs. They approve of the rule for the Lord's Prayer or Bible being read in public schools, believe in an afterlife and are in favor of the possibility for a legal abortion. Finally, they believe that most people would try to be fair and that most people can be trusted. The results discussed here include both individuals with secondary and tertiary education. However the effect for individuals with tertiary education is much stronger, in terms of size.

Finally, we find that wealthier individuals tend to believe that people should pay for doctors and hospital bills on their own, and that a country's problems should be left to individuals and private businesses. They are in favor of the death penalty, they see the courts' level of punishment as right, and believe that the government should not be giving special treatment to African-Americans. Additionally, they approve of the rule for the Lord's Prayer or Bible being read in public schools, and they are in favor of the possibility for a legal abortion if the woman became pregnant as a result of rape. Finally, they believe that most people would try to be fair and that most of the people can be trusted.

In sum, we find that individual effects play an important role in the formation of beliefs. In particular, for beliefs related to government duties, legal system, and discrimination we find that the biggest effect comes from race. Blacks believe that it is the government's responsibility to help people pay for doctors and hospital bills and it should do more to solve the country's problems, while they oppose to the death penalty, tend to believe that the courts are too harsh with criminals and support the special treatment of African-Americans. The biggest effect for the discrimination of homosexuals comes from education, where more educated individuals do not find sexual relations between two adults of the same sex wrong. Political beliefs are affected only by gender, race and marital status. We find that women and blacks tend to be more left-wing and that married individuals tend to be more right-wing. Finally, education plays the biggest role on beliefs on religion, abortion and attitudes. Educated individuals approve of the rule for the Lord's Prayer or Bible being read in public schools, believe in an afterlife and are in favor of the possibility for a legal abortion. Finally, they believe that most people would try to be fair and that most people can be trusted.

2.4.3 Sensitivity Analysis of the Identification Strategy

A sensitivity analysis of our identification strategy, is to consider alternative ages of the life cycle. For this, we compare, for each belief variable, the significance and the size of the endogenous effect at different stages of an individual's life cycle. Table 2.4 presents the results for both preferences for redistribution and various socioeconomic beliefs when we use the Euclidean distance and Table 2.3 presents the results for the case in which we decompose social identity into the four socioeconomic variables.

2.4.3.1 Preferences for Redistribution

For both the direct and the indirect forms of redistribution, we find strong evidence supporting the impressionable years hypothesis, since the endogenous effect is statistically significant only when social identity is based on the period when the individual was 18 to 25 years old. This result is consistent with the findings of both Alesina and Giuliano (2011) and Giuliano and Spilimbergo (2014), in which they find that the environment that the individual is associated with between the ages 18-25 is positive and significant. However, in their case, the "social environment" was based on macroeconomic volatility and macroeconomic shocks.

Decomposing social identity, we find evidence for the impressionable years hypothesis on the direct form of the preferences for redistribution when we use the father's education and on the indirect form when we use the mother's education. In the case of religion we find some evidence that additionally tp the 18 to 25 age range, endogenous effect is significant when social identity is based on the age of 26 to 33, but smaller in magnitude.

2.4.3.2 Other Socioeconomic Beliefs

For the majority of the belief variables we find evidence that endogenous effect is significant for various ages of the life cycle. This is true for beliefs on government duties, discrimination, politics, religion, abortion, and attitudes. For those beliefs, the endogenous effect is similar, in terms of significance and size, for all periods. For the beliefs related to the legal system, the death penalty and the level of punishment imposed by the courts, the endogenous effect has the biggest size, 0.31 and 0.16 respectively, when the individual was 18 to 25 years old. For the periods before and after, the effect is either insignificant or significant with a smaller size.

The decomposition of the social identity does not provide us with notable insights. We find some evidence that for the majority of the belief variables, the ages of 18 to 25 and 26 to 33 seem to be important for the formation of beliefs, but we cannot exclude the rest of the periods. This is consistent with the case in which we used the Euclidean distance, as discussed above.

Next, we examine the case in which the endogenous effect is based on race and religion.

2.4.4 White - Protestants

Based on the Pew Research Centre 47% of Americans are Protestant. In his famous book "The Protestant Ethic and the Spirit of Capitalism", Max Weber suggests that the evolution of capitalism is due to the Protestant ethic, a concept in Theology, Sociology, Economics and History that emphasizes hard work, discipline and frugality. The Protestant ethic can play a major role in the construction of social identity and the formation of beliefs.

Table 2.5, presents the endogenous effect when the group of the individual is based on race (white) and religion (protestant). The $N \times N$ distance matrix D (and the relevant sociomatrix W) use the socioeconomic distance with the elements:

$$d_{ij}^{SE} = \begin{cases} 1 & \text{if both individuals } i \text{ and } j \text{ are White AND Protestants,} \\ 0 & \text{Otherwise.} \end{cases}$$

We find a strong endogenous effect for the indirect form of redistribution, both in significance and size, when social identity is based on the period when the individual was 18 to 25 years old. This is consistent with one of the main ideas of protestant ethics, which emphasizes hard work. This result however does not extend to the direct form of the preferences for redistribution.

For the other socioeconomic beliefs we find that the size of the endogenous effect is statistically significant for beliefs which are considered taboo by religion and for beliefs related to religion. We find a strong effect on abortion, homosexuality, and on both religion beliefs included in the paper. Additionally, the endogenous effect on the political beliefs is quite big, indicating the close relationship of religion and politics as suggested by Weber. Also as expected, there is a strong endogenous effect, both in significance and size, on government intervention. Finally, we find significant effects on beliefs related to the legal system, and mainly on the belief concerning the death penalty. These results can potentially explain the results of the recent US election.

2.5 Conclusion

An individual's beliefs and attitudes are of great importance to the economic, legal and political organization of the society, which in turn affects the country's economic performance and growth. In economics, there is a quite large theoretical and empirical literature on belief structure, mainly on preferences for redistribution, and how they affect government intervention and redistributive policies.

Despite the large empirical literature on how beliefs, and especially preferences for redistribution, are formed, little attention has been paid to social identity. Social identity shapes individual preferences and beliefs people wish to possess and present to others. Tajfel (1978) in his book states that social identity has been defined in social psychology as that part of an individual's self-concept which derives from his knowledge of his membership in a social group.

The literature has proposed several mechanisms on the formation of beliefs and attitudes such as income, education, race, gender, religion etc. Psychology proposes a different channel on the susceptibility of beliefs and attitudes. "Impressionable years hypothesis", suggests that attitudes, beliefs and values are constructed in early adulthood and remain unaltered thereafter. This channel shows the importance of the social environment that the individual is part of.

The main objective of this paper is to understand the role of social identity in the formation of socioeconomic beliefs. Additionally, we provide a sensitivity analysis of our identification strategy by considering alternative ages of the life cycle. In order to achieve this, we used data from the General Social Survey, for the years 1972 to 2014, and identified 16 belief and attitude variables, and divided them into eight categories: beliefs about abortion, attitudes, discrimination, government duties, legal system, politics, preferences for redistribution and religion. Using the theoretical model of Blume, Brock, Durlauf, and Jayaraman (2015)) we modeled social identity using social interaction models that study the interplay of social influences which affect individual outcomes and individual decisions, which in turn determine the evolution of group memberships and hence social influences.

We find strong evidence of endogenous effects, for a range of socioeconomic beliefs. Taking into account social identity produces a significant endogenous effect for all belief variables, almost for all periods of an individual's life. The sign and significance of the endogenous effect provide enough evidence that the social environment and socioeconomic characteristics faced by the individual are important determinants for the formation of beliefs.

Last but not least, we relate our findings to the current debates about the increase in populism in the US. We find a close link between religion and politics. In particular for the case where the socioeconomic environment of the individual is based on race (white) and religion (Protestant) we find a strong endogenous effect for beliefs which are considered taboo by religion and for beliefs related to religion. More specifically we find a strong effect on abortion, homosexuality, and on both religion and politics beliefs included in the paper.

2.6 Tables

Table 2.1: **Preference for Redistribution**

The table presents the results from Equation 2.3 when social identity (w_{ij} is based on equation 2.4). Standard errors, clustered at the region at 16 level, are in parentheses. All models include region fixed effects, region at the age of 16 fixed effects, time fixed effects and the interaction of region at the age of 16 fixed effects with time fixed effects. *significant at 10%,**significant at 5%, ***significant at 1%.

Dependent Variable	**Help Poor**	**Hard Work Vs Luck**
Endogenous Effect	0.119**	0.120***
	(0.054)	(0.037)
Contextual Effects		
Age	-0.013	-0.020
	(0.239)	(0.085)
Age Square	-0.009	0.001
	(0.024)	(0.008)
Female	-0.248	-0.038
	(0.348)	(0.096)
Black	-0.546**	-0.211
	(0.275)	(0.148)
Married	-0.405*	-0.012
	(0.235)	(0.078)
Unemployed	0.554	1.004***
	(0.569)	(0.321)
Secondary	-0.376***	-0.043
	(0.050)	(0.036)
Tertiary	-0.303***	-0.019
	(0.057)	(0.027)
Income	0.020	0.007
	(0.013)	(0.008)
Individual Effects		
Age	0.000	0.090**
	(0.079)	(0.043)
Age Square	0.001	-0.008
	(0.011)	(0.006)
Female	0.226***	-0.055***
	(0.015)	(0.013)
Black	0.833***	0.224**
	(0.238)	(0.114)
Married	-0.078***	-0.068***
	(0.029)	(0.006)
Unemployed	0.079	0.040***
	(0.060)	(0.014)
Secondary	-0.204***	0.014
	(0.044)	(0.029)
Tertiary	-0.272***	0.067**
	(0.064)	(0.032)
Income	-0.042***	-0.009***
	(0.007)	(0.003)
Observations	9,837	11,688
R^2	0.110	0.037

Table 2.2: **Socioeconomic Beliefs**

The table presents the results from Equation 2.3 when social identity (w_{ij} is based on equation 2.4). Standard errors, clustered at the region at 16 level, are in parentheses. All models include region fixed effects, region at the age of 16 fixed effects, time fixed effects and the interaction of region at the age of 16 fixed effects with time fixed effects. *significant at 10%,**significant at 5%, ***significant at 1%.

Category	**Government Duties**		**Legal System**	
Dependent	**Medical Help**	**Country's Problem**	**Death Penalty**	**Courts**
Endogenous Effect	0.144***	0.115***	0.309***	0.156***
	(0.036)	(0.036)	(0.051)	(0.048)
Contextual Effects				
Age	-0.147	-0.291	0.036	0.116*
	(0.272)	(0.276)	(0.049)	(0.068)
AgeSquare	0.011	0.020	0.003	-0.011*
	(0.027)	(0.026)	(0.005)	(0.006)
Female	-0.851***	-0.258	0.026	0.098*
	(0.274)	(0.322)	(0.048)	(0.056)
Black	-0.709***	-0.614**	0.196***	0.022
	(0.234)	(0.293)	(0.067)	(0.053)
Married	-0.231	-0.441**	0.135**	-0.153**
	(0.292)	(0.199)	(0.058)	(0.067)
Unemployed	1.443**	0.148	-0.504***	0.359*
	(0.714)	(0.636)	(0.163)	(0.211)
Secondary	-0.154*	-0.417***	0.123***	0.057*
	(0.085)	(0.091)	(0.021)	(0.033)
Tertiary	-0.217***	-0.358***	0.039**	0.068***
	(0.073)	(0.071)	(0.017)	(0.025)
Income	0.032	0.045*	-0.011	-0.004
	(0.020)	(0.023)	(0.007)	(0.007)
Individual Effect				
Age	-0.067	-0.154**	0.062*	0.044
	(0.106)	(0.072)	(0.035)	(0.031)
AgeSquare	0.011	0.018*	-0.009***	0.001
	(0.009)	(0.011)	(0.003)	(0.003)
Female	0.180***	0.220***	-0.075***	-0.014**
	(0.028)	(0.019)	(0.005)	(0.006)
Black	0.873***	0.932***	-0.354***	-0.145***
	(0.204)	(0.234)	(0.053)	(0.049)
Married	-0.172***	-0.102***	0.034***	0.011**
	(0.027)	(0.025)	(0.007)	(0.005)
Unemployed	0.180***	0.169***	-0.029*	-0.037
	(0.066)	(0.050)	(0.017)	(0.029)
Secondary	-0.186***	-0.250***	0.027**	0.015
	(0.039)	(0.074)	(0.013)	(0.011)
Tertiary	-0.237***	-0.345***	-0.047**	0.066***
	(0.056)	(0.073)	(0.020)	(0.016)
Income	-0.031***	-0.020***	0.011***	0.004**
	(0.003)	(0.006)	(0.002)	(0.002)
Observations	9,865	9,677	16,760	16,233
R^2	0.086	0.110	0.104	0.041

Table continued on next page ...

Table 2.2 continued

Category	Discrimination		Politics	
Dependent	Black	Homosexual	Republican Vs Democrats	Conservatives Vs Liberal
Endogenous Effect	0.134***	0.596***	0.486***	0.803***
	(0.032)	(0.044)	(0.077)	(0.076)
Contextual Effects				
Age	-0.141	-0.157	-0.487	0.103
	(0.345)	(0.359)	(0.518)	(0.273)
AgeSquare	0.002	0.006	0.019	-0.022
	(0.036)	(0.037)	(0.055)	(0.028)
Female	-0.913***	-1.264***	-2.141***	-1.247***
	(0.218)	(0.303)	(0.319)	(0.188)
Black	-0.523**	-0.957***	-1.826***	-1.029***
	(0.241)	(0.233)	(0.264)	(0.214)
Married	-0.274	-1.283***	0.024	-0.603*
	(0.273)	(0.189)	(0.414)	(0.364)
Unemployed	0.809	1.264*	0.668	1.569**
	(0.820)	(0.750)	(0.819)	(0.787)
Secondary	-0.252**	-0.148***	-0.611***	-0.264***
	(0.107)	(0.045)	(0.130)	(0.084)
Tertiary	-0.162**	-0.307***	-0.594***	-0.320***
	(0.068)	(0.062)	(0.125)	(0.066)
Income	0.017	0.081***	0.021	0.056***
	(0.015)	(0.031)	(0.035)	(0.020)
Individual Effect				
Age	-0.198**	0.480***	0.009	0.005
	(0.092)	(0.125)	(0.209)	(0.130)
AgeSquare	0.024*	-0.014	-0.025	0.002
	(0.013)	(0.013)	(0.020)	(0.010)
Female	0.111***	0.250***	0.283***	0.197***
	(0.031)	(0.021)	(0.037)	(0.022)
Black	1.500***	0.380**	2.633***	0.886***
	(0.187)	(0.183)	(0.180)	(0.141)
Married	-0.087***	-0.285***	-0.309***	-0.302***
	(0.030)	(0.028)	(0.050)	(0.023)
Unemployed	0.060	0.000	0.074	0.041
	(0.091)	(0.055)	(0.061)	(0.070)
Secondary	-0.145*	0.146***	0.042	-0.042
	(0.075)	(0.043)	(0.065)	(0.042)
Tertiary	0.033	0.452***	0.070	-0.003
	(0.092)	(0.045)	(0.076)	(0.072)
Income	-0.030***	0.006	-0.005	-0.007
	(0.008)	(0.004)	(0.005)	(0.005)
Observations	9,950	11,288	18,450	16,091
R^2	0.151	0.242	0.139	0.101

Table continued on next page ...

Table 2.2 continued

Category	Religion		Abortion		Attitudes	
Dependent	**Religion in School**	**Afterlife**	**Any Reason**	**Rape**	**Fairness**	**Trust**
Endogenous Effect	0.479***	0.489***	0.534***	0.274***	0.225***	0.137**
	(0.078)	(0.077)	(0.087)	(0.058)	(0.073)	(0.060)
Contextual Effects						
Age	-0.320**	0.149	0.017	0.091	0.155	0.225**
	(0.129)	(0.142)	(0.131)	(0.093)	(0.123)	(0.111)
Age Square	0.025**	-0.012	0.000	-0.007	-0.021*	-0.025**
	(0.013)	(0.013)	(0.014)	(0.010)	(0.012)	(0.010)
Female	-0.449***	0.461***	0.373***	0.150**	0.074	-0.046
	(0.128)	(0.126)	(0.102)	(0.063)	(0.131)	(0.125)
Black	-0.272***	0.212***	0.211***	0.030	0.024	-0.084
	(0.077)	(0.068)	(0.074)	(0.064)	(0.131)	(0.137)
Married	-0.095	0.204*	0.220***	0.085**	-0.027	-0.036
	(0.104)	(0.105)	(0.066)	(0.040)	(0.053)	(0.064)
Unemployed	0.206	-0.286	-1.383***	-0.391**	-0.082	0.387
	(0.321)	(0.222)	(0.182)	(0.164)	(0.303)	(0.283)
Secondary	0.008	-0.013	-0.044	0.001	0.028	0.028
	(0.043)	(0.037)	(0.027)	(0.024)	(0.038)	(0.025)
Tertiary	0.006	-0.010	-0.038	0.005	0.032	0.051*
	(0.022)	(0.025)	(0.031)	(0.022)	(0.035)	(0.027)
Income	-0.005	0.005	0.001	-0.001	-0.006	0.005
	(0.011)	(0.008)	(0.007)	(0.005)	(0.005)	(0.008)
Individual Effect						
Age	-0.176***	0.006	-0.208***	-0.013	0.073**	0.050
	(0.040)	(0.024)	(0.038)	(0.016)	(0.032)	(0.037)
Age Square	0.016***	0.001	0.017***	0.002	-0.003	0.004
	(0.004)	(0.002)	(0.005)	(0.002)	(0.003)	(0.003)
Female	-0.024***	0.042***	-0.025**	0.023***	0.028***	-0.023***
	(0.009)	(0.007)	(0.012)	(0.006)	(0.010)	(0.007)
Black	0.115*	-0.166***	-0.153**	-0.020	-0.182*	-0.063
	(0.067)	(0.048)	(0.059)	(0.053)	(0.109)	(0.100)
Married	-0.024***	0.026***	0.114***	0.066***	0.027***	0.021***
	(0.008)	(0.005)	(0.016)	(0.007)	(0.007)	(0.006)
Unemployed	-0.040*	0.011	-0.017	-0.016	-0.013	-0.048**
	(0.024)	(0.013)	(0.024)	(0.016)	(0.016)	(0.024)
Secondary	0.009	0.077***	-0.065***	-0.064***	0.083***	0.058***
	(0.017)	(0.015)	(0.015)	(0.015)	(0.015)	(0.013)
Tertiary	0.119***	0.094***	-0.130***	-0.076***	0.216***	0.198***
	(0.019)	(0.017)	(0.015)	(0.017)	(0.019)	(0.019)
Income	0.003**	0.003	-0.001	-0.005**	0.007***	0.006***
	(0.001)	(0.002)	(0.003)	(0.002)	(0.002)	(0.001)
Observations	10,111	13,164	9,689	12,448	11,171	11,796
R^2	0.147	0.074	0.128	0.066	0.118	0.120

Table 2.3: **Decomposition of Social Identity**

The table presents the endogenous effects of equation 2.3 when we decompose social identity into father's education or mother's education or race or religion. All models include region fixed effects, region at the age of 16 fixed effects, time fixed effects and the interaction of region at the age of 16 fixed effects with time fixed effects. *significant at 10%,**significant at 5%, ***significant at 1%.

	Age			
	10 - 17	**18 - 25**	**26 - 33**	**34 - 41**
		Help Poor		
Father Education	-0.017	0.115***	-0.022	-0.024
Mother Education	0.098**	0.079	-0.065	0.002
Race	-0.025	-0.040	0.075	-0.001
Religion	0.001	0.217***	0.176***	0.131
		Hard Work Vs Luck		
Father Education	0.015	-0.019	0.065	0.063
Mother Education	0.077	0.122**	0.025	-0.064
Race	-0.067	-0.018	-0.078	0.033
Religion	0.119	0.203***	0.181**	0.092
		Medical Help		
Father Education	0.037	0.074	0.003	0.138**
Mother Education	0.111	0.033	0.072	0.135***
Race	0.031	0.036	0.152	0.068
Religion	0.037	0.115	0.099*	-0.019
		Country's Problem		
Father Education	0.071*	0.095***	0.108*	0.006
Mother Education	0.126**	0.004	0.163***	-0.031
Race	0.216**	0.107**	0.199***	0.183*
Religion	-0.020	0.131**	0.112**	0.106
		Death Penalty		
Father Education	0.247***	0.300***	0.227***	0.169***
Mother Education	0.195**	0.333***	0.170***	0.202***
Race	0.006	0.192**	0.062	0.237**
Religion	0.163***	0.265***	0.267***	0.245***
		Courts		
Father Education	-0.056	0.100	0.145*	0.038
Mother Education	-0.190	0.055	0.067	-0.005
Race	-0.019	0.028	0.066	-0.062
Religion	-0.060	0.091**	0.091	0.023
		Discrimination (Black)		
Father Education	0.155***	0.049	0.099*	0.004
Mother Education	0.111	0.047	0.011	-0.027
Race	0.154	0.147*	0.246*	0.101
Religion	0.013	0.177***	0.172***	0.061
		Discrimination (Homosexual)		
Father Education	0.054	0.305***	0.242***	0.017
Mother Education	0.090*	0.383***	0.244***	0.009
Race	-0.034	0.248***	0.173**	-0.024
Religion	0.442***	0.434***	0.615***	0.489***

Table continued on next page ...

Table 2.3 continued

	Age			
	10 - 17	**18 - 25**	**26 - 33**	**34 - 41**
	Republican Vs Democrats			
Father Education	0.096	0.189***	0.257***	0.106*
Mother Education	0.222***	0.208***	0.356***	0.259***
Race	0.184**	0.193	0.370***	0.129
Religion	0.341***	0.508***	0.621***	0.590***
	Conservatives Vs Liberal			
Father Education	0.146	0.325***	0.252***	0.134*
Mother Education	0.238***	0.406***	0.289***	0.262***
Race	0.101	0.261***	0.017	0.016
Religion	0.514***	0.641***	0.636***	0.507***
	Religion in School			
Father Education	0.103*	0.197***	0.089	0.291***
Mother Education	0.133	0.098	0.151***	0.332***
Race	0.052	0.168**	0.019	0.215**
Religion	0.324***	0.444***	0.443***	0.520***
	After life			
Father Education	-0.026	0.007	0.157**	0.253***
Mother Education	-0.025	0.124	0.150***	0.233***
Race	-0.029	0.005	0.236***	0.237***
Religion	0.400***	0.419***	0.567***	0.632***
	Abortion (Any Reason)			
Father Education	0.049	0.122	0.144	0.289***
Mother Education	0.121	0.117	0.032	0.413***
Race	0.087	0.060	0.084	0.095
Religion	0.314**	0.461***	0.485***	0.496***
	Abortion (Rape)			
Father Education	-0.114	0.004	0.148**	-0.022
Mother Education	0.006	0.112*	0.200*	0.003
Race	-0.001	0.183*	0.286***	0.140*
Religion	0.257**	0.422***	0.431***	0.500***
	Fairness			
Father Education	0.129	0.326***	0.133**	0.006
Mother Education	0.239**	0.301***	0.090	0.010
Race	0.110	0.249**	0.266***	0.129
Religion	0.185	0.017	0.421***	0.106***
	Trust			
Father Education	-0.014	0.069	0.170**	0.230**
Mother Education	0.071	0.134*	0.143*	0.111
Race	-0.004	0.069	0.249***	0.282***
Religion	0.213**	0.085	0.246**	0.231***

Table 2.4: **Endogenous Age and Susceptibility of Beliefs**

The table presents the endogenous effects of equation 2.3 when social identity (w_{ij}) is based on equation 2.4. Standard errors, clustered at the region at 16 level, are in parentheses. All models include region fixed effects, region at the age of 16 fixed effects, time fixed effects and the interaction of region at the age of 16 fixed effects with time fixed effects. *significant at 10%,**significant at 5%, ***significant at 1%.

	10 - 17	**18 - 25**	**26 - 33**	**34 - 41**
Help Poor	0.035	0.119**	0.059	0.079
	(0.036)	(0.054)	(0.038)	(0.049)
Hard Work Vs Luck	0.061	0.120***	0.122	0.101
	(0.050)	(0.037)	(0.084)	(0.062)
Medical Help	0.123**	0.144***	0.142***	0.121*
	(0.054)	(0.036)	(0.046)	(0.073)
Country's Problem	0.117***	0.115***	0.193***	0.100*
	(0.045)	(0.036)	(0.042)	(0.060)
Death Penalty	0.166***	0.309***	0.233***	0.253***
	(0.055)	(0.051)	(0.061)	(0.032)
Courts	-0.061	0.156***	0.131**	0.028
	(0.095)	(0.048)	(0.061)	(0.028)
Discrimination (Black)	0.130**	0.134***	0.173***	0.087
	(0.052)	(0.032)	(0.042)	(0.074)
Discrimination (Homosexual)	0.422***	0.596***	0.554***	0.487***
	(0.059)	(0.044)	(0.059)	(0.067)
Republican Vs Democrats	0.423***	0.486***	0.557***	0.492***
	(0.064)	(0.077)	(0.086)	(0.087)
Conservatives Vs Liberal	0.600***	0.803***	0.714***	0.705***
	(0.081)	(0.076)	(0.080)	(0.074)
Religion in School	0.356***	0.479***	0.472***	0.581***
	(0.057)	(0.078)	(0.085)	(0.087)
Afterlife	0.360***	0.489***	0.639***	0.721***
	(0.053)	(0.077)	(0.071)	(0.050)
Abortion (Any Reason)	0.483***	0.534***	0.527***	0.649***
	(0.156)	(0.087)	(0.066)	(0.090)
Abortion (Rape)	0.204**	0.274***	0.333***	0.257***
	(0.101)	(0.058)	(0.080)	(0.068)
Fairness	0.262***	0.225***	0.286***	0.117**
	(0.090)	(0.073)	(0.044)	(0.056)
Trust	0.192**	0.137**	0.299***	0.264***
	(0.084)	(0.060)	(0.048)	(0.046)

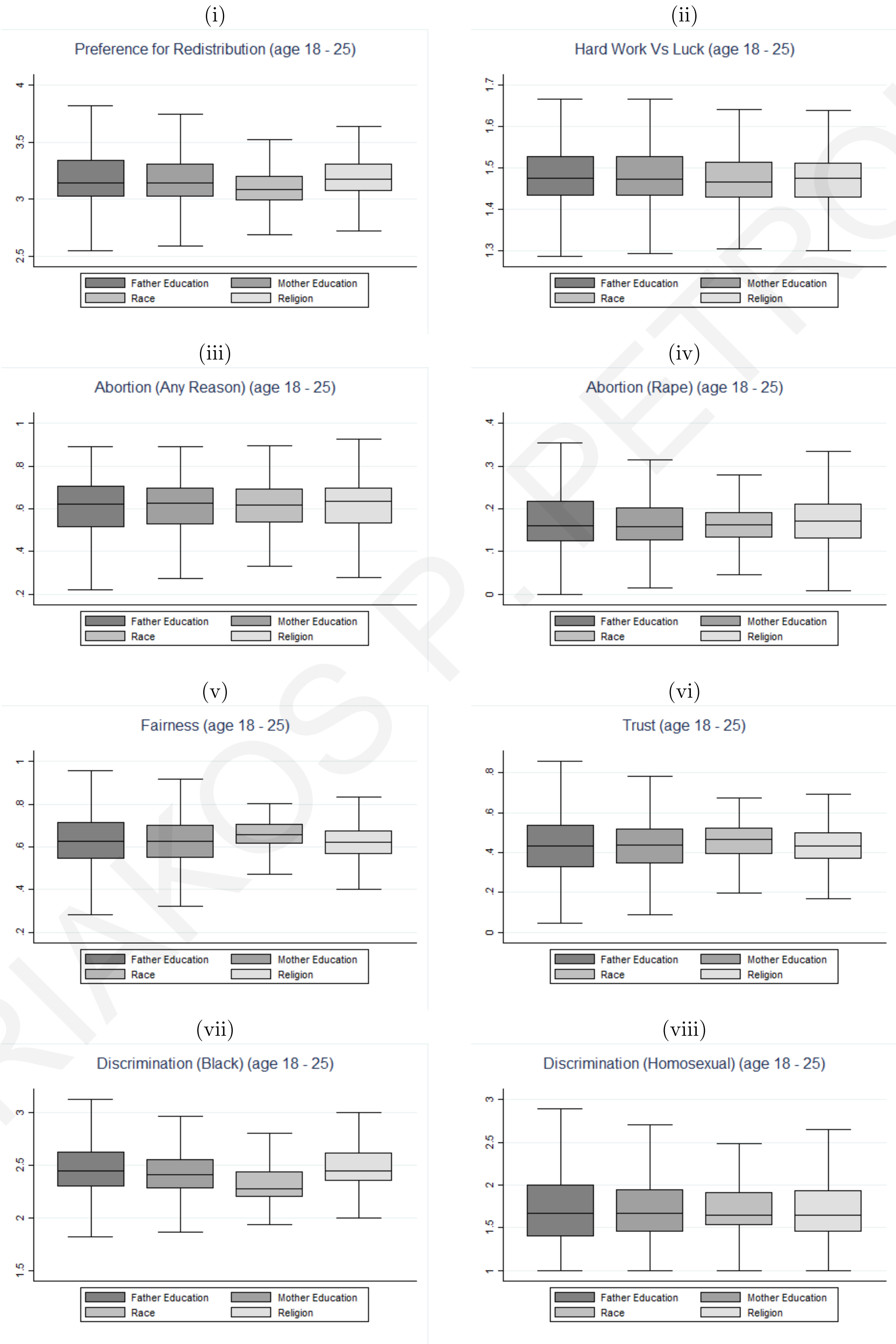
Table 2.5: **Endogenous Effect for White - Protestants**

The table presents the estimation of equation 2.3 with the use of social identity based on race (White) and religion (Protestants). Standard errors, clustered at the region at 16 level, are in parentheses. All models include region fixed effects, region at the age of 16 fixed effects, time fixed effects and the interaction of region at the age of 16 fixed effects with time fixed effects. *significant at 10%,**significant at 5%, ***significant at 1%.

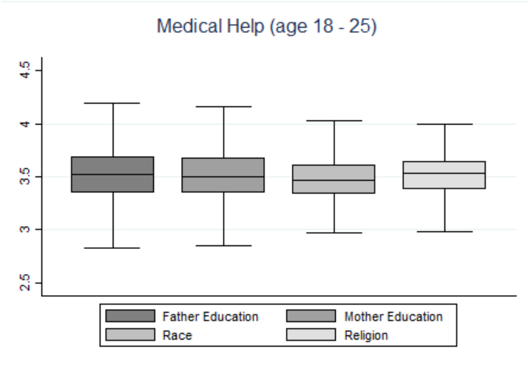
	10 - 17	**18 - 25**	**26 - 33**	**34 - 41**
Help Poor	0.000	0.072	0.056	0.084
	(0.057)	(0.112)	(0.089)	(0.087)
Hard Work Vs Luck	0.521***	0.164	0.131	0.030
	(0.136)	(0.149)	(0.131)	(0.157)
Medical Help	0.001	0.232***	0.098	-0.040
	(0.141)	(0.081)	(0.094)	(0.096)
Country's Problem	-0.006	0.226***	0.076	0.123
	(0.073)	(0.069)	(0.073)	(0.083)
Death Penalty	0.007	0.281**	0.255***	0.070
	(0.114)	(0.111)	(0.064)	(0.081)
Courts	-0.026	0.084	0.037	-0.172***
	(0.242)	(0.184)	(0.095)	(0.062)
Discrimination (Black)	0.084	0.065	0.175	-0.085
	(0.125)	(0.140)	(0.139)	(0.111)
Discrimination (Homosexual)	0.179	0.263***	0.368***	0.177
	(0.162)	(0.091)	(0.091)	(0.118)
Republican Vs Democrats	0.178**	0.294***	0.419***	0.380***
	(0.072)	(0.061)	(0.048)	(0.078)
Conservatives Vs Liberal	0.328*	0.523***	0.597***	0.279***
	(0.191)	(0.118)	(0.078)	(0.108)
Religion in School	0.125	0.252***	0.139	0.323***
	(0.156)	(0.049)	(0.093)	(0.062)
Afterlife	0.149**	0.250*	0.318***	0.501***
	(0.067)	(0.137)	(0.085)	(0.081)
Abortion (Any Reason)	0.020	0.335*	0.295**	0.233***
	(0.210)	(0.175)	(0.133)	(0.089)
Abortion (Rape)	0.352	0.433***	0.471***	0.369***
	(0.238)	(0.159)	(0.112)	(0.090)
Fairness	0.049	0.167	0.391***	0.271**
	(0.150)	(0.195)	(0.112)	(0.125)
Trust	0.106	0.129	0.245*	0.298***
	(0.238)	(0.083)	(0.141)	(0.071)

2.7 Figures

Figure 2.1: **Decomposition of Social Identity**



(ix)



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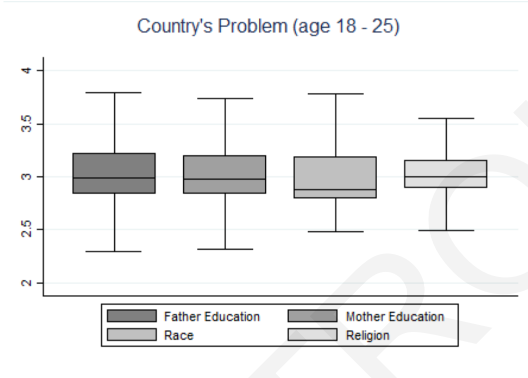
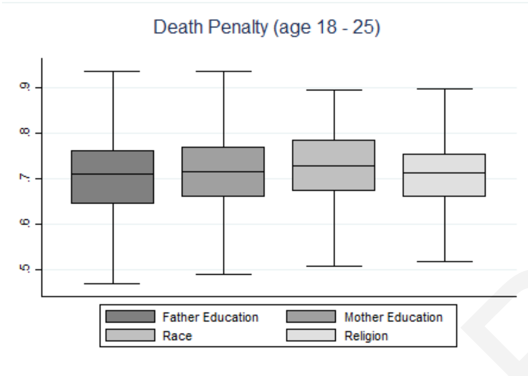


(xi)



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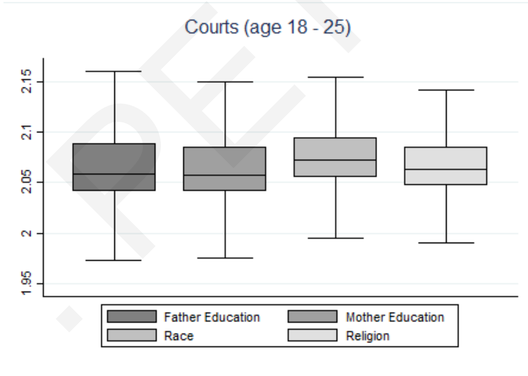

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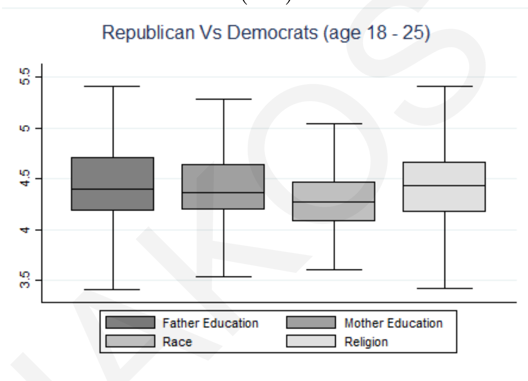
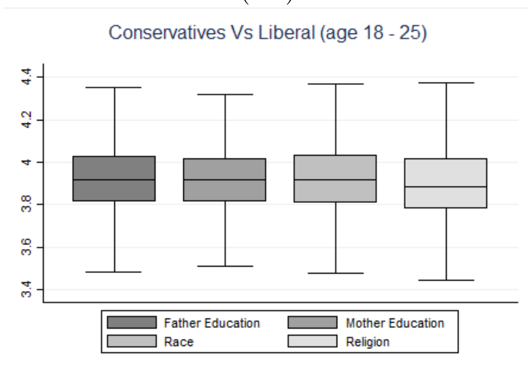
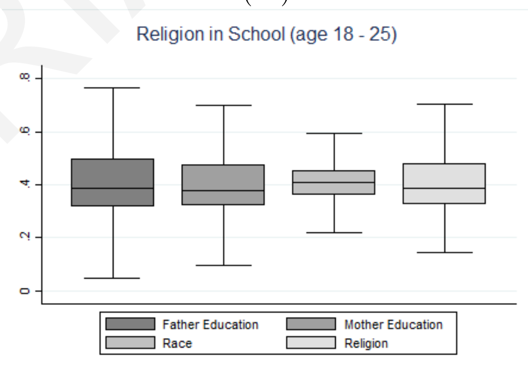


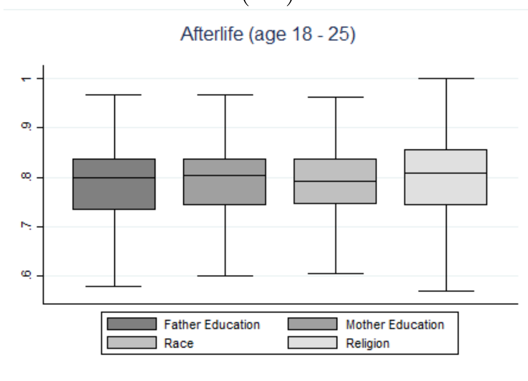
(xiv)



(xv)



(xvi)



Chapter 3

Multiple Regimes and Preferences for Redistribution

3.1 Introduction

The three traditional roles of the government are the provision of stabilization, the provision of public goods, and redistribution. Over the period of 1970 to 2010, the world average of social protection and public goods expenditures were 15% and 29% of total government expenditures, respectively.[1] In developed countries, social protection expenditures were much higher - 34% for both the G7 and the EU.

There exists a range of theories that propose different determinants for the formation of preferences for redistribution. One prominent theory of preferences for redistribution is based on political economy and, in particular, on majority voting (Meltzer and Richard (1981)).[2] Despite the huge influence of Meltzer and Richard (1981) hypothesis, the data shows a much different pattern. For example, for the period after 1970, the post-tax, post-transfer Gini index of inequality in the United States is 34% while in Western European countries[3] it is 26%. Nevertheless, social protection expenditures constitute 24% and 39% of the total expenditures in the United States and in West Europe, respectively. Additionally, using data from the World Values Survey, preferences for

[1] Following Persson and Tabellini (1999), expenditure of public good is the sum of public order and safety, health and education expenditures.

[2] In majority ruled societies where the decisive voter is the voter with the median income, higher inequality may generate demand for more redistribution and larger government, since the median voter's cost of taxation is proportional to his/her own income, while the benefits are proportional to the mean income. This creates an incentive to vote for more redistribution.

[3] West European countries: Austria, Belgium, Denmark, Finland, France, Germany, Luxembourg, Netherlands, Norway, Sweden, and United Kingdom.

redistribution are also lower in the United States. On a scale of 1 to 10, in which higher values indicate higher preferences for redistribution, the average score is 4.7 and 5.4, in the United States and in Western Europe, respectively.[4]

Surprisingly, the empirical literature of preferences of redistribution has ignored the issue of deep nonlinearities and parameter heterogeneity. The standard empirical model is the linear regression and any deviation from the linear work typically employs a generalised linear structure (e.g., Alesina and Giuliano (2011), Giuliano and Spilimbergo (2014), Kerr (2014)).[5] Based on these models, the literature used different regressors in the linear model to account for the cross-country and individual heterogeneity. These include income (Meltzer and Richard (1981)), different aspects of upward mobility (Benabou and Ok (2001)), education (Perotti (1996)), culture (Alesina and Glaeser (2005)), perception of fairness (Alesina and Angeletos (2005)), risk aversion (Alesina and La Ferrara (2005)), religion (Scheve and Stasavage (2006)), ideology (Benabou and Tirole (2006), Alesina and Fuchs-Schundeln (2007)), and structure and the organization of the family (Alesina and Giuliano (2015). Alesina and Giuliano (2011) provide a comprehensive survey.

This paper contributes to the literature by providing evidence for deep non-linearities. In particular, our analysis complements existing studies by providing evidence of threshold-type models that aim at capturing the parameter heterogeneity in the cross-country mechanism of preferences for redistribution. Remarkably, the assumption of linearity is very restrictive as it excludes a lot of important phenomena that can give rise to multiple regimes or multiple equilibria. In fact, there is a range of preferences for redistribution theories that suggest the presence of multiple equilibria.

Piketty (1995) suggests that because individuals find it difficult (in terms of effort) to evaluate the incentive costs of redistributive taxation, they may end up with different long-run beliefs on redistribution, sometimes based on incorrect beliefs. Therefore, even if everybody started with the same distributive goal, the income distribution faced by the individuals will lead to multiple equilibria. Benabou (2000) suggests the existence of multiple regimes on the absence of complete insurance and credit markets. In the presence of credit constrains, redistribution will command less political support in an unequal society than in a more homogeneous one, but lower redistribution translates into more persistent inequality. Benabou and Ok (2001) introduced the prospect of upward mobility (POUM) hypothesis. Countries with the same level of income inequality may end up with different redistributive regimes if we take intergenerational mobility into account. Even people with an income below average, may choose not to support high tax rates because of the prospect that they, or their children, may move up in the

[4]Appendix Table D1 provides descriptive statistics for a range of macro variables for US, and Western European countries.

[5]Least Squares, Ordered Logit and Ordered Probit yield similar results

income distribution ladder and therefore be hurt by such policies.

Alesina and Angeletos (2005) suggest the idea of social justice in identifying multiple equilibria. In the first equilibrium, individuals believe that success in life comes from luck and connections, making redistributive policies socially desirable. In the second equilibrium, individuals believe that success in life comes from hard work, making individuals prefer low taxes and redistribution. A related study by Benabou and Tirole (2006) suggests that individuals need to believe in a "just world". On the one hand, individuals motivate themselves or their children towards effort, triggered from the idea that they will get what they deserve, and thus will set a low tax. On the other hand, when people anticipate little redistribution, they become pessimistic on the "just world" concept, so they ask for a more extensive welfare state. Finally, Acemoglu, Robinson, and Verdier (2015) state that, in an interconnected world, a unique equilibrium cannot exist. Based on the incentive-insurance trade-off, in the first equilibrium (technological leaders) innovation will be encouraged resulting in greater inequality and contributing to the world technology frontier. In the second equilibrium (followers), individuals build on this frontier in order to stabilize their growth rate, but also choose a more supportive welfare state. All these models suggest that preferences for redistribution naturally produce threshold-type structures than linear mechanisms.

In this paper we propose the use of threshold regression, which is novel to this literature, to model parameter heterogeneity in the cross-country mechanism of preferences for redistribution using individual survey data. Parameter heterogeneity refers to the idea that the data generating process for the formation of the preferences for redistribution is not common across countries. Using a set of threshold variables suggested by relevant theories, countries are endogenously sorted into two regimes. One important question we attempt to answer is which mechanism is responsible for the different regimes prevailing in Europe and the U.S. We want to examine whether those regimes suggest a different pattern for inequality and redistribution in the United State versus Western Europe.[6]

In particular we use the structural threshold regression model, which was proposed by Kourtellos, Stengos, and Tan (2016), to allow for the endogeneity of the threshold variable.[7] Ignoring the problem of endogeneity in the threshold variable, will yield inconsistent parameter estimates for the regime-specific partial effects.

[6]These models have been successfully used in the cross-country growth literature, in order to identify multiple regimes (e.g., Durlauf and Johnson (1995), Hansen (2000) and Caner and Hansen (2004)).

[7]In a seminal paper, Durlauf and Johnson (1995) employed a regression tree approach to uncover multiple growth regimes. Hansen (2000) proposed a concentrated least squares method for the estimation of the threshold parameter and obtained the regression coefficients for the two regimes using least squares on the two sub-samples, separately. Caner and Hansen (2004) proposed a similar methodology, allowing for endogeneity in the slope regressors.

The main finding of the paper is that there is substantial evidence for the presence of multiple regimes in the formation of preferences for redistribution. We find that the mechanisms that generate multiple regimes between countries are due to the mean country beliefs on redistributions, trust, and fairness, the level of development, human capital, inequality, political institutions, religion, government stability and corruption. We find that female, unemployed, and left-wing individuals prefer more redistribution, while highly educated, and wealthier individuals prefer less. More importantly we find an asymmetric effect for social justice, for most of the threshold variables. In particular, countries that are associated with high mean preferences for redistribution, low level of trust, low GDP per capita, low human capital index, low schooling, high inequality, high beliefs on the importance of religion and high inequality exhibit a negative relation for the preferences for redistribution. The opposite is true for the other regime.

Furthermore, our analysis reveals that the coefficient for social justice, for the whole set of countries, is always negative and that it becomes stronger in recent years. Additionally, we find notable heterogeneity between the countries. Finally, we find that countries which face more inequality and demand more redistribution, are the ones with low productivity, low human capital and schooling, and high beliefs in the importance of God. Countries with high inequality and low demand for redistribution are the ones with people believing they do not have a great deal of freedom of choice and control over the way life turns out.

The paper is organized as follows. Section 3.2 presents our econometric methodology. Section 3.3 describes the preferences for redistribution, the determinants and the threshold variables. In Section 3.4, we present the main results of the paper, a deeper analysis for the effect of social justice and a descriptive analysis for the link of inequality and the preferences for redistribution, between the regimes. Finally, Section 3.5 presents our conclusions.

3.2 The Threshold Model of Preferences for Redistribution

The standard empirical model in the literature is the linear model. For each individual i, in country c, at time t, preference for redistribution is assumed to follow

$$PR_{ict} = \beta' X_{ict} + \iota_c + \iota_t + \epsilon_{ict} \tag{3.1}$$

where $i = 1, 2, ..., n$, $c = 1, 2, ..., C$, and $t = 1, 2, ..., T$. X_{ict} is a vector of regressors that includes individual observed characteristics, such as age, gender, marital and employment status, education, income, ideology, social mobility and religion denominations. ι_c and ι_t denote country fixed and time effects, respectively, in order to control for country and time unobserved heterogeneity. Finally, ϵ_{ict} is an $i.i.d$ error term.

Assuming linearity we can investigate the formation of preferences for redistribution around a particular equilibrium. The linear model (3.1) rules out a number of interesting mechanisms that imply multiple steady states or multiple equilibria. These multiple regimes may arise due to threshold variables associated with general beliefs on redistribution (Alesina and Angeletos (2005)); general beliefs on fairness - general trust and freedom of choice (Benabou and Tirole (2006)); development (Acemoglu, Robinson, and Verdier (2015) and Benabou (2000)); human capital (Benabou and Ok (2001)); inequality (Piketty (1995)); institutions (Acemoglu, Robinson, and Verdier (2015)); religion (Benabou and Tirole (2006)); and government quality (Benabou (2000)).

After the seminal work of Hansen (2000), threshold models have a wide variety of applications in economics including models of multiple equilibria., especially in growth literature.[8] One way to think about a generalization of the linear model for preferences of redistribution that allows for multiple regimes is to assume that there exists a threshold variable (q_{ct}), for each one of the above theories, that sorts the data into groups of observations each of which obeys the same linear model. The threshold parameter is unknown and need to be estimated.

Both the data and the theoretical literature suggest the existence of two equilibria (US vs Europe debate, discussed above). This implies the following threshold regression model for preferences of redistribution

$$PR_{ict} = \begin{cases} \beta_1' X_{ict} + \iota_c + \iota_t + \epsilon_{ict} & \text{iff} \quad q_{ct} \leq \gamma, \\ \beta_2' X_{ict} + \iota_c + \iota_t + \epsilon_{ict} & \text{iff} \quad q_{ct} > \gamma, \end{cases} \tag{3.2}$$

where the threshold variables q_{ct} are given by (i) mean beliefs for preferences for redistribution and hard work vs luck of the country (ii) mean beliefs for trust and freedom of choice; (iii) GDP per capita and total factor productivity; (iv) human capital index and average years of schooling; (v) post-tax, post-transfer and pre-tax, pre-transfer Gini index of inequality; (vi) democracy and executive constraints score; (vii) mean beliefs in God and importance of God; and (viii) government stability and corruption. These variables aim at capturing the mechanisms implied by the aforementioned theories. We estimate this model using single threshold variables (one at a time).

[8] As Hansen (2000) suggests, threshold models may be used as a parsimonious strategy for nonparametric function estimation. Caner and Hansen (2004) suggest that threshold models emerge as special cases of more complex statistical frameworks, such as mixture models, switching models, Markov switching models, and smooth transition threshold models.

It is useful to rewrite the model in a single equation by defining the indicator function:

$$I(q_{ct} \leq \gamma) = \begin{cases} 1 & \text{iff} \quad q_{ct} \leq \gamma, \\ 0 & \text{iff} \quad q_{ct} > \gamma. \end{cases} \tag{3.3}$$

Then equation (3.2) becomes

$$PR_{ict} = \beta' X_{ict} + \delta' X_{ict} I(q_{ct} \leq \gamma) + \iota_c + \iota_t + \epsilon_{ict}, \tag{3.4}$$

where $\beta = \beta_2$, and $\delta = \beta_1 - \beta_2$. This model embodies multiple regimes when the vector $\delta \neq 0$.

We allow the threshold variable q_{ct} to be endogenous since there exists a lot of evidence that suggests that country specific variables such as institutions, the level of development and inequality are endogenous (e.g., LaPorta, Lopez-de Silanes, Shleifer, and Vishny (1999), Acemoglu and Johnson (2005), and Spolaore and Wacziarg (2016)). For instrumental variables we also rely on economic theory. Spolaore and Wacziarg (2016), suggest and empirically show that countries which shared common ancestry (genetic, linguistic, religious) tend to exchange goods, capital, innovations and technologies more intensively.[9] Alesina, Devleeschauwer, Easterly, Kurlat, and Wacziarg (2003) find strong evidence that the fractionalization indices explain economic growth, GDP per capita, and the quality of institutions. LaPorta, Lopez-de Silanes, Shleifer, and Vishny (1999) consider the country's legal system as a determinant of government performance, and find an effect on property rights, investment, taxation, government size, government efficiency, corruption, and schooling. Finally, Gallup, Sachs, and Mellinger (1999) suggest that geography plays an important role for economic development and especially GDP per capita, economic growth and productivity. Therefore, we instrument the threshold variables with their lag values as well as the first factor (of various time-invariant country characteristics) from a maximum likelihood factor analysis. The variables we use are genetic, linguistic, religious and geographic distance,[10] ethnic, linguistic and religious fractionalization, legal origin, internal distance, landlocked dummy and latitude. Additionally, for robustness purposes we use latent factors that combine information across the various instrumental variables.

Estimation and inference of Equation 3.4 has been examined by Kourtellos, Stengos, and Tan (2016) who proposed the structural threshold regression (STR) that allows for the endogeneity of the threshold variable.[11] The estimation of the threshold param-

[9] When populations split apart and diverge over the long span of history, their cultural traits also diverge, and this introduces barriers to interactions and communication between them

[10] The data on distance are in bilateral form (country pairs). In order to use them in our analysis, we use the US as a reference country, so each variable is the distance from US

[11] Kourtellos, Stengos, and Tan (2016) accounted for the endogeneity of the threshold variable by extending the threshold regression of Hansen (2000) to include regime specific control functions.

eter is based on a concentrated least squares method, while the slope coefficients are obtained using least squares. The asymptotic distribution of the threshold parameter γ is non-standard as it involves two independent Brownian motions with two different scales and two different drifts. The null hypothesis of a linear model against the alternative of a two-regime threshold regression model is given by $H_0 : \delta = 0$. The test is based on the sup Wald test of Hansen (1996).[12]

3.3 Data

We employ the World Values Survey (WVS), which is provided in order to monitor changing values and their impact on social and political life. The WVS consists of nationally representative surveys conducted in 109 countries since 1981. There are six available waves from 1981 to 2014, for 496,856 individuals.[13] For this paper we use waves 5 and 6 (2005-2009, and 2010-2014 respectively). We end up with 51 countries and 69,342 individuals. For more information on the countries and samples see Appendix Table D2.

3.3.1 Preferences for Redistribution

We measure the preferences for redistribution, coding the following question:

> "People should take more responsibility to provide for themselves or Government should take more responsibility to ensure that everyone is provided for. How would you place your views on this scale? 1 means you agree completely with the first statement and 10 means you agree completely with the second statement. If your views fall somewhere in between, you can choose any number in between."

Bigger values indicate higher preferences for redistribution. This is the standard variable in the empirical literature (e.g., Alesina and Giuliano (2011), Giuliano and Spilimbergo (2014), Kerr (2014)). For more information on the mean score for all countries see Appendix Table D3.

[12] The threshold parameter, γ, is not identified under the null hypothesis of a linear model, so the p-values are computed by a bootstrap method proposed by Hansen (1996).

[13] The six waves refer to the periods 1981-1984, 1990-1994, 1995-1998, 1999-2004, 2005-2009, and 2010-2014. *Countries:* 24, 43, 51, 71, 83 and 52 per wave. *Average Individual per country:* 1374, 1460, 1454, 1425, 1828, and 1424 per wave.

3.3.2 Determinants

Alesina and Giuliano (2011) provide a comprehensive survey for the determinants of preferences for redistribution. A first determinant, which is closely related to Meltzer and Richard (1981) idea, is income. Since redistribution is the direct transfer from rich to poor, through tax, the rich will oppose it and the poor will favor it. Nevertheless, there are cases, in which even wealthier individuals will vote for more redistribution. Firstly, due to altruistic reasons. Secondly, high level of inequality may affect the rich as well, through crime and loss of property rights. Finally, in a case of a negative shock (e.g, unemployment), the rich have more to lose. If redistribution acts as a safety net, even a wealthier individual might be in favor of redistribution. The majority of the literature finds a positive effect (e.g., Corneo and Gruner (2002), Alesina and La Ferrara (2005), Olivera (2015)).

On the one hand, education, may be thought of as a prospect of upward mobility devise. In this case, individuals with higher education, reflecting higher expected future incomes, will oppose redistribution. But, education may also bias people into favoring redistribution, as a result of ideology, altruism, and philanthropy. In all cases in the empirical literature, the effect is negative (e.g., Alesina and Fuchs-Schundeln (2007), Isaksson and Lindskog (2009), Cojocaru (2014)).

Considering the two edges of the political spectrum, a "libertarian" considers that the market must determine the distribution of income and that no redistribution is needed, while a "communist" considers that everybody must be identical, which is obtained by government redistribution through tax and transfer. The empirical literature finds that left-wing individuals are more pro-redistributive (e.g., Alesina and Fuchs-Schundeln (2007), Bavetta, Patti, and Navarra (2009), Olivera (2015)).

There is a quite large literature on the effect of social mobility (Benabou and Ok (2001)). The main hypothesis suggests that if the individual believes that he/she (or his/her children) may move up in the income distribution ladder, then he/she will oppose redistribution. Closely related to this, is the idea that if the individual believes that success in life comes through hard work, then he/she will oppose redistribution. The majority of the literature finds that mobility affects preferences for redistribution negatively (e.g., Alesina and La Ferrara (2005), Alesina and Giuliano (2011)). Bjornskov, Dreher, Fischer, Schnellenbachi, and Gehringe (2013) find that people who believe that hard work leads to success in life, tend to be in favor of a more equal income distribution. They suggest that this reflects a modern version of Weber's hypothesis of a Protestant work ethic, combined with a charitable attitude towards the poor.

Scheve and Stasavage (2006) suggest that religion may have two effects on preferences for redistribution. On the one hand, religious involvement can serve as an alternative to social insurance for individuals to buffer themselves against adverse events. In this case, religious individuals prefer lower levels of social insurance provision than secular individuals. On the other hand, religion prompts individuals to become more altruistic, advocating greater spending on the disadvantaged. They find that religious individuals systematically prefer lower levels of government transfers. Among others, Guillaud (2013), Alesina and Giuliano (2011) and Alesina and La Ferrara (2005) find that Protestants tend to prefer less redistribution, when compared to other denominations.

Other determinants for the preferences for redistribution are the marital and employment status, gender and age. Societies with strong family ties rely more on the family than on the market or the government for production of income and insurance (Alesina and Giuliano (2015)). Youngsters, the elderly, the sick and the disabled are more supported by their families in certain societies than in others, and in those societies the demand for government intervention is smaller. In the cases where the individual is a direct recipient of a transfer program, such as unemployment compensation, then he/she will be in favor of redistribution. Finally, the majority of the literature, suggests that females prefer more redistribution than males.

For more information on the variables see Appendix Tables D4 and D5. Descriptive statistics can be found in Appendix Tables D6 and D7.

Survey data are widely used in the recent literature. Even though there are various limitations on the use of individual survey data: coverage error, sampling error, non-response error, and measurement error. Coverage error refers to the bias that can result when the selected sample does not include some portions of the population. Sampling error refers to the differences between the sample and the population. Non-response error is the bias that can result when data are not collected from all of the members of a sample. Finally, measurement error refers to distortions that may come from respondents' own behavior, interviewer behavior, or the questionnaire. The use of WVS limit those issues. It consists of nationally representative surveys. Samples must be representative of all people in the age 18 and older residing within private households in each country. Data collection is face-to-face interview at respondent's home or place of residence and no replacements are allowed in case of non-respondent.

Another consideration raised in the literature is the link between individual data and economic outcome. In our case the question is what is the effect of the country mean preferences for redistribution on various economic variables? Figure 3.1, presents the scatter plot and the regression line between different economic variables (GDP per capita, total factor productivity, gross capital formation and government consumption) and preference for redistribution. The effect of preference for redistribution is significant for all economic variables. Specifically, we find a positive effect on government consumption and a negative effect on GDP per capita, total factor productivity, and gross capital formation.[14]

3.4 Results

In this section we present the results for the formation of preferences for redistribution. Firstly, we present results from the linear model (Equation 3.1). Secondly, we present results from the structural threshold regression model (Equation 3.4). Thirdly, using the results from the STR model, we investigate the proposed regimes, in order to see whether the data suggest the America vs Western Europe distinction, which we discussed in the introduction. Finally, we perform a deeper investigation of the effect of the Hard Work vs Luck variable on the preferences for redistribution.

We consider three specifications based on the determinants that are included in the vector of individual observed characteristics (X_{ict}). In the first specification X_{ict} includes age, gender, marital and employment status, education, and income. In the second specification, we add ideology and social mobility, and in the third we add religious denominations. Even though the variable preferences for redistribution is an order variable (ranging from 1 to 10), we follow the standard practice to present results based on least squares estimation which are similar, in terms of sign and significance, with ordered logit and ordered probit estimations.[15] Finally, in order to consider the within-group dependence in estimating standard errors, all models' standard errors are clustered at the country level.

3.4.1 Linear Regression Model

Table 3.1 presents the results from Equation 3.1, using least square, for the three specifications we discussed above. Consistent with the literature, we find that least squares, ordered logit and ordered probit provide the same results in term of significance and sign.

[14] Alesina and Angeletos (2005) provide evidence for the positive relationship between social spending and the fraction of respondents who believe that luck determines income. Barro and McCleary (2003) provide evidence for the positive relationship between growth and to religious beliefs, such as beliefs in hell and heaven, church attendance.

[15] Among others, this is shown in Alesina and Giuliano (2011), Kerr (2014), Giuliano and Spilimbergo (2014), and Alesina and Giuliano (2015)

Age shows an inverse U shape effect. Individuals prefer more redistribution as they get older, but this effect gradually diminishes. Female and unemployed individuals prefer more redistribution, while marital status has an insignificant effect. Higher income and more educated individuals prefer less redistribution, while left-wing individuals prefer more. Finally, religion plays an important role in the formation of preferences for redistribution. Individuals from all religious denominations prefer less redistribution when compared to atheists. Additionally, as suggested by the literature, Protestants opposed redistribution the most, since individuals of that faith carry the largest (negative) coefficient in absolute size.

With regards to the Hard Work vs Luck variable, we find opposite results, relative to the majority of the literature. We find that if individuals believe that luck and connections determine success in life then they prefer less redistribution (equivalently, if individuals believe that hard work determines success in life then they prefer more redistribution). This is close to the idea of Bjornskov, Dreher, Fischer, Schnellenbachi, and Gehringe (2013) that the effect reflects a modern version of Weber's hypothesis of a Protestant work ethic, combined with a charitable attitude towards the poor. We present a deeper investigation in Section 3.4.3.

3.4.2 Parameter Heterogeneity

The results for the common determinants from the three specifications, are very similar in terms of significance and sign. In this section, we will discuss results from the third specification (which includes all determinants). Table 3.2 reports the sup Wald tests, and the relevant bootstrap p-value for the null hypothesis of a linear model (Equation 3.1) against the alternative of a threshold model (Equation 3.4). It also reports the point estimate of the threshold parameter ($\hat{\gamma}$), along with the associated 90% confidence interval, the joint sum of square error, the sample size of the two regimes, and the Akaike information criterion (AIC). Table 3.3 presents the results, for the two regimes from the structural threshold regression. Finally, Table 3.4 presents the difference on the coefficient of the two regimes ($\hat{\delta}$). Appendix Tables D8, D10, D12 and D9, D11, D14, present the corresponding tables for specification 1 and 2, respectively.

Table 3.2 presents the sup Wald tests, and the relevant bootstrap p-value, the point estimate of the threshold parameter ($\hat{\gamma}$), along with the associated 90% confidence interval, the joint sum of square error, the sample size of the two regimes and AIC for the 16 candidate threshold variables. In all cases, we reject the null hypothesis of a linear model at the 1% level (for Belief in God we reject at 5% and for Schooling we reject at 10%). Those results provide strong evidence for the existence of parameter heterogeneity and the usefulness of threshold type models, regardless of which threshold variable we use. We find that based on AIC, the model that better fits our data is the one in which the threshold variable is the share of the individuals that believe in God.

Table 3.3 presents the results for the two regimes, of the STR model for all threshold variables. Table 3.4 presents the difference of the coefficient of the two regimes ($\hat{\delta}$). While results between the two regimes appear similar in terms of sign and significance, the magnitude differs substantially. For all threshold variables, for both regimes (for at least one regime), we find that female, unemployed, and left-wing individuals prefer more redistribution, while highly educated, and wealthier individuals prefer less. The biggest effect, in absolute values, of gender (0.145) and secondary education (-0.274) on preferences for redistribution is found in countries with low levels of beliefs in the importance of God. In rich countries we find the biggest effect of both unemployed (0.339) and ideology (0.348). The biggest effect of income (-0.153) is found in countries with low inequality. Finally, the biggest effect of tertiary education (-0.381) is found in countries in which individuals on average believe that hard work brings success in life.

Importantly, the only variables for which the sign between the regime differs is the Hard Work vs Luck variable. We find this when the threshold variables are the mean preferences for redistribution, the mean trust level, GDP per capita, the human capital index, the net Gini coefficient, the share of individuals who believe in God and the level of corruption. In all other cases, we find a negative effect (or at least insignificant), but never a positive one.

In the literature, on the one hand, the positive effect is explained by Alesina and Angeletos (2005). They suggest that Hard Work vs Luck variable captures the concept of social mobility. If the individual believes he/she (or their children) may move up in the income distribution ladder (by hard work), then he/she will oppose redistribution. Therefore, we would expect a positive coefficient. This is true only for the countries with low mean preferences for redistribution, high mean trust level, high GDP per capita, high human capital index, low inequality (net Gini coefficient), a small share of individuals who believe in God and a low level of corruption (higher values of the index, indicated less corruption).

For the other regimes we find a negative coefficient, indicating that, if individuals believe that success in life comes from luck and connections, then he/she will prefer less redistribution. Identically, individuals who believe that hard work determines success in life, tend to prefer more redistribution. This is explained by Bjornskov, Dreher, Fischer, Schnellenbachi, and Gehringe (2013) as a modern version of Weber's hypothesis of a Protestant work ethic, combined with a charitable attitude towards the poor.

The results on this variable are very interesting since it is the only variable for which we have an alternation of the sign between the two regimes. In order to better understand the differences between the two regimes, we examine the summary statistics of the two regimes and investigate the significant of the difference in the mean. We use various country variables and we end up into three categories, based on the different between the regimes. We find that development, religion and altruism determine the sorting of countries into the two regimes (Table D13).

Results closest to Alesina and Angeletos (2005) (positive coefficient for Hard Work vs Luck variable) are associated in regimes with higher development. Particularly, in those regimes we find higher GDP per capita, productivity, human capital, and democracy.

As suggested by Bjornskov, Dreher, Fischer, Schnellenbachi, and Gehringe (2013) the negative effect Hard Work vs Luck on the preference for redistribution, is related with religion and altruism. The summary statistics suggest this relationships. We find that the regimes with a negative coefficient are the ones with higher share of individuals who believes in God, higher important of God and lower share of atheists. Also in those regimes we find lower mean preference for redistribution, lower trust level, higher inequality and higher corruption.

The negative effect of the Hard Work vs Luck variable suggest that if individual believes that success in life comes from luck he/she prefer less redistribution. Scheve and Stasavage (2006) suggest that the first effect of religion is that it can serve as an alternative to social insurance for individuals to buffer themselves against adverse events. If we assume that luck is an adverse event then religious individuals prefer lower levels of social insurance provision than secular individuals. Additionally the effect of the Hard Work vs Luck variable suggest that if individual believes that success in life comes from hard work he/she prefer more redistribution. The second effect of religion, suggested by Scheve and Stasavage (2006), is that it prompts individuals to become more altruistic, advocating greater spending on the disadvantaged. A country with lower development and higher inequality makes religious individual to demand more redistribution, even if they believe in the existence of social justice (hard work determined the success in life).

Additionally, in the next section we take a deeper look in the countries' specific coefficients.

3.4.3 Hard Work Vs Luck Investigation

In this section we perform a deeper analysis of the effect of Hard Work vs Luck variable on the preferences for redistribution. In order to do this, we use, additionally to our data, the available information from the third wave of WVS (conducted between 1995 and 1999). We estimate Equation 3.1 for each country-wave pair, for each country regardless of the wave, for each wave regardless of the country. As in our main specification, the vector of regressors, X_{ict}, includes, in addition with the Hard Work vs Luck variable, individual observed characteristics, such as age, gender, marital and employment status, education, income, ideology, and religion denominations. Fixed (ι_c) and time (ι_t) effects are entered in the equation whenever possible.

Table 3.5 presents the results. Each coefficient refers to a different model. Using all countries and waves we find that the coefficient of the Hard Work vs Luck variable is -0.083 and statistically significant at the 1% level. This is consistent with the results we find from our sample. Results from all three suggest a negative coefficient, significant at 1%. Importantly enough, the coefficient becomes more negative as the waves proceed. From the 51 countries, we find that 31 have a negative coefficient, 9 have a positive coefficient and the rest 11 countries have an insignificant coefficient. The countries with the most robust positive effect of the Hard Work vs Luck variable are Australia, France, New Zealand, Sweden, Switzerland, and the United States. This simple regression analysis is a first step in understanding the effect of social mobility on the preferences for redistribution. We find that there is a quite large heterogeneity among countries.

3.4.4 Multiple Regimes Characteristics

One way to understand the patterns of the multiple regimes is to examine the summary statistics of the two regimes. We compare the mean preferences for redistribution and the mean Gini inequality index, (pre-taxes, pre-transfers), and the relevant boxplots, in order to investigate the differences between the US and Western European countries, as described in the Introduction. Table 3.6, presents the mean preferences for redistribution and the mean Gini coefficient for the whole sample and the two regimes. Additionally, it presents the difference between the two regimes and tests its significance using a difference in mean test. Figure 3.2 presents the box plot of the mean preferences for redistribution and the mean Gini inequality index for the two regimes.

We find that the mean preferences for redistribution are significantly higher in countries with low trust level in people, low level of beliefs on freedom of choice, low GDP and productivity, low human capital and schooling, high post-tax, post-transfer inequality, less democratic, more religious and more corrupted. As for the mean pre-tax, pre-transfer inequality, we find that this is significantly higher in countries with a high level of beliefs on freedom of choice, low productivity, low human capital and schooling and more religious in terms of the importance of God.

Based on the Meltzer and Richard (1981) theory we would expect that countries with high inequality will demand more redistribution. Nevertheless, the data shows that there are countries with high inequality and a low demand for redistribution. The most notable example is the difference between the US and Western European countries, as we described in the Introduction.

We find evidence for the Meltzer and Richard (1981) theory for the cases in which the threshold variables constitute the total factor productivity, the human capital index, schooling and beliefs about the importance of God. More specifically, we find that countries with low productivity, low human capital and schooling, and high beliefs for the importance of God, face high inequality and demand more redistribution.

We find that when the threshold variable is the mean belief of freedom of choice and control over the way life turns out, in countries in which people believe they have a great deal of freedom, inequality is significantly higher and preferences for redistribution are significantly lower. The opposite happens in countries in which people believe they do not have enough freedom. This is what we observe in the US vs Western European countries debate. The US is part of the high regime, where people believe in freedom. Finland and Sweden are part of this regime. In the low regime we find the Netherlands and the UK, while for Austria, Belgium, Denmark, France, Germany, Luxembourg, and Norway we do not have information, since they are not included in the dataset. Results suggest some evidence for the difference between the US and Western European countries, for the link between inequality and the preferences for redistribution.

For all the other cases, we find that there is not a significant difference in inequality, between the two regimes but the mean preferences for redistribution are significantly higher in countries with low general trust, GDP per capita, democracy index, and executive constraints index and in countries with low beliefs in God and corruption.

3.5 Conclusion

While the well known Meltzer and Richard (1981) theory suggests that in majority rule societies higher inequality may generate demand for more redistribution and larger government, the data shows a much different pattern. At one end, we find the US with high inequality and low preferences for redistribution and at the other end we find

Western European countries with low inequality and high preferences for redistribution.

The literature suggests the presence of multiple equilibria, which can be generated by incorrect beliefs, credit constrains, the prospect of upward mobility, social justice or the interconnectedness of the world. Using the threshold regression model of Kourtellos, Stengos, and Tan (2016), which takes into account endogeneity in the threshold variable, we empirically investigate the presence of multiple equilibria in the preferences for redistribution.

Using individual data from the World Values Survey, we investigate 16 different threshold variables from 8 categories. In all cases, the null hypothesis of a linear model is rejected. Based on AIC we find that the model that better fits our data is the one in which the threshold variable is the share of the individuals that believe in God. We find evidence consistent with the empirical literature, regarding preferences for redistribution. As a result of the presence of multiple regimes, we find that the effect for most of the determinants, in terms of sign and magnitude, is substantially different. For all threshold variables, for both regimes (for at least one regime), we find that female, unemployed, and left-wing individuals prefer more redistribution, while highly educated, and wealthier individuals prefer less.

Importantly, we find that social justice (Hard Work vs Luck) affects the preference for redistribution asymmetrically. For countries with high mean preferences for redistribution, low level of trust, low GDP per capita, low human capital index, low schooling, high inequality, high beliefs on the importance of religion and high inequality, Hard Work vs Luck affects preference for redistribution negatively, while the opposite is true of their corresponding other regime.

Digging a little deeper, for the effect of Hard Work vs Luck variable, we find that the coefficient, for the whole set of countries is always negative and that it becomes more negative for recent years. Additionally, we find big heterogeneity among the countries. From the 51 countries we examined, we find that 31 have a negative coefficient, 9 have a positive coefficient and the rest 11 countries have an insignificant coefficient.

Finally, we investigate the differences on inequality and the preferences for redistribution between the two regimes. On the one hand, consistent with Meltzer and Richard (1981), we find that countries which face more inequality, and demand more redistribution are the ones with low productivity, low human capital and schooling, and high beliefs for the importance of God. On the other hand, countries with high inequality and low demand for redistribution are the ones in which people believe they do not have a great deal of freedom of choice and control over the way life turns out.

3.6 Tables

Table 3.1: **Least Square Estimation**

The table presents the estimation of equation 3.1. Robust standard errors, clustered at the country level, are not reported. Constant, country and time fixed effect included in all models, are not reported. *significant at 10%,**significant at 5%, ***significant at 1%.

	Least Squares	Ordered Logit	Ordered Probit	Least Squares	Ordered Logit	Ordered Probit	Least Squares	Ordered Logit	Ordered Probit
Age	0.111***	0.072***	0.044***	0.109***	0.073***	0.044***	0.102***	0.068***	0.041***
Age Square	-0.018***	-0.012***	-0.007***	-0.017***	-0.012***	-0.007***	-0.016***	-0.011***	-0.006***
Female	0.077***	0.053***	0.029***	0.077***	0.054***	0.030***	0.083***	0.057***	0.032***
Married	-0.016	0.002	-0.004	-0.008	0.006	-0.001	-0.004	0.009	0.001
Unemployed	0.155***	0.109***	0.061***	0.169***	0.119***	0.068***	0.165***	0.116***	0.066***
Secondary	-0.196***	-0.136***	-0.073***	-0.218***	-0.151***	-0.082***	-0.218***	-0.151***	-0.082***
Tertiary	-0.192***	-0.129***	-0.073***	-0.252***	-0.174***	-0.097***	-0.251***	-0.174***	-0.097***
Income	-0.130***	-0.088***	-0.047***	-0.123***	-0.083***	-0.045***	-0.123***	-0.083***	-0.045***
Ideology				0.149***	0.110***	0.057***	0.148***	0.109***	0.056***
Hard Work Vs Luck				-0.100***	-0.074***	-0.038***	-0.100***	-0.075***	-0.038***
Buddhist							-0.001	0.007	0.006
Hindu							-0.214	-0.111	-0.085
Jew							-0.240*	-0.139	-0.089*
Muslim							-0.194***	-0.115***	-0.076***
Orthodox							-0.175**	-0.123**	-0.061*
Protestant							-0.263***	-0.164***	-0.096***
Catholic							-0.076**	-0.044*	-0.028**
Other Religion							-0.099**	-0.059**	-0.038**
N	69,342	69,342	69,342	69,342	69,342	69,342	69,342	69,342	69,342
R^2	0.100			0.121			0.122		
Pseudo R^2		0.023	0.022		0.029	0.027		0.030	0.027

Table 3.2: **Threshold Test**

The table presents sup Wald tests (and the relevant bootstrap p-value) for the null hypothesis of a linear model (Equation 3.1) against the alternative of a threshold model (Equation 3.4). Also shows the point estimate of the threshold parameter ($\hat{\gamma}$), along with the associated 90% confidence interval, the joint sum of square error and the sample size of the two regimes. The results refer to the specification in which the vector of regressors (X_{ict}) includes age, gender, marital and employment status, education, income, ideology, social mobility and religion denominations.

Threshold Variable	Bootstrap p-value	Sup Wald	Threshold Estimate ($\hat{\gamma}$)	90% Confidence Interval	Joint Sum of Square Error	N	N^{Low}	N^{High}	AIC
Prefer. for Redistr. (Country)	0.000	499.7	5.251	5.251 , 5.251	378530	53110	17651	35459	1.971
Hard Work Vs Luck (Country)	0.014	144.8	3.445	3.411 , 3.596	321290	44416	8732	35684	1.986
General Trust	0.000	588.4	0.320	0.320 , 0.320	358200	50908	32857	18051	1.958
Freedom of Choice	0.014	198.6	7.488	7.409 , 7.628	381090	53110	29889	23221	1.977
GDP per Capita	0.000	860.2	10.469	10.469 , 10.469	486790	68086	53920	14166	1.973
Total Factor Productivity	0.000	356.0	0.712	0.712 , 0.747	431810	61301	31988	29313	1.958
Human Capital Index	0.000	881.7	2.866	2.731 , 2.866	480530	67351	37962	29389	1.971
Schooling	0.059	748.9	9.410	9.410 , 11.520	479550	66473	33838	32635	1.982
Gini (Net)	0.000	255.4	28.38	28.10 , 46.68	473900	65465	9210	56255	1.986
Gini (Market)	0.000	88.7	42.58	40.34 , 51.23	475030	65465	14419	51046	1.988
Democracy	0.000	410.2	5.600	5.600 , 9.000	502100	69342	14814	54528	1.986
Executive constraints	0.000	343.9	6.000	6.000 , 6.000	502480	69342	30271	39071	1.987
Believe in God	0.035	562.2	0.925	0.925 , 0.925	203130	30065	15227	14838	1.920
Importance of God	0.000	553.6	8.250	8.250 , 8.661	377980	53110	25788	27322	1.969
Government Stability	0.000	200.1	7.917	7.008 , 7.925	504050	69342	34223	35119	1.990
Corruption	0.000	837.4	3.858	3.858 , 3.858	499490	69342	51094	18248	1.981

Table 3.3: **Structural Threshold Regression Estimation**

The table presents the estimation of equation 3.4. Robust standard errors, clustered at the country level in parenthesis. Constant, country and time fixed effect included in all models, are not reported. *significant at 10%,**significant at 5%, ***significant at 1%.

Threshold Variable	Prefer. for Redistr. (Country)		Hard Work Vs Luck (Country)		General Trust		Freedom of Choice	
Regime	Low	High	Low	High	Low	High	Low	High
Age	0.041	-0.005	-0.299**	0.096*	-0.089	0.079	0.157***	-0.041
	(0.068)	(0.055)	(0.124)	(0.049)	(0.059)	(0.066)	(0.058)	(0.062)
Age Square	-0.014**	-0.002	0.029**	-0.017***	0.009	-0.020***	-0.020***	-0.004
	(0.007)	(0.006)	(0.014)	(0.005)	(0.006)	(0.007)	(0.006)	(0.006)
Female	0.003	0.104***	0.106	0.094***	0.041	0.120***	0.073**	0.091**
	(0.039)	(0.029)	(0.069)	(0.027)	(0.031)	(0.037)	(0.030)	(0.037)
Married	-0.043	-0.001	0.066	-0.031	0.002	-0.018	-0.047	-0.009
	(0.046)	(0.034)	(0.077)	(0.032)	(0.037)	(0.043)	(0.037)	(0.041)
Unemployed	0.289***	0.107**	-0.001	0.188***	0.128**	0.252***	0.151**	0.144**
	(0.094)	(0.053)	(0.101)	(0.061)	(0.056)	(0.096)	(0.061)	(0.072)
Secondary	-0.230***	-0.171***	-0.117	-0.196***	-0.161***	-0.218***	-0.266***	-0.102*
	(0.059)	(0.039)	(0.086)	(0.040)	(0.039)	(0.061)	(0.040)	(0.053)
Tertiary	-0.148**	-0.291***	-0.381***	-0.214***	-0.268***	-0.160**	-0.298***	-0.150**
	(0.063)	(0.046)	(0.114)	(0.044)	(0.047)	(0.063)	(0.047)	(0.059)
Income	-0.112***	-0.121***	-0.099***	-0.116***	-0.116***	-0.120***	-0.111***	-0.130***
	(0.010)	(0.008)	(0.016)	(0.007)	(0.008)	(0.009)	(0.008)	(0.009)
Ideology	0.279***	0.128***	0.142***	0.208***	0.119***	0.300***	0.141***	0.211***
	(0.011)	(0.007)	(0.014)	(0.007)	(0.007)	(0.010)	(0.008)	(0.009)
Hard Work Vs Luck	0.024**	-0.138***	-0.164***	-0.044***	-0.130***	0.020**	-0.131***	-0.033***
	(0.009)	(0.006)	(0.013)	(0.006)	(0.006)	(0.009)	(0.007)	(0.008)
Buddhist	0.362**	-0.097	1.221	-0.060	-0.216**	0.347***	0.033	-0.281
	(0.155)	(0.076)	(0.746)	(0.070)	(0.098)	(0.097)	(0.073)	(0.184)
Hindu	0.290	-0.371*	-0.256	0.053	-0.199	-0.172	-0.438*	-0.003
	(0.203)	(0.224)	(0.231)	(0.199)	(0.168)	(0.539)	(0.244)	(0.190)
Jew	0.297	-0.273	-0.167	-0.044	-0.217	0.147	-0.143	0.083
	(0.242)	(0.186)	(0.667)	(0.155)	(0.191)	(0.238)	(0.194)	(0.233)
Muslim	0.182	-0.220**	-0.204	-0.235***	-0.230***	0.120	-0.091	-0.339**
	(0.142)	(0.091)	(0.227)	(0.088)	(0.087)	(0.191)	(0.095)	(0.135)
Orthodox	0.098	0.096	-0.270	0.340***	0.084	-0.069	0.050	0.177
	(0.346)	(0.109)	(0.228)	(0.116)	(0.111)	(0.320)	(0.133)	(0.166)
Protestant	-0.351***	-0.099	-0.005	-0.365***	-0.123*	-0.368***	-0.114*	-0.395***
	(0.067)	(0.065)	(0.132)	(0.053)	(0.071)	(0.067)	(0.065)	(0.069)
Catholic	-0.031	-0.005	-0.068	0.001	-0.011	-0.053	0.027	-0.072
	(0.060)	(0.054)	(0.120)	(0.043)	(0.055)	(0.062)	(0.057)	(0.057)
Other Religion	-0.030	-0.106	0.109	-0.053	-0.109	-0.077	-0.289***	-0.074
	(0.062)	(0.071)	(0.138)	(0.053)	(0.087)	(0.057)	(0.083)	(0.058)
Kappa	0.094*		-0.035		0.006		-0.007	
	(0.049)		(0.077)		(0.185)		(0.060)	

Table continued on next page ...

Table 3.3 continued

Threshold Variable	GDP per Capita		Total Factor Productivity		Human Capital Index		Schooling	
Regime	Low	High	Low	High	Low	High	Low	High
Age	0.038	0.002	-0.046	0.117**	0.051	0.021	0.057	0.016
	(0.044)	(0.071)	(0.060)	(0.051)	(0.054)	(0.053)	(0.060)	(0.050)
Age Square	-0.006	-0.011	0.002	-0.020***	-0.006	-0.011**	-0.007	-0.010*
	(0.005)	(0.007)	(0.006)	(0.005)	(0.006)	(0.005)	(0.007)	(0.005)
Female	0.089***	0.013	0.102***	0.109***	0.084***	0.077***	0.074**	0.080***
	(0.024)	(0.040)	(0.032)	(0.029)	(0.029)	(0.029)	(0.031)	(0.028)
Married	0.006	0.048	0.014	0.021	-0.032	0.056	-0.009	0.053
	(0.028)	(0.047)	(0.038)	(0.034)	(0.034)	(0.034)	(0.037)	(0.033)
Unemployed	0.143***	0.339***	0.109**	0.242***	0.150***	0.217***	0.130**	0.242***
	(0.043)	(0.111)	(0.056)	(0.067)	(0.048)	(0.076)	(0.052)	(0.068)
Secondary	-0.214***	-0.103	-0.204***	-0.219***	-0.186***	-0.221***	-0.179***	-0.249***
	(0.030)	(0.068)	(0.042)	(0.042)	(0.036)	(0.046)	(0.038)	(0.042)
Tertiary	-0.252***	-0.106	-0.319***	-0.211***	-0.275***	-0.206***	-0.300***	-0.223***
	(0.037)	(0.069)	(0.051)	(0.045)	(0.044)	(0.049)	(0.047)	(0.046)
Income	-0.116***	-0.128***	-0.111***	-0.128***	-0.105***	-0.131***	-0.097***	-0.135***
	(0.006)	(0.010)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)
Ideology	0.107***	0.348***	0.090***	0.216***	0.095***	0.239***	0.089***	0.224***
	(0.006)	(0.011)	(0.008)	(0.007)	(0.007)	(0.008)	(0.007)	(0.008)
Hard Work Vs Luck	-0.129***	0.045***	-0.117***	-0.016**	-0.171***	0.029***	-0.170***	0.009
	(0.005)	(0.010)	(0.007)	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)
Buddhist	-0.016	0.084	-0.132	0.001	0.622***	0.011	0.681***	-0.018
	(0.068)	(0.175)	(0.082)	(0.107)	(0.189)	(0.067)	(0.195)	(0.067)
Hindu	-0.193	-0.162	-0.193	-0.343	-0.337*	0.127	-0.360	-0.062
	(0.149)	(0.376)	(0.155)	(0.341)	(0.202)	(0.185)	(0.256)	(0.162)
Jew	-0.924***	0.004	-0.616	-0.190	-0.305	-0.173	-0.164	-0.157
	(0.316)	(0.163)	(0.375)	(0.155)	(0.367)	(0.154)	(0.457)	(0.154)
Muslim	-0.228***	0.668***	-0.287***	0.272**	-0.139	0.113	-0.025	-0.069
	(0.070)	(0.219)	(0.094)	(0.107)	(0.088)	(0.119)	(0.116)	(0.106)
Orthodox	-0.209**	0.082	-0.041	0.211**	-0.174	0.074	-0.451***	0.176*
	(0.097)	(0.166)	(0.189)	(0.107)	(0.130)	(0.114)	(0.166)	(0.102)
Protestant	-0.105*	-0.303***	-0.089	-0.429***	-0.078	-0.292***	-0.074	-0.287***
	(0.058)	(0.061)	(0.067)	(0.059)	(0.074)	(0.051)	(0.084)	(0.051)
Catholic	-0.069	-0.002	-0.021	-0.069	-0.102*	0.003	-0.081	-0.037
	(0.044)	(0.061)	(0.053)	(0.051)	(0.055)	(0.047)	(0.063)	(0.045)
Other Religion	-0.130**	0.112*	-0.022	-0.045	-0.148**	0.032	-0.123	0.003
	(0.055)	(0.065)	(0.076)	(0.054)	(0.073)	(0.052)	(0.077)	(0.052)
Kappa	-0.043		-0.020		-0.064		0.079**	
	(0.044)		(0.182)		(0.066)		(0.033)	

Table continued on next page ...

Table 3.3 continued

Threshold Variable	Gini (Net)		Gini (Market)		Democracy		Executive Constraints	
Regime	Low	High	Low	High	Low	High	Low	High
Age	0.042	0.112***	0.312***	0.075*	0.049	0.083**	0.021	0.090*
	(0.086)	(0.043)	(0.091)	(0.042)	(0.087)	(0.042)	(0.064)	(0.047)
Age Square	-0.013	-0.017***	-0.037***	-0.014***	-0.007	-0.015***	-0.005	-0.016***
	(0.009)	(0.004)	(0.010)	(0.004)	(0.010)	(0.004)	(0.007)	(0.005)
Female	0.034	0.100***	0.077*	0.099***	0.028	0.095***	0.072**	0.087***
	(0.048)	(0.023)	(0.045)	(0.024)	(0.044)	(0.023)	(0.032)	(0.027)
Married	0.043	-0.031	-0.070	-0.013	-0.038	0.008	0.021	-0.008
	(0.056)	(0.028)	(0.058)	(0.028)	(0.054)	(0.027)	(0.039)	(0.031)
Unemployed	0.164	0.149***	0.103	0.160***	0.153**	0.157***	0.100*	0.217***
	(0.124)	(0.044)	(0.114)	(0.044)	(0.073)	(0.048)	(0.054)	(0.059)
Secondary	-0.167**	-0.223***	-0.257***	-0.204***	-0.214***	-0.212***	-0.171***	-0.258***
	(0.070)	(0.031)	(0.067)	(0.032)	(0.052)	(0.033)	(0.040)	(0.038)
Tertiary	-0.132*	-0.264***	-0.175**	-0.266***	-0.327***	-0.233***	-0.235***	-0.272***
	(0.074)	(0.037)	(0.077)	(0.037)	(0.067)	(0.037)	(0.049)	(0.043)
Income	-0.120***	-0.122***	-0.153***	-0.119***	-0.118***	-0.120***	-0.124***	-0.116***
	(0.012)	(0.006)	(0.013)	(0.006)	(0.012)	(0.006)	(0.009)	(0.007)
Ideology	0.253***	0.140***	0.107***	0.168***	0.067***	0.169***	0.107***	0.181***
	(0.013)	(0.006)	(0.012)	(0.006)	(0.010)	(0.006)	(0.008)	(0.007)
Hard Work Vs Luck	0.043***	-0.107***	-0.118***	-0.080***	-0.240***	-0.061***	-0.177***	-0.036***
	(0.012)	(0.005)	(0.010)	(0.005)	(0.010)	(0.005)	(0.007)	(0.006)
Buddhist	-0.362	-0.006	0.046	-0.048	0.566***	-0.077	-0.082	0.065
	(0.527)	(0.064)	(0.095)	(0.085)	(0.214)	(0.065)	(0.101)	(0.082)
Hindu	-2.524**	-0.220	-0.183	-0.227	0.813	-0.219	0.383	-0.303*
	(1.017)	(0.149)	(0.397)	(0.160)	(0.664)	(0.139)	(0.237)	(0.161)
Jew	-0.034	-0.235	-0.216	-0.091	-0.286	-0.236	-0.775*	-0.152
	(0.613)	(0.148)	(0.200)	(0.209)	(0.603)	(0.147)	(0.464)	(0.150)
Muslim	0.631***	-0.200***	-0.092	-0.130*	-0.086	-0.224***	-0.269***	0.002
	(0.199)	(0.072)	(0.212)	(0.072)	(0.132)	(0.078)	(0.086)	(0.120)
Orthodox	0.114	-0.076	0.062	-0.177	-0.411	-0.174**	-0.886***	0.080
	(0.210)	(0.096)	(0.136)	(0.110)	(0.369)	(0.086)	(0.180)	(0.099)
Protestant	-0.165*	-0.275***	-0.274***	-0.247***	-0.218*	-0.248***	-0.252***	-0.269***
	(0.097)	(0.048)	(0.094)	(0.048)	(0.129)	(0.045)	(0.077)	(0.052)
Catholic	0.110	-0.097**	0.071	-0.078**	-0.138	-0.042	-0.173***	-0.030
	(0.078)	(0.041)	(0.091)	(0.039)	(0.120)	(0.038)	(0.063)	(0.045)
Other Religion	-0.074	-0.111**	-0.229**	-0.088*	-0.405***	-0.013	-0.281***	0.003
	(0.073)	(0.051)	(0.090)	(0.050)	(0.131)	(0.046)	(0.084)	(0.050)
Kappa	0.022		-0.076***		0.005		0.000	
	(0.021)		(0.017)		(0.013)		(0.031)	

Table continued on next page ...

Table 3.3 continued

Threshold Variable	Believe in God		Importance of God		Government Stability		Corruption	
Regime	Low	High	Low	High	Low	High	Low	High
Age	-0.069	-0.050	0.077	-0.108	0.045	0.119**	0.025	0.000
	(0.069)	(0.090)	(0.056)	(0.068)	(0.055)	(0.051)	(0.047)	(0.063)
Age Square	0.000	0.006	-0.016***	0.012	-0.008	-0.019***	-0.005	-0.010
	(0.007)	(0.010)	(0.006)	(0.008)	(0.006)	(0.005)	(0.005)	(0.006)
Female	0.091**	-0.002	0.145***	0.017	0.046	0.111***	0.085***	0.036
	(0.038)	(0.047)	(0.031)	(0.035)	(0.030)	(0.029)	(0.025)	(0.036)
Married	0.019	-0.002	-0.033	0.036	0.041	-0.043	0.004	0.038
	(0.044)	(0.056)	(0.036)	(0.041)	(0.035)	(0.033)	(0.030)	(0.041)
Unemployed	0.194**	0.147*	0.212***	0.115**	0.067	0.249***	0.129***	0.297***
	(0.096)	(0.077)	(0.077)	(0.058)	(0.057)	(0.056)	(0.045)	(0.088)
Secondary	-0.143**	-0.136**	-0.274***	-0.123***	-0.191***	-0.253***	-0.218***	-0.106*
	(0.062)	(0.058)	(0.049)	(0.043)	(0.040)	(0.038)	(0.032)	(0.057)
Tertiary	-0.098	-0.325***	-0.229***	-0.264***	-0.256***	-0.237***	-0.299***	-0.074
	(0.066)	(0.071)	(0.052)	(0.054)	(0.046)	(0.044)	(0.038)	(0.059)
Income	-0.121***	-0.113***	-0.116***	-0.113***	-0.131***	-0.113***	-0.113***	-0.131***
	(0.010)	(0.013)	(0.008)	(0.009)	(0.008)	(0.007)	(0.007)	(0.009)
Ideology	0.306***	0.082***	0.254***	0.111***	0.110***	0.185***	0.097***	0.310***
	(0.010)	(0.010)	(0.009)	(0.008)	(0.007)	(0.007)	(0.006)	(0.010)
Hard Work Vs Luck	0.023**	-0.181***	0.002	-0.160***	-0.124***	-0.074***	-0.141***	0.023***
	(0.010)	(0.009)	(0.008)	(0.007)	(0.006)	(0.007)	(0.005)	(0.009)
Buddhist	-0.231**	-0.171	0.148**	-0.373*	-0.130*	0.321**	-0.036	0.343
	(0.109)	(1.200)	(0.073)	(0.201)	(0.073)	(0.128)	(0.066)	(0.300)
Hindu	-0.282	0.242	-0.374	0.129	-0.134	-0.292*	-0.166	-0.126
	(0.632)	(0.865)	(0.245)	(0.195)	(0.213)	(0.173)	(0.144)	(0.523)
Jew	0.133	-0.801	0.053	-0.436	-0.456**	-0.060	-0.436**	0.171
	(0.288)	(0.532)	(0.159)	(0.447)	(0.189)	(0.219)	(0.176)	(0.230)
Muslim	0.535**	-0.358***	0.188	-0.229**	-0.377***	0.014	-0.166**	0.287*
	(0.220)	(0.130)	(0.211)	(0.098)	(0.088)	(0.093)	(0.074)	(0.156)
Orthodox	0.549**	0.038	0.359**	-0.003	-0.190	-0.121	-0.230**	0.269*
	(0.227)	(0.179)	(0.146)	(0.148)	(0.123)	(0.115)	(0.107)	(0.158)
Protestant	-0.393***	-0.061	-0.376***	-0.044	-0.140**	-0.344***	-0.082	-0.336***
	(0.075)	(0.123)	(0.057)	(0.086)	(0.064)	(0.057)	(0.059)	(0.060)
Catholic	0.080	0.068	0.003	-0.026	0.031	-0.173***	-0.038	-0.017
	(0.062)	(0.097)	(0.048)	(0.073)	(0.051)	(0.050)	(0.047)	(0.055)
Other Religion	0.043	-0.210	-0.080	-0.089	0.033	-0.196***	-0.068	-0.009
	(0.065)	(0.145)	(0.054)	(0.092)	(0.063)	(0.059)	(0.060)	(0.058)
Kappa	0.000		-0.059		-0.041		0.021	
	(0.190)		(0.042)		(0.072)		(0.037)	

Table 3.4: **Test for the Difference in Coefficients**

The table presents the $\hat{\delta}$ from the equation 3.1. Robust standard errors, are not reported. Constant, country and time fixed effect included in all models, are not reported. *significant at 10%,**significant at 5%, ***significant at 1%.

ThresholdVariable	Prefer. For Redistr. (Country)	Hard Work Vs Luck (Country)	General Trust	Freedom of Choice	GDP per Capita	Total Factor Productivity	Human Capital Index	Schooling
Age	0.046	-0.395***	-0.168*	0.198**	0.036	-0.163**	0.031	0.041
Age Square	-0.013	0.046***	0.029***	-0.017*	0.004	0.022***	0.005	0.003
Female	-0.102**	0.012	-0.079	-0.018	0.076	-0.006	0.007	-0.006
Married	-0.042	0.097	0.020	-0.038	-0.043	-0.007	-0.088*	-0.061
Unemployed	0.182*	-0.189	-0.123	0.007	-0.197*	-0.133	-0.067	-0.112
Secondary	-0.059	0.079	0.056	-0.164**	-0.111	0.015	0.035	0.070
Tertiary	0.143*	-0.166	-0.108	-0.148*	-0.146*	-0.107	-0.069	-0.077
Income	0.008	0.017	0.005	0.019	0.012	0.017	0.026**	0.038***
Ideology	0.151***	-0.067***	-0.181***	-0.070***	-0.241***	-0.125***	-0.144***	-0.136***
Hard Work Vs Luck	0.162***	-0.120***	-0.150***	-0.098***	-0.175***	-0.101***	-0.200***	-0.179***
Buddhist	0.459***	1.281*	-0.563***	0.314	-0.101	-0.133	0.611***	0.699***
Hindu	0.661**	-0.309	-0.027	-0.435	-0.031	0.151	-0.463*	-0.299
Jew	0.570*	-0.123	-0.363	-0.225	-0.928***	-0.426	-0.132	-0.007
Muslim	0.402**	0.031	-0.350*	0.248	-0.896***	-0.559***	-0.251*	0.044
Orthodox	0.002	-0.610**	0.153	-0.127	-0.291	-0.252	-0.248	-0.627***
Protestant	-0.252***	0.360**	0.245**	0.281***	0.198**	0.340***	0.214**	0.213**
Catholic	-0.026	-0.069	0.041	0.099	-0.067	0.048	-0.105	-0.044
Other Religion	0.076	0.162	-0.032	-0.215**	-0.242***	0.023	-0.180**	-0.126

Table continued on next page ...

Table 3.4 continued

ThresholdVariable	Gini (Net)	Gini (Market)	Democracy	Executive Constraints	Believe in God	Importance of God	Government Stability	Corruption
Age	-0.069	0.238**	-0.034	-0.069	-0.019	0.185**	-0.075	0.025
Age Square	0.004	-0.024**	0.008	0.010	-0.006	-0.027***	0.011	0.005
Female	-0.066	-0.022	-0.067	-0.014	0.093	0.127***	-0.065	0.048
Married	0.074	-0.057	-0.046	0.029	0.021	-0.069	0.084*	-0.034
Unemployed	0.015	-0.058	-0.004	-0.117	0.047	0.097	-0.182**	-0.167*
Secondary	0.055	-0.053	-0.002	0.087	-0.006	-0.151**	0.062	-0.112*
Tertiary	0.132	0.091	-0.094	0.036	0.226**	0.034	-0.018	-0.224***
Income	0.002	-0.034**	0.002	-0.008	-0.008	-0.003	-0.018*	0.018
Ideology	0.113***	-0.061***	-0.102***	-0.074***	0.224***	0.143***	-0.076***	-0.213***
Hard Work Vs Luck	0.150***	-0.038***	-0.179***	-0.141***	0.204***	0.162***	-0.051***	-0.164***
Buddhist	-0.356	0.095	0.643***	-0.147	-0.059	0.521**	-0.451***	-0.379
Hindu	-2.304**	0.043	1.031	0.686**	-0.523	-0.502	0.159	-0.040
Jew	0.200	-0.125	-0.051	-0.623	0.934	0.489	-0.396	-0.607**
Muslim	0.831***	0.038	0.139	-0.271*	0.893***	0.417*	-0.392***	-0.453***
Orthodox	0.190	0.239	-0.237	-0.966***	0.511*	0.362*	-0.068	-0.499***
Protestant	0.109	-0.026	0.030	0.017	-0.332**	-0.332***	0.204**	0.254***
Catholic	0.206**	0.150	-0.097	-0.144*	0.012	0.029	0.205***	-0.022
Other Religion	0.038	-0.141	-0.392***	-0.284***	0.253	0.009	0.230***	-0.058

Table 3.5: **Hard Work Vs Luck Investigation**

The table presents the coefficient of the Hard Work Vs Luck variable, from thethreshold model (Equation 3.4). Constant, country and time fixed effect included in all models, are not reported. *significant at 10%,**significant at 5%, ***significant at 1%.

Country	Wave 1995-1998	Wave 2005-2009	Wave 2010-2014	All Wave
Algeria			-0.181***	-0.181***
			(0.045)	(0.045)
Australia	0.029	0.075**	0.003	0.037*
	(0.030)	(0.035)	(0.042)	0.02
Brazil	-0.081***			-0.081***
	(0.029)			0.029
Bulgaria	0.004	0.034		0.02
	(0.042)	(0.042)		0.029
Burkina Faso		-0.125***		-0.125***
		(0.045)		0.045
Canada		0.025		0.025
		(0.032)		0.032
Chile	-0.042	-0.106**	-0.106**	-0.085***
	(0.047)	(0.049)	(0.043)	0.027
Colombia			-0.213***	-0.213***
			(0.034)	0.034
Cyprus		-0.120***	-0.163***	-0.153***
		(0.042)	(0.035)	0.027
Ecuador			-0.140***	-0.14***
			(0.036)	0.036
Egypt		-0.176***		-0.176***
		(0.026)		0.026
Finland	0.040	0.029		0.035
	(0.044)	(0.044)		0.031
France		0.129***		0.129***
		(0.041)		0.041
Ghana		-0.148***	-0.140***	-0.132***
		(0.056)	(0.031)	0.028
Hungary		0.089**		0.089**
		(0.040)		0.04
India	0.101**	-0.232***		-0.068*
	(0.048)	(0.047)		0.035
Indonesia		-0.075**		-0.075**
		(0.035)		0.035
Iraq			-0.219***	-0.219***
			(0.040)	0.04
Italy		0.022		0.022
		(0.050)		0.05
Japan		-0.105**	-0.038	-0.06**
		(0.047)	(0.033)	0.027
South Korea	-0.031	-0.146***	-0.114***	-0.088***
	(0.029)	(0.034)	(0.028)	0.017
Lebanon			-0.375***	-0.375***
			(0.041)	0.041
Libya			-0.368***	-0.368***
			(0.034)	0.034

Table continued on next page ...

Table 3.5 continued

Country	Wave 1995-1998	Wave 2005-2009	Wave 2010-2014	All Wave
Malaysia			0.054*	0.054*
			(0.031)	0.031
Mali		-0.036		-0.036
		(0.057)		0.057
Mexico	-0.032	-0.132***	-0.190***	-0.121***
	(0.029)	(0.037)	(0.029)	0.018
Morocco		0.023	-0.159	-0.034
		(0.057)	(0.102)	0.05
Netherlands		-0.039	0.055*	0.025
		(0.047)	(0.031)	0.026
New Zealand	0.096**	0.251***	0.024	0.119***
	(0.046)	(0.055)	(0.057)	0.03
Nigeria	-0.083***		-0.375***	-0.222***
	(0.029)		(0.028)	0.021
Norway	0.042	-0.012		0.018
	(0.036)	(0.037)		0.025
Pakistan			-0.440***	-0.44***
			(0.028)	0.028
Peru	-0.072*	-0.058	-0.231***	-0.112***
	(0.044)	(0.038)	(0.040)	0.023
Philippines			-0.098***	-0.098***
			(0.035)	0.035
Poland		0.001	0.148***	0.079**
		(0.046)	(0.042)	0.031
Romania	-0.003	0.085*	-0.044	0.004
	(0.042)	(0.046)	(0.037)	0.024
South Africa	-0.193***	-0.236***		-0.221***
	(0.030)	(0.025)		0.019
Spain	-0.102**	-0.297***	-0.116***	-0.167***
	(0.044)	(0.042)	(0.039)	0.024
Sweden	0.218***	0.119***	0.065*	0.131***
	(0.035)	(0.036)	(0.035)	0.021
Switzerland	0.198***	0.002		0.084***
	(0.041)	(0.034)		0.027
Taiwan		-0.025	-0.046	-0.044*
		(0.036)	(0.039)	0.026
Thailand		-0.199***		-0.199***
		(0.036)		0.036
Trinidad and Tobago		-0.129**	-0.016	-0.081**
		(0.053)	(0.055)	0.038
Tunisia			-0.253***	-0.253***
			(0.045)	0.045
Turkey	-0.173***	-0.185***	-0.260***	-0.209***
	(0.026)	(0.036)	(0.030)	0.017
United Kingdom		-0.038		-0.038
		(0.045)		0.045
United States	0.071**	0.108***	0.117***	0.109***
	(0.033)	(0.038)	(0.028)	0.019
Uruguay	-0.071*	-0.020	0.067	-0.007
	(0.040)	(0.042)	(0.043)	0.024
Vietnam		-0.209***		-0.209***
		(0.037)		0.037
Zambia		-0.344***		-0.344***
		(0.038)		0.038
Zimbabwe			-0.047*	-0.047*
			(0.027)	0.027
All Countries	-0.032***	-0.075***	-0.123***	-0.083***
	(0.008)	(0.006)	(0.006)	(0.004)

Table 3.6: **Differences among Countries**

The table presents the mean Preferences for Redistribution and the Gini Inequality Index (pre-tax, pre-transfer) for all countries and for both the Low and High regimes. *significant at 10%,**significant at 5%, ***significant at 1%.

	Preferences for Redistribution				**Gini (pre-tax, pre-transfer)**			
Regime	**All**	**Low**	**High**	**Difference**	**All**	**Low**	**High**	**Difference**
Prefer. for Redistr. (Country)	5.973	4.871	6.508	-1.638***	46.68	46.15	46.93	-0.78
Hard Work Vs Luck (Country)	5.819	5.893	5.805	0.088	46.76	48.86	46.41	2.45
General Trust	5.973	6.370	5.178	1.192***	46.32	46.65	45.72	0.93
Freedom of Choice	5.973	6.304	5.484	0.820***	46.68	45.45	48.46	-3.02*
GDP per Capita	6.009	6.239	4.963	1.276***	46.50	46.63	45.97	0.67
Total Factor Productivity	6.001	6.260	5.688	0.572**	46.62	47.89	45.27	2.61*
Human Capital Index	6.000	6.325	5.545	0.781***	46.50	48.26	44.39	3.88***
Schooling	5.998	6.309	5.654	0.655***	46.40	48.37	44.66	3.71***
Gini (Net)	5.957	4.857	6.063	-1.205***	46.50	46.58	46.49	0.09
Gini (Market)	5.957	5.887	5.980	-0.092	46.50	38.65	48.81	-10.16***
Democracy	6.028	6.762	5.794	0.968***	46.50	48.04	46.16	1.88
Executive constraints	6.028	6.464	5.668	0.796***	46.50	46.34	46.60	-0.27
Believe in God	5.958	5.570	6.401	-0.831**	46.61	45.88	47.57	-1.69
Importance of God	5.973	5.678	6.291	-0.613**	46.68	45.17	48.53	-3.36**
Government Stability	6.028	6.208	5.859	0.349	46.50	45.86	47.01	-1.15
Corruption	6.028	6.302	5.240	1.062***	46.50	46.41	46.73	-0.32

3.7 Figures

Figure 3.1: **Preferences for Redistribution and Economic Variables**

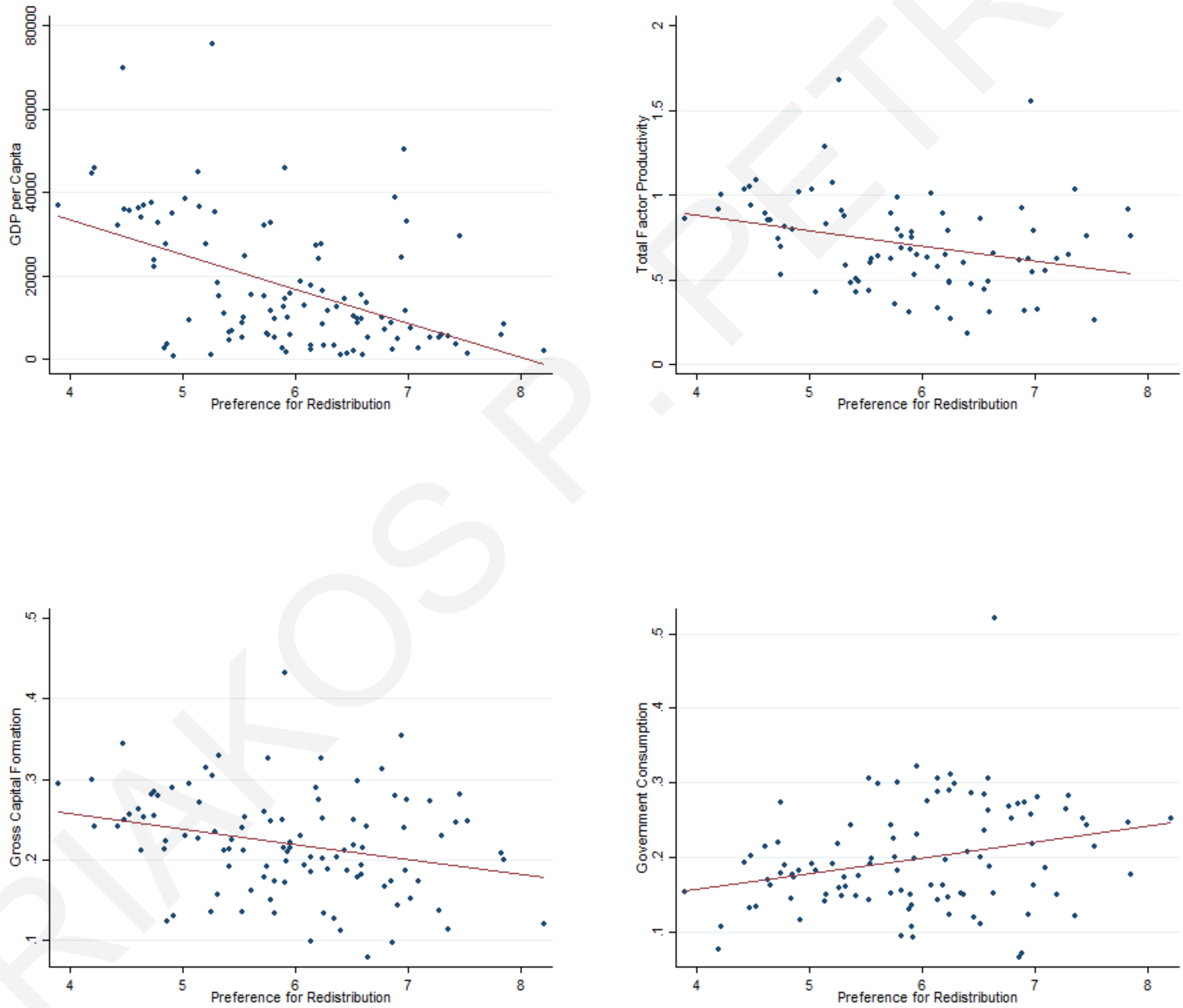
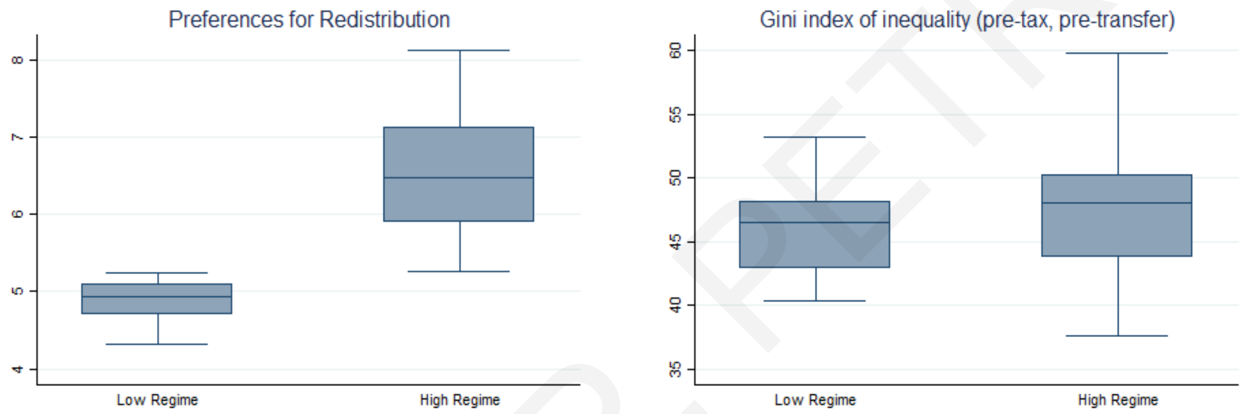
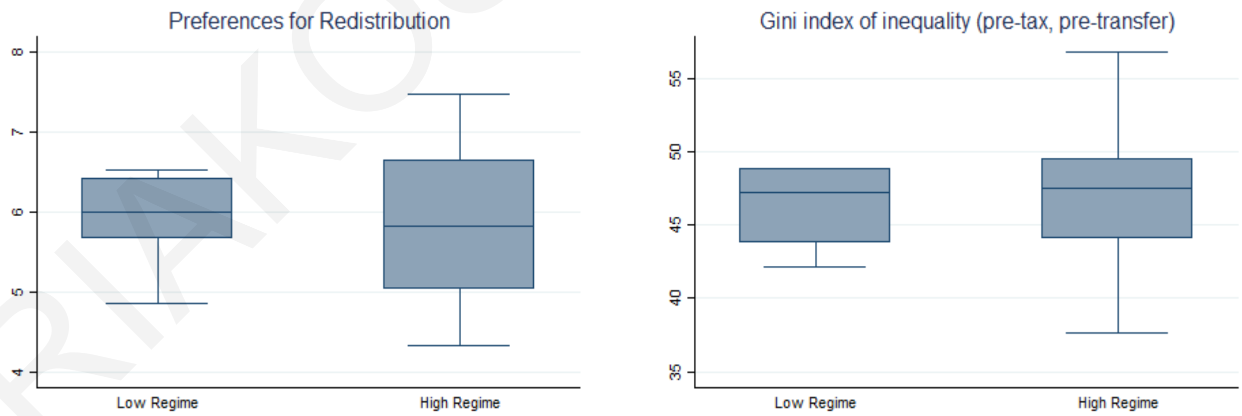


Figure 3.2: **Preferences for Redistribution and Inequality in the Two Regimes**

Threshold Variable: Prefer. for Redistr. (Country)

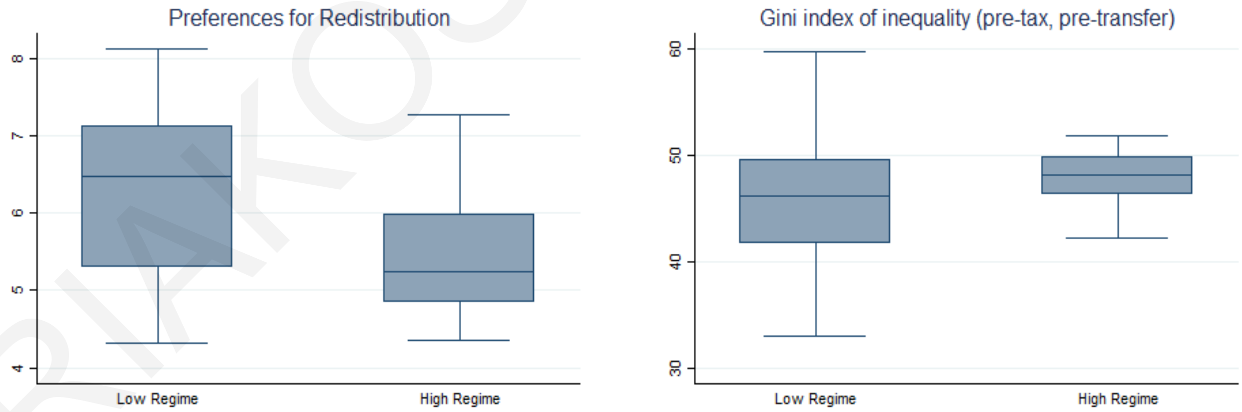


Threshold Variable: Hard Work Vs Luck (Country)

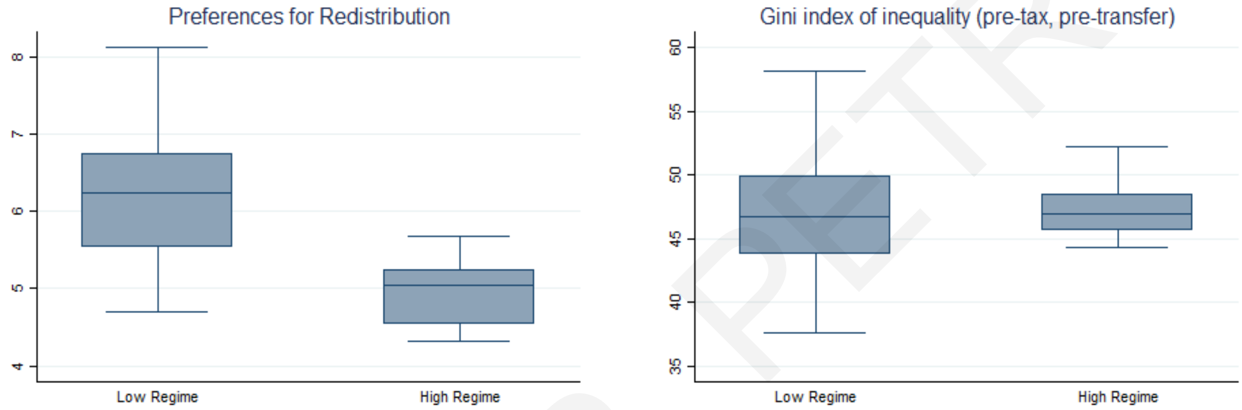


Threshold Variable: General Trust

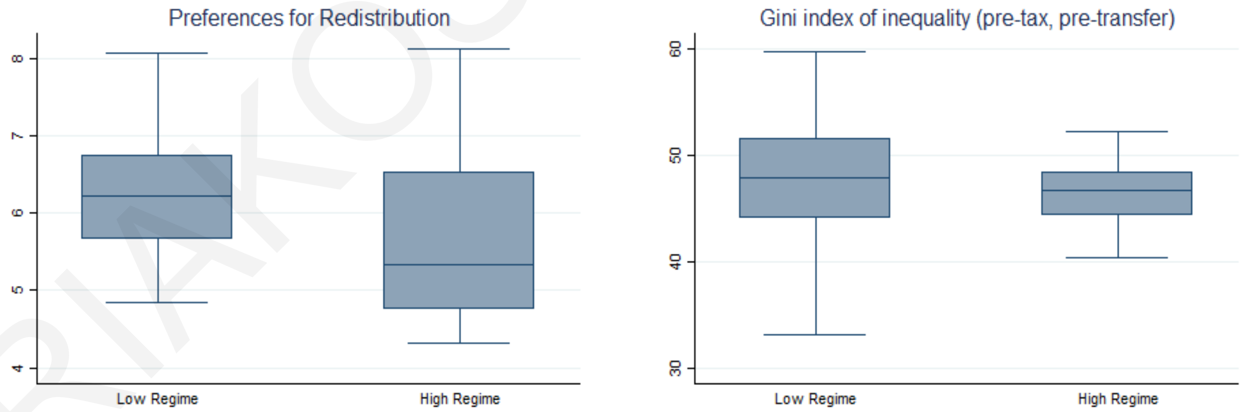
Threshold Variable: Freedom of Choice



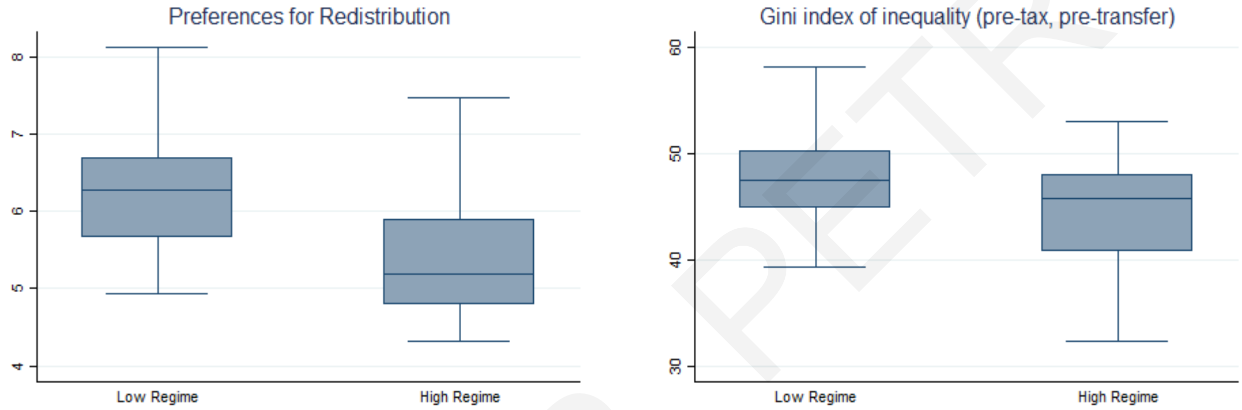
Threshold Variable: GDP per Capita



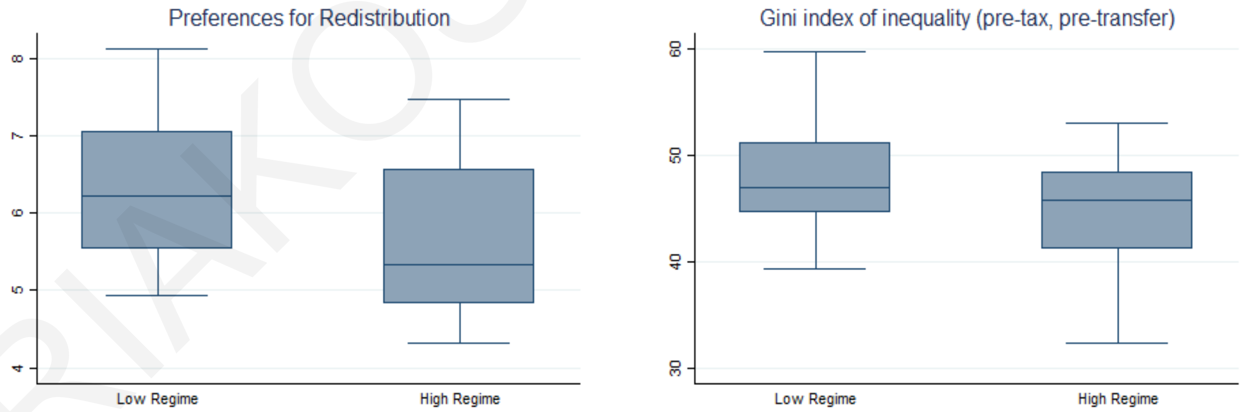
Threshold Variable: Total Factor Productivity



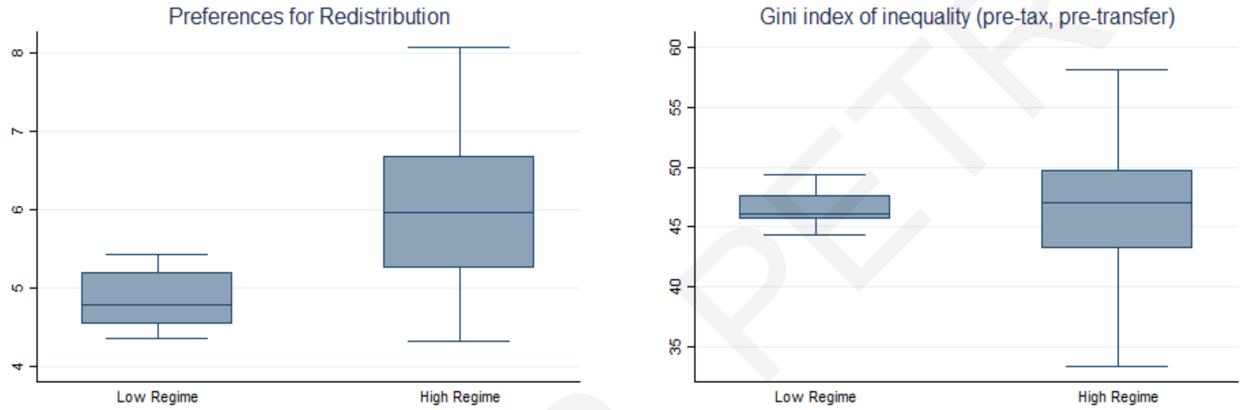
Threshold Variable: Human Capital Index



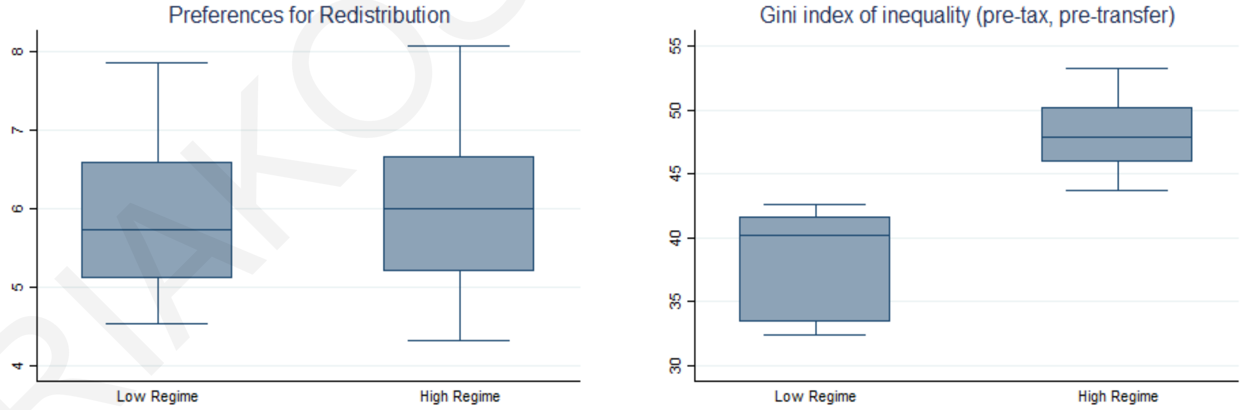
Threshold Variable: Schooling



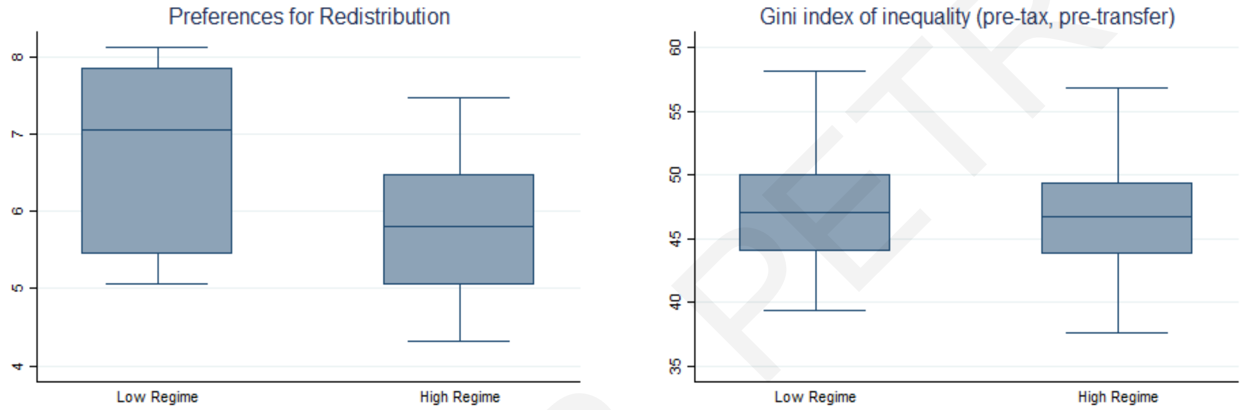
Threshold Variable: Gini (Net)



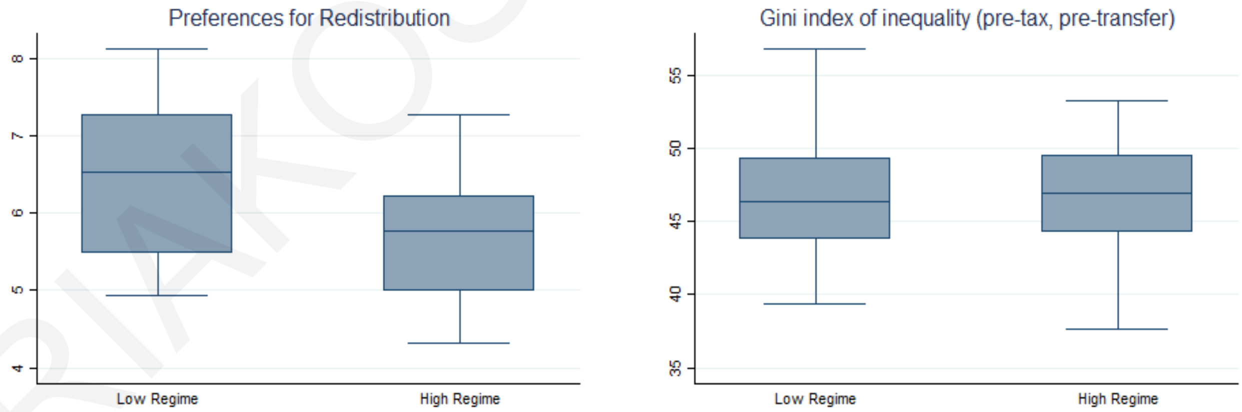
Threshold Variable: Gini (Market)



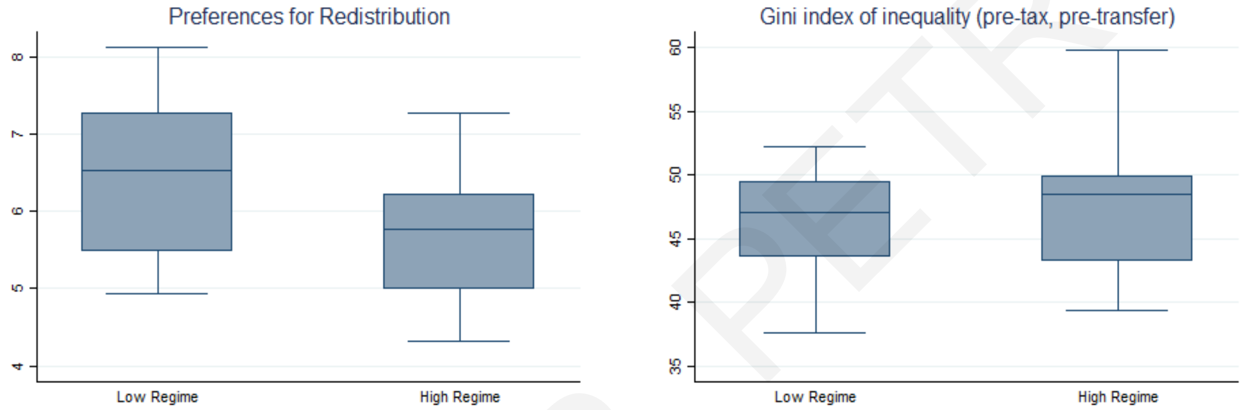
Threshold Variable: Democracy



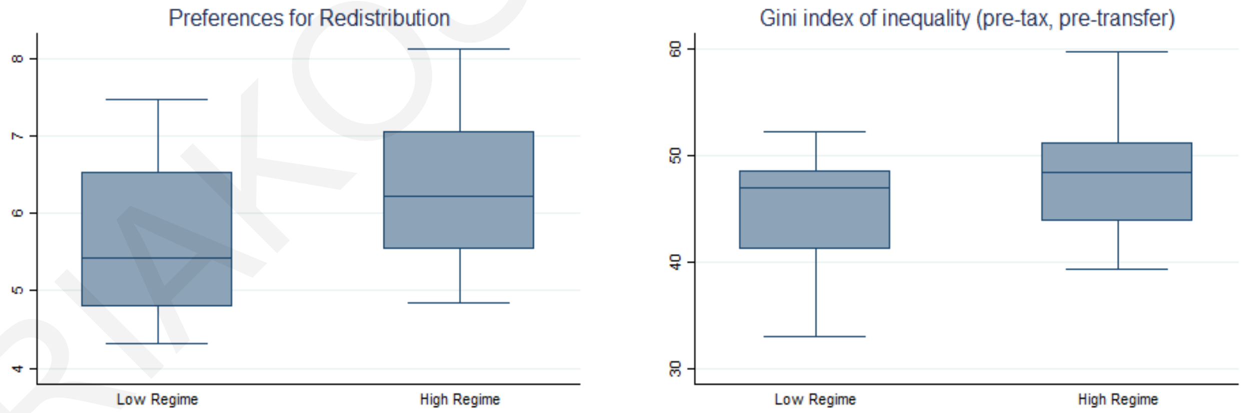
Threshold Variable: Executive Constraints



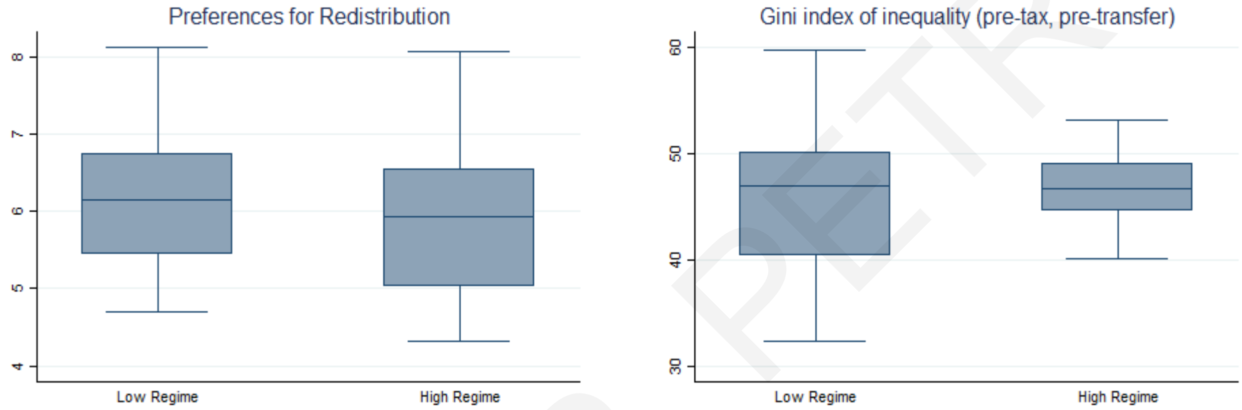
Threshold Variable: Believe in God



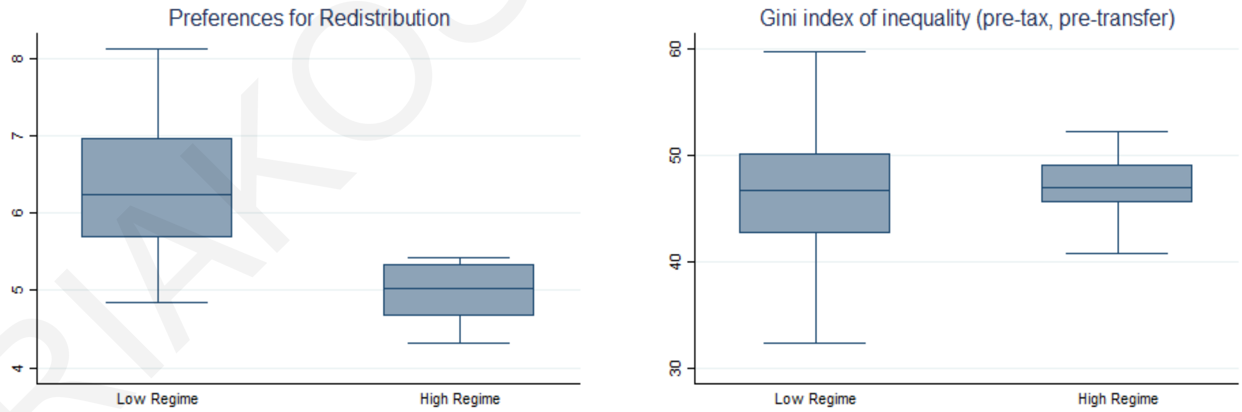
Threshold Variable: Importance of God



Threshold Variable: Government Stability



Threshold Variable: Corruption



Conclusions

The present dissertation has two main objectives. Firstly, to uncover the determinants that drive government spending, and secondly, to understand how preferences for redistribution are formed. We contribute in the literature of government size as a means to achieve the provision of public goods, stabilization and redistribution. Firstly, we uncover the robust determinants of government spending. Secondly, we focus on the size of the redistributive government, which depends on the demand for redistribution, that is, the willingness of individuals to tax the rich more heavily and transfer resources to the poor.

By now there exists a large literature on the size of government that proposed and tested a wide range of alternative theories and hypotheses that determine the long run demand and supply of government size. Yet, both theory and empirics have not provided convincing answers about the determinants of government expenditure. In the first chapter we contribute to the literature of government size by assessing the strength of the empirical relevance of those theories by taking into account model uncertainty. To address the issue of model uncertainty, we propose a novel BMA approach that develops an Instrumental Variable Bayesian Model Averaging with priors defined in economic theory space to account for the fact that the strength of several competing theories is simultaneously assessed using multiple proxy variables.

For general government we find decisive evidence for the demography theory, and strong evidence for the globalization and political institution theories. For the central government we find decisive evidence for the macroeconomic policy, income inequality, and demography theories. These results are robust with the variance decomposition and the channels of transmission analyses. Furthermore, we do not find any effect of the recent economic crisis. Finally, we do not find evidence for the explanation of Rodrik (1998), who suggests that the link between government expenditure and globalization is based on the exposure to risk of the country. Furthermore, the investigation of the formation of the components of government expenditure suggests that different categories are affected by different theories. Using this, we can conclude that the use of only total expenditure may lead us to incomplete and misleading results.

In the second chapter, we focus on the formation of preferences for redistribution and study how they are affected by social identity. The main objective of this chapter is to understand the role of social identity in the formation of socioeconomic beliefs. Additionally, we provide a sensitivity analysis of our identification strategy by considering alternative ages of the life cycle. In order to achieve this, we used data from the General Social Survey, for the years 1972 to 2014, and identified 16 belief and attitude variables, and divided them into eight categories: beliefs about abortion, attitudes, discrimination, government duties, legal system, politics, preferences for redistribution and religion. Using the theoretical model of Blume, Brock, Durlauf, and Jayaraman (2015)) we modeled social identity using social interaction models that study the interplay of social influences which affect individual outcomes and individual decisions, which in turn determine the evolution of group memberships and hence social influences.

We find strong evidence of endogenous effects, for a range of socioeconomic beliefs. Taking into account social identity produces a significant endogenous effect for all belief variables, almost for all periods of an individual's life. The sign and significance of the endogenous effect provide enough evidence that the social environment and socioeconomic characteristics faced by the individual are important determinants for the formation of beliefs.

In the third chapter, we investigate the presence of parameter heterogeneity and multiple regimes in the preferences for redistribution. The literature suggests the presence of multiple equilibria, which can be generated by incorrect beliefs, credit constrains, the prospect of upward mobility, social justice or the interconnectedness of the world. Using individual data from the World Values Survey, we investigate 16 different threshold variables from 8 categories.

In all cases, the null hypothesis of a linear model is rejected. We find evidence consistent with the empirical literature, regarding preferences for redistribution. As a result of the presence of multiple regimes, we find that the effect for most of the determinants, in terms of sign and magnitude, is substantially different. For all threshold variables, for both regimes (for at least one regime), we find that female, unemployed, and left-wing individuals prefer more redistribution, while highly educated, and wealthier individuals prefer less. Importantly, we find that social justice (Hard Work vs Luck) affects the preference for redistribution asymmetrically. For countries with high mean preferences for redistribution, low level of trust, low GDP per capita, low human capital index, low schooling, high inequality, high beliefs on the importance of religion and high inequality, Hard Work vs Luck affects preference for redistribution negatively, while the opposite is true of their corresponding other regime.

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Appendices

Appendix A

Determining the CBF calculations

Here we outline the calculation of $pr(\mathcal{D}|M_r, \boldsymbol{\beta}_{-r}, \boldsymbol{K})$. Note that

$$pr(\mathcal{D}|M_r, \boldsymbol{\beta}_{-r}, \boldsymbol{K}) = \int_{\Lambda_{M_r}} pr(\mathcal{D}|\boldsymbol{\beta}_r, \boldsymbol{\beta}_{-r}, \boldsymbol{K}) pr(\boldsymbol{\beta}_r|M_r) d\boldsymbol{\beta}_r$$

Let $\boldsymbol{X}_{r,M_r}$ be the submatrix of $\boldsymbol{X}_r$ associated with the variables in M_r and set $\tilde{\boldsymbol{Y}}_r$ as above. Then

$$\int_{\Lambda_{M_r}} pr(\mathcal{D}|\boldsymbol{\beta}_r, \boldsymbol{\beta}_{-r}, \boldsymbol{K}) pr(\boldsymbol{\beta}_r|M_r) d\boldsymbol{\beta}_r \propto \int_{\Lambda_{M_r}} (2\pi)^{-|M_r|/2} \exp\left(-\frac{1}{2}\left[-2\hat{\boldsymbol{\beta}}_{M_r}\boldsymbol{\Omega}_{M_r}\boldsymbol{\beta}_r + \boldsymbol{\beta}_r'\boldsymbol{\Omega}_{M_r}\boldsymbol{\beta}_r\right]\right) d\boldsymbol{\beta}$$

where $\Omega_{M_r} = K_{rr}\boldsymbol{X}_{r,M_r}'\boldsymbol{X}_{r,M_r} + \mathbb{I}_{|M_r|}$ and $\hat{\boldsymbol{\beta}}_{M_r} = K_{rr}\boldsymbol{\Omega}_{M_r}^{-1}\boldsymbol{X}_{r,M_r}'\tilde{\boldsymbol{Y}}_r$.

We can now see that the term in the integral is the canonical form of a Gaussian distribution. Appropriate completion therefore yields

$$pr(\mathcal{D}|M_r, \boldsymbol{\beta}_{-r}, \boldsymbol{K}) \propto |\Omega_{M_r}|^{-1/2} \exp\left(-\frac{1}{2}\hat{\boldsymbol{\beta}}_{M_r}'\boldsymbol{\Omega}_{M_r}\hat{\boldsymbol{\beta}}_{M_r}\right).$$

Posterior Determination in the Poisson Case

Let $Y_{i1} \sim \mathcal{P}\left(\boldsymbol{X}_i r'\boldsymbol{\beta}_i + \epsilon_{i1}\right)$ and for $r > 1$ $Y_{ir} = \boldsymbol{X}_i r'\boldsymbol{\beta}_r + \epsilon_{ir}$. Finally, $\boldsymbol{\epsilon}_i \sim \mathcal{N}(0, \boldsymbol{K}^{-1})$.

The MCMC for this model roughly follows that of the methods above, but with the additional handling of the random effect ϵ_{i1} and the subsequent updating of $\boldsymbol{\beta}_1$. Note that $pr(\epsilon_{i1}|\cdot) \propto pr(Y_i|\boldsymbol{X}_{i1}, \boldsymbol{\beta}_1, \epsilon_{i1}) pr(\epsilon_{i1}|\boldsymbol{\epsilon}_i \backslash \epsilon_{i1}, \boldsymbol{K})$ where $pr(\epsilon_{i1}|\boldsymbol{\epsilon}_i \backslash \epsilon_{i1}, \boldsymbol{K}) = \mathcal{N}(\eta_i, \kappa_i^{-1})$ with $\eta_i = -\sum_{r=2}^{R} \frac{K_{1r}}{K_{11}}\epsilon_{ir}$ and $\kappa_i = \frac{1}{K_{11}}$.

Further, denote $\mu_i = \boldsymbol{X}_{i1}'\boldsymbol{\beta}_1$. Then

$$pr(\epsilon_{i1}|\cdot) \propto \exp\left(-\exp(\mu_i + \epsilon_{i1}) + (\mu_i + \epsilon_{i1})Y_{i1}\right)\exp\left(-\frac{1}{2}\kappa_i(\epsilon_{i1} - \eta_i)^2\right).$$

Writing $f(\epsilon_{i1}) = -\exp(\mu_i + \epsilon_{i1}) + (\mu_i + \epsilon_{i1})Y_{i1} - \frac{1}{2}\kappa_i(\epsilon_{i1} - \eta_i)^2$ we have $f'(\epsilon_{i1}) = -\exp(\mu_i + \epsilon_{i1}) + Y_{i1} - \kappa_i(\epsilon_{i1} - \eta_i)$ and $f''(\epsilon_{i1}) = -\exp(\mu_i + \epsilon_{i1}) - \kappa_i$

Hence, by setting $b(\epsilon_{i1}) = f'(\epsilon_{i1}) - f''(\epsilon_{i1})\epsilon_{i1}$ and $c(\epsilon_{i1}) = -f''(\epsilon_{i1})$ we may sample $\epsilon_{i1}' \sim \mathcal{N}(b(\epsilon_{i1})/c(\epsilon_{i1}), 1/c(\epsilon_{i1}))$ and accept this update with probability $\min\{\alpha, 1\}$ where

$$\alpha = \frac{pr(Y_{i1}|\mu_i, \epsilon_{i1}')pr(\epsilon_{i1}'|\eta_i, \kappa_i)pr(\epsilon_{i1}|b(\epsilon_{i1}'), c(\epsilon_{i1}'))}{pr(Y_{i1}|\mu_i, \epsilon_{i1})pr(\epsilon_{i1}|\eta_i, \kappa_i)pr(\epsilon_{i1}'|b(\epsilon_{i1}), c(\epsilon_{i1}))}.$$

Once all ϵ_{i1} are updated, all other updates essentially follow the steps above.

Appendix B

Table B1: **Literature Review**

Theory/Article	Sample	Period	Methodology	Main Findings
Centralization Hypothesis: Can be divided into three sub-hypotheses: (1) the Wallis and Oates decentralization hypothesis suggests that an increase in fiscal decentralization will lead to an increase in the size of lower-level government (state and local) and to a decrease in the size of higher-level government due to the high degree of competition in taxation among the different levels of government; (2) the Brennan/Buchanan decentralization hypothesis suggests that an increase in fiscal decentralization will lead to less total government spending; (3) the Brennan/Buchanan collusion hypothesis suggests that it is possible that the component governments (local, state, central) in a federal system may collude to organize a cartel-like arrangement in order to circumvent the competitive influences of fiscal federalism. In this case the size of each level of government will increase.				
Baskaran (2011)	18 OECD countries	1980-2000	FE	Positive coefficient for both the subnational share of total government expenditures and revenues on public expenditures.
Grossman (1989)	USA	1946-1985	OLS	Negative coefficient of the share of state and local expenditure. Positive coefficient for collusion.
Jin and Zou (2002)	32 industrial and developing countries	1980-1994	FE, FGLS	Expenditure decentralization leads to smaller national governments, larger subnational governments, and larger aggregate governments; revenue decentralization increases subnational governments and leads to smaller aggregate governments; and vertical imbalance tends to increase the sizes of subnational, national, and aggregate governments.
Marlow (1988)	USA	1946-1985	OLS	Negative coefficient of the share of state and local expenditure.
Conflict Hypothesis: A country, which faces either an internal or an external conflict increases its government size in order to deal with those conflicts. This increase is due to defence and/or public order and safety expenditures.				
Eterovic and Eterovic (2012)	104 countries	1960-2004	FE	Positive coefficient for the armed conflict dummy
Ferris, Park and Winer (2008)	Canada	1870-2000	Cointegr., ECM	Negative effcte of the peaceful period after WWII.
Country Size Hypothesis: When there are fixed costs (establishing a set of institutions, a legal, monetary, and fiscal system) and economies of scale linked to partial or complete non-rivalry in the supply of public goods, less populated countries may have a larger share of government in GDP. Additionally, the costs of public goods grow less than proportionally to the size of the population. On the other hand, countries with very big territorial size may have bigger government size because of the fixed cost in different, remote regions.				
Adsera and Boix (2002)	65 countries	1950-1990	OLS	Positive coefficient of country size.
Alesina and Wacziarg (1998)	130 countries	1985-1989	OLS	Negative coefficient for population.
Benarroch and Pandey (2008)	119 countries	1970-2000	FE	Negative coefficient for population.
Epifani and Gancia (2009)	127 countries	1950-2000	FE	Positive coefficient for population.
Grossman (1989)	USA	1946-1985	OLS	Positive coefficient for population.
Rodrik (1998)	125 developed and developing countries	Various	OLS	Positive coefficient of country size.
Demographic Hypothesis: Countries with high share of dependents, i.e., individuals less than 15 or more than 64 years old, have higher government size, mainly through education, health and social protection expenditures. A higher share of individuals less 15 years old increase the need for provision of primary and secondary education which is compulsory in the majority of the countries. Similarly, a higher share of individuals more than 64 years old increase the need for provision of social protection in the form of benefits against the risks linked to old age. Additionally, the share of the population over 65 constitutes an interest group with high political power. As urbanization increases, a greater demand for government services is expected if education and health are mainly public responsibilities.				
Aidt and Jensen (2009)	10 western European countries	1860-1938	FE	Positive coefficient for urbanization.
Alesina and Wacziarg (1998)	130 countries	1985-1989	OLS	Negative effect of urbanization.
Benarroch and Pandey (2008)	119 countries	1970-2000	FE	Negative effect of urbanization.
Dreher (2006)	30 OECD countries	1970-2000	GMM	Insignificant coefficient of the dependency ratio.
Gemmell, Kneller and Sanz (2008)	25 OECD countries	1980-1997	ECM	Insignificant coefficient of the dependency ratio.
Jin and Zou (2002)	32 industrial and developing countries	1980-1994	FE, FGLS	Positive coefficient for urbanization.
Kimakova (2009)	87 countries	1980-2003	FE, RE, GMM	Positive coefficient for urbanization.
Rodrik (1998)	125 developed and developing countries	Various	OLS	Positive coefficient of the dependency ratio. Negative effect of urbanization.
Shelton (2007)	101 countries	1970-2010	RE, BE	Positive coefficient of the dependency ratio.

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Table B1 continued

Theory/Article	Sample	Period	Methodology	Main Findings
Globalization Hypothesis: Can be divided into two schools of thought: (1) Under the compensate hypothesis, globalization increase inequality and economic insecurity. From the demand side of the political market this creates incentives for government to compensate the losers from globalization, mainly through income transfer programs and economic policy activism; (2) Under the efficiency hypothesis, government spending reduces the competitiveness of national producers in international goods and services markets. From the supply side of the political market this creates incentives for the government to reduce economic policy activism to promote competitiveness in order to keep mobile capital within national borders.				
Adsera and Boix (2002)	65 countries	1950-1990	OLS	Negative coefficient of trade openness.
Alesina and Wacziarg (1998)	130 countries	1985-1989	OLS	Positive coefficient of trade openness.
Cameron (1978)	18 countries	1960-1975	OLS	Positive coefficient of trade openness.
Cusack (1997)	16 OECD countries	1955-1989	Pooled LS	Negative coefficient of trade openness.
Epifani and Gancia (2009)	127 countries	1950-2000	FE	Positive coefficient of trade openness.
Garrett and Mitchell (2001)	18 OECD countries	1961-1993	Pooled LS	Negative coefficient of trade openness.
Rodrik (1998)	125 developed and developing countries	Various	OLS	Positive coefficient of trade openness.
Shelton (2007)	101 countries	1970-2010	RE, BE	Positive coefficient of trade openness.
Income Inequality Hypothesis: Inequality may generate demand for more redistribution and a larger government since the median voter has less income than the mean, which creates an incentive to vote for more redistribution. In contrast, when majority voting models account for capital market imperfections inequality may negatively affect redistribution. Similarly, it is possible that poor individuals may tolerate high levels of inequality or even vote for higher taxes when voting is only concerned with redistribution and ideology, or expect that their children will have prospects of upward mobility. Furthermore, the effect of inequality on government expenditure may also depend on the nature of redistribution and the mix of factor income taxes. If redistribution is accomplished by a public provision of goods and services rather than by transfers, higher income inequality may lead to a smaller government size in majority voting equilibrium.				
Milanovic (2000)	24 countries	Various	OLS	Positive coefficient of inequality.
Perotti (1996)	67 countries	1960-1985	OLS	Insignificant coefficient of inequality.
Macroeconomic Hypothesis: Higher government debt means higher interest payments, higher taxes by the government in order to repay the debt, and as a result, government size increases. Additionally, openness increases government spending by enhancing the economy's ability to borrow from external sources. Competition between countries in order to attract FDI leads to a reduction in taxation, mainly capital taxation. Because taxes are the main source for government spending, this competition results in government size decreases. On the other hand government size may be increased through protection programs to individuals that are negatively affected by FDI. High inflation erodes the government's tax base both as a result of delays in tax payments and as a consequence of the shrinkage of the formal sector at the expense of the informal sector. Additionally, high inflation reduces the real value of the government revenues, thereby limiting the government's ability to spend.				
Dreher, Sturm and Ursprung (2008)	108 countries	1970-2001	Pooled LS	Insignificant coefficient of public debt. Insignificant coefficient of FDI. Positive coefficient for inflation.
Eterovic and Eterovic (2012)	104 countries	1960-2004	FE	Negative coefficient for inflation.
Gemmell, Kneller and Sanz (2008)	25 OECD countries	1980-1997	ECM	Positive coefficient of FDI.
Jin and Zou (2002)	32 industrial and developing countries	1980-1994	FE, FGLS	Insignificant coefficient for inflation.
Liberati (2007)	18 developed countries	1975-2005	OLS, RE	Negative coefficient of FDI.
Rodrik (1998)	125 developed and developing countries	Various	OLS	Positive coefficient of public debt. Insignificant coefficient for inflation.

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Table B1 continued

Theory/Article	Sample	Period	Methodology	Main Findings
Political Institution Hypothesis: Can be divided into five sub-hypothesis: (1) there are at least four reasons why enhanced political competition is likely to decrease government expenditure (the theory of fiscal illusion, pressure groups, political accountability, and in societies with severe restrictions on political competition political leaders need to spend substantial public funds on securing and maintaining power); (2) in presidential regimes we have the separation of powers, which leads to more competition between policy-makers and thus to smaller, more efficient government with less waste, less redistribution and lower expenditure on public goods while in parliamentary regimes there are higher levels of public goods expenditures and more broadly targeted transfers and as a result higher government expenditure; (3) majoritarian electoral systems have smaller districts and voters select individual candidates, leading to narrowly designed redistributed programs benefiting small constituencies. Moreover majoritarian rules tend to have smaller rents for politicians and then less corruption compared to proportional rules; (4) in many countries political rights are either de jure or de facto restricted to a privileged minority. And even in the most established democracies, the overwhelming evidence is that the wealthy are more active in a wide variety of forms of political participation. As political rights get more open more social and redistribution policies will take place; (5) democracy positively affect government size. The main reason is the "fixed" cost in building democratic institutions, the presence of many pressure groups and the existence of social and redistribution policies. Additionally, democracy affects not only the size, but also the composition of government expenditure.				
Adsera and Boix (2002)	65 countries	1950-1990	OLS	Negative coefficient for the democracy index.
Alesina and Wacziarg (1998)	130 countries	1985-1989	OLS	Positive coefficient for the democracy index.
Baraldi (2008)	20 Italian regions	1980-2003	2SLS	Negative coefficient for the political competition index. Negative coefficient for the majoritarian electoral system dummy.
Epifani and Gancia (2009)	127 countries	1950-2000	FE	Positive coefficient for the democracy index.
Eterovic and Eterovic (2012)	104 countries	1960-2004	FE	Negative coefficient for the political competition index.
Gregorini and Longoni (2009)	70 developed and developing countries	1970- 2005	RE	Positive coefficient of the proportional electoral system dummy.
Kimakova (2009)	87 countries	1980-2003	FE, RE, GMM	Positive coefficient for the parliamentary index.
Milesi-Ferretti, Perotti, and Rostagno (2002)	40 OECD and Latin America countries	1991-1994	OLS	Positive coefficient of the proportional electoral system dummy.
Shelton (2007)	101 countries	1970-2010	RE, BE	Negative coefficient for the presidential dummy. Negative coefficient for the majoritarian electoral system dummy.
Wagner's Law Hypothesis: economic development increases government size. According to Wagner law the main reason is that as states grow wealthier they simultaneously grow more complex, increasing the need for public regulatory and protective action to ensure the smooth workings of a modern, specialized economy. Additionally, certain public goods, such as education and cultural enhancements, are luxury goods, so the demand for those goods increases more than proportionally as income rises. In addition, richer countries tend to have more elderly and thus tend to spend more on social security and other forms of social protection, which drives greater total spending.				
Adsera and Boix (2002)	65 countries	1950-1990	OLS	Positive coefficient for theGDP per capita.
Alesina et al. (2003)	103 countries	Various	OLS	Negative coefficient for theGDP per capita.
Epifani and Gancia (2009)	127 countries	1950-2000	FE	Negative coefficient for theGDP per capita.
Garrett (2001)	113 countries	Various	OLS	Positive coefficient for theGDP per capita.
Islam (2004)	6 countries	1929-1997	ARDL, FM-OLS	Positive coefficient for theGDP per capita.
Rodrik (1998)	125 developed and developing countries	Various	OLS	Negative coefficient for theGDP per capita.

Table B2: **Countries**

	General Government											Central Government										
Country	**Total Expenditure**	**Compensat. of employees**	**Use of goods and services**	**General public services**	**Defense**	**Public order and safety**	**Economic affairs**	**Health**	**Education**	**Social protection**	**Public Goods**	**Total Expenditure**	**Compensat. of employees**	**Use of goods and services**	**General public services**	**Defense**	**Public order and safety**	**Economic affairs**	**Health**	**Education**	**Social protection**	**Public Goods**
Algeria	√	√	√		√	√		√	√	√	√	√	√	√		√	√		√	√	√	√
Angola	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Argentina	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Australia	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Austria	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Bangladesh	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Belgium	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Benin	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Bolivia	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Botswana	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Brazil	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Burundi	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Cameroon	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Canada	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Chile	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Colombia	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Costa Rica	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Cote d'Ivoire	√	√	√									√	√	√								
Cyprus	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Denmark	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Dominican Republic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Ecuador	√	√	√									√	√	√								
Egypt	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
El Salvador	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Ethiopia	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Fiji	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Finland	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
France	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Germany	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Ghana	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Greece	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Guatemala	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Guinea	√	√	√									√	√	√								
Honduras	√	√	√									√	√	√								
India	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√		
Indonesia	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Iran	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Ireland	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Israel	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Italy	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Jamaica	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Japan	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Jordan	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Kenya	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Lesotho	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

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Table B2 continued

	General Government											Central Government										
Country	**Total Expenditure**	**Compensat. of employees**	**Use of goods and services**	**General public services**	**Defense**	**Public order and safety**	**Economic affairs**	**Health**	**Education**	**Social protection**	**Public Goods**	**Total Expenditure**	**Compensat. of employees**	**Use of goods and services**	**General public services**	**Defense**	**Public order and safety**	**Economic affairs**	**Health**	**Education**	**Social protection**	**Public Goods**
Liberia	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Madagascar	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Malawi	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Malaysia	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Mali	√	√	√									√	√	√								
Mauritius	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Mexico	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Mongolia	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Morocco	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Namibia	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Nepal	√			√	√	√	√	√	√	√	√	√			√	√	√	√	√	√	√	√
Netherlands	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
New Zealand	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Nicaragua	√	√	√									√	√	√								
Nigeria	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Norway	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Pakistan	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Panama	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Papua New Guinea	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Paraguay	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Peru	√	√	√									√	√	√								
Philippines	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Portugal	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Rwanda	√	√	√									√	√	√								
Senegal	√	√	√									√	√	√								
Sierra Leone	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Singapore	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Slovak Republic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
South Africa	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Spain	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Sri Lanka	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Swaziland	√	√	√									√	√	√								
Sweden	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Switzerland	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Thailand	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Togo	√	√	√									√	√	√								
Trinidad and Tobago	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Tunisia	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Turkey	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Uganda	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
United Kingdom	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
United States	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Uruguay	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Venezuela	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Zambia	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Zimbabwe	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Table B3: **Description of Government Expenditure**

Data about government expenditure comes from IMF's Government Financial Statistics (GFS) database. In the GFS 2014 Manual Expense is a decrease in net worth resulting from a transaction (decrease in assets or an increase in liabilities). Government expenditure are classified in two ways: an economic classification and a functional classification. The economic classification of expense identifies the types of expense incurred according to the economic process involved. The functional classification of expense provides information on the purpose for which an expense was incurred.

	Description
General Government Sector	Resident institutional units that fulfill the functions of government as their primary activity. This sector includes all government units and all nonmarket non-profit institutions (NPIs) that are controlled by government units. The general government's subsectors are central, state and local governments.
Central Government Subsector	Institutional unit(s) of the central government plus those nonmarket NPIs that are controlled by the central government. The political authority of the central government extends over the entire territory of the country.
State Government Subsector	Institutional units exercising some of the functions of government at a level below that of central government and above that of the government institutional units existing at a local level.
Local Government Subsector	Institutional units whose fiscal, legislative, and executive authority extends over the smallest geographical areas distinguished for administrative and political purposes. The local government subsector consists of local governments that are separate institutional units plus those nonmarket NPIs that are controlled by local governments.
Total expenditure	The economic classification of expense is divided into eight categories: (1) Compensation of employees, (2) Use of goods and services, (3) Consumption of fixed capital, (4) Interest, (5) Subsidies, (6) Grants, (7) Social benefits and (8) Other expense. The functional classification of expense is divided into ten categories: (1) General public services, (2) Defense, (3) Public order and safety, (4) Economic affairs, (5) Environmental protection, (6) Housing and community amenities, (7) Health, (8) Recreation, culture, and religion, (9) Education and (10) Social protection.
Compensation of employees	The total remuneration, in cash or in kind, payable to an individual in an employer-employee relationship in return for work performed by the latter during the reporting period. These amounts are payable as an exchange for manual and intellectual labor services of individuals used in the production process of the institutional unit. It excludes amounts connected with own-account capital formation.
Use of goods and services	The value of goods and services used for the production of market and nonmarket goods and services. It excludes the consumption of fixed capital, the use of goods and services in own-account capital formation and the goods purchased by government and distributed without transformation.
General public services	Expenses for executive and legislative organs, financial and fiscal affairs, external affairs, foreign economic aid, general services, basic research, R&D for general public services, public debt transactions and transfers of a general character between different levels of government.
Defense	Expenses for military and civil defense, foreign military aid and R&D for defense.
Public order and safety	Expenses for police and fire protection services, law courts, prisons and R&D for public order and services.
Economic affairs	Expenses for general economic, commercial, and labor affairs, agriculture, forestry, fishing, and hunting, fuel and energy, mining, manufacturing, and construction, transport, communication and R&D for economic affairs.
Health	Expenses for medical products, appliances, and equipment, outpatient services, hospital services, public health services and R&D for health.
Education	Expenses for pre-primary and primary education, secondary education, postsecondary non-tertiary education, tertiary education, education not definable by level, subsidiary services to education and R&D for education.
Social protection	Expenses for Sickness and disability, old age, survivors, family and children, unemployment, housing and R&D for social protection.
Public Goods	The sum of public order and safety, health and education expenditures.

Table B4: **Description of the Determinants**

The Database of Political Institutions (DPI), the Freedom House (FH) database, the Historical Public Debt Database (HPDD), the IMF's Government Financial Statistics database (GFS),Lane and Milesi-Ferretti (2007), the Major Episodes of Political Violence database (MEPV), Penn World Table 8 (PWT), Political Regime Characteristics and Transitions, the 1800-2013 database of the Polity IV Project (PRCT), the Polity IV Project (PIV), Solt (2009) and the World Development Indicators database (WDI).

Variable	**Description**	
Centralization	Percentage of central to general total government expenditure.	GFS
Warfare score	Magnitude score of episode(s) of warfare involving that state in that year. It's the sum of international, civil and ethnic warfare. Zero denotes no episodes.	MEPV
Land area	Natural logarithm of the land area in square km.	WDI
Population	Natural logarithm of the population.	PWT8
Dependency share < 15	Percentage of people younger than 15 to the working-age population.	WDI
Dependency share > 64	Percentage of people older than 64 to the working-age population.	WDI
Urbanization	Urban population as a percebtage of total population.	WDI
Population growth	Population growth, in percentage.	WDI
Trade openness	Sum of exports and imports as a percentage of GDP.	PWT8
Terms of Trade Variability	Net barter terms of trade index: the percentage ratio of the export unit value indexes to the import unit value indexes, measured relative to the base year 2000.	WDI
Gross inequality	Gross income gini inequality, ranging from 0 to 100.	Solt
Central government debt	Total central government debt as a percentage of GDP.	HPDD
FDI liabilities	Natural logarithm of the FDI liabilities stock	MLF
Inflation	Inflation, based on the annual percentage growth of GDP deflator	WDI
Democracy score	Revised combined polity democracy score, ranging from -10 for autocracy to +10 for decocracy.	PIV
Political competition index	Political competition scale: (1) Suppressed; (2) Restricted; (3) Imposed Transition: Loosening or tightening restrictions; (4) Uninstitutionalized; (5) Gradual Transition from Uninstitutionalized; (6) Factional/Restricted; (7) Factional; (8) Electoral Transition: Persistent Conflict/Coercion; (9) Electoral Transition: Limited Conflict/Coercion; (10) Institutionalized Electoral	PIV
Presidential systems	1 for presidential systems; 0 otherwise	DPI
Plurality systems	1 for plurality systems; 0 otherwise	DPI
Political Rights index	Political rights gastil index, ranging from 1 to 7	FH
GDP per capita	GDP per capita at current USD prices	PWT8
East Asia & Pacific	1 for East Asia and Pacific countries; 0 otherwise	WDI
Europe & Central Asia	1 for Europe and Central Asia countries; 0 otherwise	WDI
Latin America & Caribbean	1 for Latin America and Caribbean countries; 0 otherwise	WDI
Middle East & North Africa	1 for Middle East and North Africa countries; 0 otherwise	WDI
North America	1 for North America countries; 0 otherwise	WDI
South Asia	1 for South Asia countries; 0 otherwise	WDI
Sub-Saharan Africa	1 for Sub-Saharan Africa countries; 0 otherwise	WDI
1976-1980 period	1 for the 1976-1980 period; 0 otherwise	
1981-1985 period	1 for the 1981-1985 period; 0 otherwise	
1986-1990 period	1 for the 1986-1990 period; 0 otherwise	
1991-1995 period	1 for the 1991-1995 period; 0 otherwise	
1996-2000 period	1 for the 1996-2000 period; 0 otherwise	
2001-2005 period	1 for the 2001-2005 period; 0 otherwise	
2006-2010 period	1 for the 2006-2010 period; 0 otherwise	

Table B5: **Descriptive Statistics of Government Expenditure**

	Observations	Mean	Std. Dev.	Min	Max
General Government					
Total expenditure	414	30.625	13.922	6.746	79.438
Compensation of employees	399	9.048	4.414	0.562	30.768
Use of goods and services	399	5.357	3.064	0.760	21.480
General public services	358	7.649	4.051	1.459	26.262
Defense	347	2.256	1.905	0.148	20.722
Public order and safety	292	1.380	0.709	0.097	6.033
Economic affairs	356	4.405	2.300	0.718	22.360
Health	360	3.212	2.777	0.123	27.484
Education	360	4.340	2.060	0.180	16.515
Social protection	356	7.551	7.604	0.002	32.404
Public Goods	281	7.031	3.785	0.547	26.882
Central Government					
Total expenditure	414	26.085	10.371	6.156	73.546
Compensation of employees	398	7.149	4.442	0.384	30.768
Use of goods and services	398	4.250	2.785	0.760	20.108
General public services	356	7.164	3.862	1.427	23.407
Defense	347	2.209	1.909	0.148	20.925
Public order and safety	281	1.185	0.746	0.085	6.033
Economic affairs	354	3.665	2.226	0.718	22.360
Health	358	2.359	1.937	0.047	8.973
Education	358	3.231	2.010	0.130	16.515
Social protection	346	6.671	6.056	0.002	23.322
Public Goods	292	9.561	4.633	0.547	31.943

Table B6: **Descriptive Statistics of the Determinants**

	Observations = 414			
	Mean	Std. Dev.	Min	Max
Centralization	88.824	14.684	44.561	102.944
Warfare score	0.647	1.688	0.000	13.000
Land area	12.467	1.892	6.507	16.035
Population	16.514	1.431	13.344	20.819
Dependency share < 15	54.100	22.350	20.681	106.243
Dependency share > 64	12.142	7.067	3.958	33.103
Urbanization	58.085	22.566	7.143	100.000
Population growth	1.596	1.115	-4.526	5.612
Trade openness	71.079	51.230	10.827	409.431
Terms of trade	7.610	7.302	0.000	56.313
Gross inequality	46.414	7.586	31.166	69.869
Central government debt	62.188	38.147	3.414	310.426
FDI liabilities	8.814	2.248	1.496	14.898
Inflation	25.448	132.083	-5.111	1871.911
Democracy score	5.143	6.074	-9.600	10.000
Political competition index	7.517	2.980	1.000	10.000
Presidential systems	0.487	0.490	0.000	1.000
Plurality systems	0.633	0.477	0.000	1.000
Political Rights index	2.729	1.800	1.000	7.000
GDP per capita	8.106	1.531	4.863	11.320
East Asia & Pacific	0.145	0.352	0.000	1.000
Europe & Central Asia	0.268	0.444	0.000	1.000
Latin America & Caribbean	0.237	0.426	0.000	1.000
Middle East & North Africa	0.094	0.292	0.000	1.000
North America	0.034	0.181	0.000	1.000
South Asia	0.053	0.225	0.000	1.000
Sub-Saharan Africa	0.169	0.375	0.000	1.000
1976-1980 period	0.104	0.305	0.000	1.000
1981-1985 period	0.130	0.337	0.000	1.000
1986-1990 period	0.140	0.348	0.000	1.000
1991-1995 period	0.159	0.367	0.000	1.000
1996-2000 period	0.171	0.377	0.000	1.000
2001-2005 period	0.171	0.377	0.000	1.000
2006-2010 period	0.123	0.329	0.000	1.000

Table B7: **Correlation of the Determinants**

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	**Centralization**																		
2	**Warfare score**	0.07																	
3	**Land area**	-0.37	0.05																
4	**Population**	-0.27	0.24	0.68															
5	**Dependency share < 15**	0.47	0.28	0.09	-0.01														
6	**Dependency share > 64**	-0.52	-0.26	-0.06	-0.01	-0.82													
7	**Urbanization**	-0.39	-0.30	0.05	-0.04	-0.68	0.59												
8	**Population growth**	0.35	0.15	0.12	0.04	0.68	-0.64	-0.37											
9	**Trade openness**	0.19	-0.16	-0.64	-0.49	-0.15	-0.04	0.15	0.04										
10	**Gross inequality**	0.14	-0.03	-0.09	-0.19	0.28	-0.21	-0.19	0.21	0.05									
11	**Central government debt**	0.13	0.05	-0.13	-0.07	0.15	-0.04	-0.09	0.10	0.09	-0.04								
12	**FDI liabilities**	-0.50	-0.22	0.25	0.38	-0.69	0.62	0.62	-0.38	0.09	-0.15	-0.12							
13	**Inflation**	-0.06	-0.02	0.15	0.09	0.06	-0.07	0.08	0.03	-0.12	0.06	0.01	-0.04						
14	**Democracy score**	-0.40	-0.24	-0.02	-0.07	-0.65	0.57	0.43	-0.49	-0.06	-0.09	-0.16	0.39	0.01					
15	**Political competition index**	-0.38	-0.28	0.00	-0.08	-0.63	0.60	0.46	-0.48	-0.10	-0.16	-0.14	0.39	-0.02	0.93				
16	**Presidential systems**	0.35	0.14	0.16	-0.02	0.56	-0.53	-0.18	0.41	-0.20	0.20	0.07	-0.38	0.13	-0.40	-0.32			
17	**Plurality systems**	0.11	0.01	0.09	0.16	0.26	-0.24	-0.23	0.23	0.03	0.00	0.09	-0.04	-0.07	-0.32	-0.26	0.05		
18	**Political Rights index**	0.44	0.26	0.05	0.10	0.69	-0.67	-0.48	0.49	0.05	0.11	0.17	-0.43	-0.01	-0.91	-0.88	0.43	0.28	
19	**GDP per capita**	-0.49	-0.32	-0.09	-0.08	-0.87	0.84	0.78	-0.55	0.18	-0.16	-0.20	0.77	-0.06	0.59	0.60	-0.50	-0.26	-0.67

Table B8: **Variance Decomposition**

The table presents the role of each theory in explaining the variation of the general and central government total expenditures and components, using the Correlated Variance Share (CVS) described in section 1.4.2.

	Total Expenditure	**Compensation of Employees**	**Use of Goods and Services**	**General Public Services**	**Defense**	**Public Order and Safety**	**Economic Affairs**	**Health**	**Education**	**Social Protection**	**Public Goods**
					Panel A: General Government						
Centralization	18.45	0.00	0.11	0.00	0.00	0.01	0.00	9.31	12.08	9.86	9.24
Conflict	0.13	0.03	0.00	0.27	8.50	0.03	0.00	0.10	0.01	0.00	0.08
Country Size	0.12	0.25	9.04	2.90	0.19	1.29	0.12	0.14	7.54	0.01	0.01
Demography	34.23	4.73	47.96	2.29	6.06	54.03	4.77	4.66	22.62	1.45	31.57
Globalization	21.59	0.42	17.41	0.01	0.03	17.76	1.60	0.00	8.14	44.64	8.03
Income Inequality	23.58	0.08	1.02	0.07	0.18	47.77	4.84	0.15	0.02	86.33	0.01
Macroeconomic Policy	19.83	7.52	2.92	14.05	35.70	0.68	5.33	0.04	0.25	77.06	0.10
Political Institution	72.31	0.52	0.11	16.25	2.22	0.07	0.01	0.05	4.91	3.29	0.03
Wagner's Law	0.20	15.13	3.63	1.23	0.16	8.01	0.74	26.08	33.67	2.67	31.18
Time Fixed Effects	0.02	0.69	1.48	1.37	3.60	46.01	5.92	0.45	1.60	0.09	0.98
Country Fixed Effects	0.05	3.90	14.01	3.60	35.78	18.95	19.10	19.16	25.75	0.62	4.93
					Panel B: Central Government						
Centralization	19.79	62.26	8.20	1.38	0.00	1.33	0.00	0.02	9.03	0.00	2.48
Conflict	0.10	0.37	0.03	0.03	2.11	0.02	0.00	0.00	0.00	0.04	0.58
Country Size	0.61	4.49	0.48	0.02	0.00	0.91	7.40	0.06	12.85	0.00	1.20
Demography	41.53	10.37	0.60	28.42	8.20	0.00	11.61	18.45	35.86	84.57	12.42
Globalization	11.01	44.50	1.18	0.00	0.17	0.01	22.78	0.36	2.56	0.00	0.21
Income Inequality	9.55	39.46	0.04	0.00	1.89	2.98	0.53	0.73	0.00	0.09	0.41
Macroeconomic Policy	12.66	27.21	0.00	16.75	5.32	58.60	15.08	0.00	1.04	0.04	6.53
Political Institution	2.11	4.37	9.24	31.85	0.28	13.34	1.10	0.82	7.23	0.06	18.04
Wagner's Law	0.43	5.14	1.60	0.00	0.74	0.32	6.69	0.27	10.74	0.10	42.17
Time Fixed Effects	0.03	0.11	4.83	0.90	3.90	1.44	3.37	0.56	3.23	0.10	0.25
Country Fixed Effects	0.07	0.88	16.17	4.96	33.84	67.58	17.10	43.84	23.81	4.58	6.75

Table B9: **Channels of Transmission Analysis - Posterior Probability of the Determinants - Dropping Theories**

The table provides the IVBMA posterior inclusion probability for the different determinants for general and central government total expenditures when we exclude the various theories one-by-one. Time and country fixed effects (unreported) are included in each model.

	PIP^i	$PIP^{i,-j}$ Theory Drop									$\Delta PIP^{i,-j}$ Theory Drop								
	Baseline	**Centralization**	**Conflict**	**Country Size**	**Demography**	**Globalization**	**Income Inequality**	**Macroeconomic Policy**	**Political Institution**	**The Wagner's Law**	**Centralization**	**Conflict**	**Country Size**	**Demography**	**Globalization**	**Income Inequality**	**Macroeconomic Policy**	**Political Institution**	**The Wagner's Law**
Panel A: General Government																			
Centralization	0.806		1.000	0.272	0.970	0.986	0.842	0.998	1.000	0.081		0.194	-0.534	0.164	0.180	0.036	0.191	0.194	-0.725
Warfare score	0.601	0.634		0.794	0.826	0.550	0.757	0.535	0.815	0.599	0.033		0.193	0.225	-0.051	0.156	-0.066	0.214	-0.002
Land area	0.525	0.089	0.325		0.447	0.085	0.325	0.109	0.933	0.406	-0.436	-0.200		-0.078	-0.440	-0.200	-0.416	0.408	-0.118
Population	0.504	0.747	0.340		0.066	0.457	0.741	0.435	0.101	0.830	0.242	-0.165		-0.439	-0.048	0.237	-0.070	-0.404	0.325
Dependency share < 15	0.957	0.992	0.018	0.974		0.011	0.057	0.027	0.990	0.992	0.035	-0.938	0.017		-0.945	-0.900	-0.929	0.034	0.035
Dependency share > 64	0.998	0.029	0.037	0.066		0.975	0.190	0.051	0.942	0.063	-0.969	-0.961	-0.933		-0.023	-0.808	-0.947	-0.056	-0.935
Urbanization	0.014	0.989	0.970	0.920		0.012	0.896	1.000	0.987	0.941	0.975	0.956	0.905		-0.003	0.882	0.986	0.973	0.926
Population growth	0.848	0.082	0.906	0.939		0.945	0.926	0.111	0.857	0.132	-0.765	0.058	0.091		0.097	0.078	-0.736	0.009	-0.716
Trade openness	0.958	0.981	0.705	0.360	0.173		0.381	0.176	0.934	0.234	0.024	-0.253	-0.598	-0.785		-0.577	-0.782	-0.023	-0.723
Gross inequality	0.798	1.000	1.000	0.977	0.516	0.990		0.422	0.958	0.995	0.202	0.202	0.180	-0.282	0.193		-0.376	0.160	0.197
Central government debt	0.602	0.015	0.021	0.880	0.582	0.015	0.999		0.736	0.739	-0.587	-0.580	0.278	-0.020	-0.587	0.398		0.134	0.137
FDI liabilities	0.736	0.966	0.036	0.078	0.036	0.033	0.904		0.744	1.000	0.231	-0.700	-0.657	-0.700	-0.703	0.169		0.008	0.264
Inflation	0.793	1.000	1.000	0.003	0.003	1.000	0.012		0.002	0.004	0.207	0.207	-0.789	-0.790	0.207	-0.780		-0.791	-0.789
Democracy score	0.887	0.010	1.000	0.955	0.803	0.958	0.868	1.000		0.036	-0.878	0.113	0.068	-0.085	0.071	-0.019	0.113		-0.851
Political competition index	0.924	0.990	0.012	1.000	0.028	0.013	0.049	1.000		0.047	0.066	-0.912	0.076	-0.896	-0.911	-0.875	0.076		-0.877
Presidential systems	0.132	0.900	0.131	0.992	0.117	0.122	0.937	0.182		0.184	0.768	-0.001	0.860	-0.015	-0.010	0.805	0.050		0.053
Plurality systems	0.137	0.119	0.853	0.155	0.122	0.119	0.169	0.946		0.974	-0.019	0.715	0.018	-0.015	-0.019	0.031	0.808		0.836
Political Rights index	0.896	0.018	0.974	0.028	0.032	0.935	0.059	0.028		0.085	-0.878	0.077	-0.869	-0.865	0.039	-0.838	-0.868		-0.811
GDP per capita	0.868	0.815	0.887	0.917	0.985	0.864	1.000	0.811	0.714		-0.054	0.019	0.049	0.117	-0.005	0.132	-0.058	-0.155	

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Table B9 continued

	PIP^i	$PIP^{i,-j}$									$\Delta PIP^{i,-j}$								
		Theory Drop									**Theory Drop**								
	Baseline	**Centralization**	**Conflict**	**Country Size**	**Demography**	**Globalization**	**Income Inequality**	**Macroeconomic Policy**	**Political Institution**	**The Wagner's Law**	**Centralization**	**Conflict**	**Country Size**	**Demography**	**Globalization**	**Income Inequality**	**Macroeconomic Policy**	**Political Institution**	**The Wagner's Law**
Panel B: Central Government																			
Centralization	0.899		0.929	0.990	0.350	1.000	1.000	0.999	0.970	1.000		0.031	0.092	-0.549	0.101	0.101	0.100	0.071	0.101
Warfare score	0.616	0.981		0.929	0.424	0.743	0.553	0.532	0.632	0.928	0.365		0.313	-0.192	0.127	-0.063	-0.084	0.016	0.312
Land area	0.550	0.219	0.568		0.093	0.114	0.470	0.490	0.127	0.972	-0.331	0.019		-0.457	-0.436	-0.080	-0.060	-0.423	0.422
Population	0.696	0.021	0.054		1.000	0.391	0.488	0.049	0.758	0.890	-0.674	-0.641		0.304	-0.304	-0.207	-0.647	0.062	0.195
Dependency share < 15	0.028	0.004	0.963	0.004		0.031	0.945	0.011	0.025	0.997	-0.024	0.935	-0.025		0.003	0.917	-0.018	-0.003	0.969
Dependency share > 64	0.993	0.022	0.018	0.006		0.037	0.015	0.014	0.633	0.035	-0.971	-0.974	-0.987		-0.955	-0.978	-0.979	-0.360	-0.958
Urbanization	0.978	0.162	0.973	0.003		0.031	0.881	0.011	0.026	0.999	-0.817	-0.006	-0.975		-0.948	-0.098	-0.967	-0.952	0.020
Population growth	0.073	0.019	0.071	0.768		1.000	0.853	0.602	0.055	0.086	-0.054	-0.002	0.695		0.927	0.780	0.529	-0.018	0.013
Trade openness	0.814	0.091	0.780	0.368	0.535		0.961	0.944	0.490	0.870	-0.724	-0.034	-0.446	-0.279		0.147	0.130	-0.324	0.056
Gross inequality	1.000	0.242	0.956	1.000	0.267	0.593		0.337	0.804	0.524	-0.758	-0.044	0.000	-0.733	-0.407		-0.663	-0.196	-0.476
Central government debt	0.804	0.481	0.860	0.905	0.006	0.997	1.000		0.902	0.014	-0.323	0.056	0.101	-0.798	0.193	0.196		0.098	-0.789
FDI liabilities	0.971	0.442	0.980	0.035	0.443	0.056	0.962		0.982	0.960	-0.530	0.009	-0.936	-0.528	-0.916	-0.009		0.010	-0.011
Inflation	1.000	0.001	0.992	1.000	0.001	0.002	0.843		0.957	0.002	-0.999	-0.008	0.000	-0.999	-0.998	-0.157		-0.043	-0.998
Democracy score	0.008	0.028	0.954	0.583	1.000	0.015	0.325	0.995		0.011	0.019	0.946	0.575	0.992	0.006	0.316	0.987		0.002
Political competition index	0.821	0.038	0.957	0.008	1.000	0.018	0.003	1.000		0.014	-0.783	0.135	-0.813	0.179	-0.804	-0.818	0.179		-0.807
Presidential systems	0.777	0.999	0.928	0.587	0.991	0.112	0.047	0.162		0.965	0.221	0.151	-0.190	0.213	-0.665	-0.730	-0.616		0.187
Plurality systems	0.090	0.166	0.115	0.060	0.174	0.665	0.314	0.881		0.957	0.075	0.025	-0.030	0.084	0.575	0.223	0.790		0.866
Political Rights index	0.018	0.062	0.895	0.011	0.020	0.619	0.329	0.026		0.995	0.044	0.877	-0.007	0.002	0.601	0.311	0.008		0.978
GDP per capita	0.719	1.000	0.887	0.641	0.997	0.999	0.681	1.000	0.738		0.281	0.167	-0.078	0.277	0.279	-0.038	0.281	0.018	

Table B10: **Channels of Transmission Analysis - Posterior Mean of the Determinants - Dropping Theories**

The table provides the IVBMA posterior mean for the different determinants for general and central government total expenditures when we exclude the various theories one-by-one. Time and country fixed effects (unreported) are included in each model.

	PIP^i	$PIP^{i,-j}$									$\Delta PIP^{i,-j}$								
		Theory Drop									**Theory Drop**								
	Baseline	**Centralization**	**Conflict**	**Country Size**	**Demography**	**Globalization**	**Income Inequality**	**Macroeconomic Policy**	**Political Institution**	**Wagner's Law**	**Centralization**	**Conflict**	**Country Size**	**Demography**	**Globalization**	**Income Inequality**	**Macroeconomic Policy**	**Political Institution**	**Wagner's Law**
Panel A: General Government																			
Centralization	0.407		-2.032	0.043	1.308	1.534	-0.117	-0.199	2.373	-0.003		-2.439	-0.364	0.901	1.127	-0.524	-0.606	1.965	-0.411
Warfare score	0.297	0.367		0.557	-0.690	0.056	-0.532	0.044	0.936	-0.276	0.070		0.260	-0.987	-0.241	-0.829	-0.253	0.638	-0.573
Land area	0.343	0.012	0.042		0.198	0.040	0.305	0.057	1.413	0.420	-0.331	-0.301		-0.145	-0.303	-0.038	-0.286	1.069	0.077
Population	-0.219	-0.795	-0.116		-0.027	-0.075	0.078	-0.161	0.017	-0.483	-0.575	0.103		0.193	0.145	0.297	0.058	0.237	-0.264
Dependency share < 15	0.183	0.957	0.000	-0.363		0.000	0.005	0.000	-3.178	-0.176	0.774	-0.183	-0.546		-0.183	-0.178	-0.183	-3.362	-0.359
Dependency share > 64	1.588	0.006	0.006	0.022		1.087	0.116	0.003	0.392	0.005	-1.582	-1.581	-1.566		-0.500	-1.471	-1.585	-1.195	-1.583
Urbanization	0.000	0.392	0.965	-0.057		0.000	-0.042	0.668	-1.032	0.056	0.392	0.965	-0.057		0.000	-0.042	0.668	-1.032	0.056
Population growth	0.080	-0.027	-0.744	-1.932		-1.133	-2.194	0.010	-0.489	0.073	-0.107	-0.824	-2.012		-1.213	-2.275	-0.070	-0.569	-0.007
Trade openness	0.399	1.114	-0.307	0.010	0.004		0.007	-0.001	-0.142	0.004	0.715	-0.706	-0.389	-0.395		-0.392	-0.400	-0.541	-0.395
Gross inequality	-2.816	-4.626	4.991	0.548	0.369	-4.254		0.050	2.283	0.339	-1.809	7.808	3.364	3.185	-1.438		2.866	5.100	3.156
Central government debt	0.008	0.000	0.000	0.063	-2.274	0.000	0.076		-1.080	0.011	-0.007	-0.008	0.055	-2.281	-0.008	0.068		-1.088	0.004
FDI liabilities	0.163	0.577	0.000	-0.044	0.004	-0.001	-0.207		-0.056	2.605	0.414	-0.163	-0.207	-0.159	-0.164	-0.370		-0.219	2.442
Inflation	1.482	3.143	-2.021	0.000	0.000	2.632	0.000		0.000	0.000	1.661	-3.503	-1.482	-1.482	1.150	-1.482		-1.482	-1.482
Democracy score	1.445	0.001	-2.171	0.605	0.373	0.776	0.145	-1.414		0.003	-1.444	-3.616	-0.840	-1.072	-0.668	-1.300	-2.859		-1.441
Political competition index	1.620	2.395	0.000	4.254	0.016	0.003	0.058	3.087		0.015	0.775	-1.619	2.634	-1.604	-1.617	-1.562	1.467		-1.605
Presidential systems	-0.116	-0.772	-0.082	-2.393	-0.119	-0.066	-2.079	-0.257		-0.380	-0.656	0.034	-2.277	-0.003	0.050	-1.964	-0.141		-0.264
Plurality systems	-0.085	-0.045	-0.347	-0.119	-0.129	-0.038	-0.222	-1.361		-1.565	0.041	-0.262	-0.034	-0.044	0.048	-0.136	-1.275		-1.480
Political Rights index	0.977	0.000	1.272	-0.009	0.006	0.877	0.013	0.015		-0.016	-0.977	0.295	-0.986	-0.971	-0.100	-0.964	-0.962		-0.994
GDP per capita	0.408	0.976	1.247	-1.404	3.690	1.134	4.474	-0.747	-0.060		0.568	0.839	-1.812	3.282	0.726	4.066	-1.155	-0.468	

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Table B10 continued

	PIP^i	$PIP^{i,-j}$									$\Delta PIP^{i,-j}$								
		Theory Drop									Theory Drop								
	Baseline	Centralization	Conflict	Country Size	Demography	Globalization	Income Inequality	Macroeconomic Policy	Political Institution	Wagner's Law	Centralization	Conflict	Country Size	Demography	Globalization	Income Inequality	Macroeconomic Policy	Political Institution	Wagner's Law
Panel B: Central Government																			
Centralization	-0.993		-1.064	-1.625	0.028	0.185	-2.739	0.131	-1.257	0.301		-0.071	-0.632	1.021	1.178	-1.747	1.124	-0.264	1.293
Warfare score	-0.190	-1.055		-1.521	-0.054	-0.417	-0.039	-0.182	-0.359	-1.707	-0.865		-1.331	0.136	-0.227	0.151	0.008	-0.169	-1.517
Land area	0.115	-0.008	0.300		-0.006	0.066	-0.255	-0.207	0.043	1.864	-0.122	0.185		-0.121	-0.049	-0.370	-0.322	-0.072	1.749
Population	-0.660	-0.005	-0.008		-1.123	-0.115	-0.239	-0.014	-0.691	-0.918	0.655	0.651		-0.464	0.545	0.420	0.646	-0.031	-0.258
Dependency share < 15	0.000	0.000	-0.117	0.000		0.001	0.188	0.000	0.000	-0.212	0.000	-0.117	0.000		0.001	0.188	0.000	0.000	-0.212
Dependency share > 64	0.519	0.006	0.001	0.000		0.007	0.000	0.001	0.281	0.000	-0.513	-0.517	-0.519		-0.512	-0.519	-0.518	-0.238	-0.518
Urbanization	0.536	-0.006	-0.367	0.000		-0.001	0.032	0.000	0.000	-0.458	-0.542	-0.903	-0.536		-0.536	-0.504	-0.536	-0.536	-0.994
Population growth	-0.002	0.004	-0.017	-0.799		-7.030	-0.723	0.101	0.008	0.016	0.006	-0.015	-0.797		-7.029	-0.721	0.103	0.010	0.017
Trade openness	-0.672	0.001	-0.442	-0.170	0.013		-0.360	0.042	-0.104	0.064	0.673	0.230	0.502	0.685		0.312	0.714	0.567	0.736
Gross inequality	4.225	0.019	4.171	4.896	0.002	0.059		-0.033	3.269	0.107	-4.206	-0.053	0.672	-4.223	-4.166		-4.258	-0.956	-4.118
Central government debt	0.014	0.018	0.022	0.042	0.000	0.104	4.638		0.149	0.000	0.004	0.007	0.028	-0.014	0.089	4.624		0.135	-0.014
FDI liabilities	0.781	-0.007	0.785	0.001	0.104	0.003	0.647		1.313	3.035	-0.787	0.004	-0.780	-0.676	-0.777	-0.134		0.533	2.255
Inflation	-2.407	0.000	-1.643	-1.905	0.000	0.000	-0.004		-1.124	0.000	2.407	0.764	0.502	2.407	2.407	2.403		1.283	2.407
Democracy score	-0.001	0.001	-1.235	-0.192	-1.989	0.001	0.051	0.807		0.002	0.002	-1.234	-0.191	-1.988	0.002	0.052	0.808		0.003
Political competition index	0.469	0.009	1.660	0.000	5.094	0.007	0.001	5.241		0.006	-0.461	1.191	-0.469	4.624	-0.463	-0.469	4.772		-0.463
Presidential systems	-0.596	-2.753	-1.412	-0.385	-2.202	-0.109	-0.040	-0.175		-1.689	-2.157	-0.816	0.211	-1.606	0.487	0.555	0.421		-1.093
Plurality systems	-0.011	-0.190	-0.035	-0.021	-0.191	-0.648	-0.130	-0.637		-1.300	-0.179	-0.024	-0.010	-0.180	-0.637	-0.118	-0.626		-1.289
Political Rights index	0.003	-0.007	0.463	-0.001	0.008	0.051	0.096	-0.012		-1.912	-0.011	0.460	-0.004	0.004	0.047	0.092	-0.016		-1.916
GDP per capita	0.447	3.173	0.797	0.337	1.618	1.599	0.347	-3.287	0.611		2.726	0.351	-0.110	1.171	1.153	-0.100	-3.734	0.164	

Table B11: **Global Economic Crisis - Posterior Probability of the Determinants**

The table provides the IVBMA posterior inclusion probability for the different determinants for general and central government total expenditures and components, taking into account the global economic crisis. Time and country fixed effects (unreported) are included in each model.

	Total Expenditure	**Compensation of Employees**	**Use of Goods and Services**	**General Public Services**	**Defense**	**Public Order and Safety**	**Economic Affairs**	**Health**	**Education**	**Social Protection**	**Public Goods**
					Panel A: General Government						
Centralization	1.000	0.095	0.032	0.020	0.009	0.006	0.021	1.000	1.000	1.000	0.728
Warfare score	0.629	0.315	0.368	0.303	0.945	0.281	0.141	0.185	0.146	0.774	0.525
Land area	0.696	0.646	0.976	0.631	0.110	0.973	0.014	0.119	0.984	0.865	0.023
Population	0.156	0.186	0.137	0.493	0.002	0.963	0.116	0.150	0.987	0.045	0.411
Dependency share < 15	1.000	0.038	0.988	0.062	0.001	0.527	0.007	0.894	0.980	1.000	0.817
Dependency share > 64	1.000	0.608	0.025	0.452	0.003	0.539	0.006	0.946	0.003	0.024	0.006
Urbanization	0.030	0.040	0.986	0.478	0.990	0.506	0.005	0.903	0.991	0.993	0.005
Population growth	0.116	0.057	0.039	0.080	0.992	0.541	0.402	0.979	0.035	0.057	0.035
Trade openness	0.992	0.289	0.932	0.326	0.029	0.839	0.301	0.575	0.956	0.177	0.627
Gross inequality	0.218	0.802	0.455	0.304	0.300	0.144	0.990	0.756	0.161	0.465	0.595
Central government debt	0.080	0.159	0.456	0.002	1.000	0.008	0.006	0.000	0.001	0.020	0.007
FDI liabilities	0.097	0.024	0.555	0.002	0.962	0.000	0.001	0.173	0.896	0.003	0.015
Inflation	0.080	0.190	0.001	0.022	0.001	0.000	0.006	0.000	0.902	0.017	0.997
Democracy score	0.014	0.020	0.644	0.988	0.737	0.000	0.001	0.474	0.200	0.998	0.872
Political competition index	0.988	0.021	0.674	0.011	0.004	0.521	0.089	0.512	0.001	1.000	0.007
Presidential systems	0.986	0.059	0.110	0.192	0.811	0.492	0.016	0.469	0.213	0.947	0.058
Plurality systems	0.960	0.459	0.639	0.109	0.025	0.512	0.081	0.020	0.188	0.906	0.801
Political Rights index	0.024	0.498	0.634	0.962	0.004	0.513	0.088	0.468	0.199	0.989	0.009
GDP per capita	0.664	0.922	0.971	0.703	0.411	0.381	0.181	0.973	0.990	0.908	0.703
					Panel B: Central Government						
Centralization	0.942	0.836	0.694	0.050	0.013	0.511	0.549	0.188	1.000	0.018	0.619
Warfare score	0.474	0.496	0.285	0.649	0.939	0.177	0.127	0.173	0.113	0.356	0.365
Land area	0.390	0.880	0.329	0.168	0.060	0.553	0.024	0.523	0.070	0.088	0.724
Population	0.033	0.879	0.057	0.183	0.063	0.563	0.302	0.010	1.000	0.003	0.908
Dependency share < 15	0.006	0.647	0.459	0.997	0.003	0.280	0.003	0.437	0.541	0.003	0.009
Dependency share > 64	0.005	0.626	0.011	0.835	1.000	0.005	0.275	0.002	0.011	1.000	0.858
Urbanization	0.253	0.004	0.011	0.788	0.003	0.005	0.006	0.397	0.498	0.833	0.914
Population growth	0.021	0.026	0.016	0.996	1.000	0.294	0.276	0.010	0.016	0.024	0.932
Trade openness	0.802	0.363	0.591	0.432	0.232	0.251	0.645	0.027	0.087	0.095	0.967
Gross inequality	0.197	0.378	0.589	0.703	0.890	0.070	0.513	0.404	0.529	0.976	1.000
Central government debt	0.002	0.003	0.006	0.580	0.000	0.042	0.010	0.004	0.003	0.047	0.004
FDI liabilities	0.005	0.781	0.014	0.033	0.000	0.002	0.001	0.000	0.524	0.062	0.999
Inflation	0.187	0.788	0.547	0.001	0.004	0.000	0.000	0.003	0.000	0.000	1.000
Democracy score	1.000	0.993	0.010	0.991	0.270	0.503	0.376	0.001	0.003	0.121	0.947
Political competition index	1.000	0.010	0.013	0.982	0.001	0.518	0.385	0.204	0.937	0.002	0.943
Presidential systems	0.130	0.915	0.980	0.190	0.012	0.506	0.038	0.007	0.927	0.169	0.059
Plurality systems	0.112	0.948	0.899	0.912	0.248	0.011	0.366	0.206	0.818	0.011	0.909
Political Rights index	0.892	0.957	0.021	0.024	0.271	0.539	0.430	0.002	0.937	0.002	0.883
GDP per capita	1.000	0.964	0.463	0.965	0.268	0.464	0.668	0.835	0.636	0.301	0.751

Table B12: **Globalization - Posterior Probability of the Determinants**

The table provides the IVBMA posterior inclusion probability for the different determinants for general and central government total expenditures and components, taking into account the global economic crisis. Time and country fixed effects (unreported) are included in each model.

	Total Expenditure	**Compensation of Employees**	**Use of Goods and Services**	**General Public Services**	**Defense**	**Public Order and Safety**	**Economic Affairs**	**Health**	**Education**	**Social Protection**	**Public Goods**
					Panel A: General Government						
Centralization	0.229	0.236	0.038	0.147	0.013	0.085	0.026	0.049	0.018	0.171	0.696
Warfare score	0.492	0.664	0.363	0.340	1.000	0.252	0.228	0.111	0.239	0.409	0.472
Land area	0.079	0.666	0.987	0.052	0.099	0.753	0.036	0.012	0.131	0.290	0.996
Population	0.615	0.027	0.980	0.459	0.105	0.726	0.157	0.465	0.664	0.036	0.996
Dependency share $<$ 15	0.865	0.005	0.474	0.006	0.004	0.006	0.008	0.986	0.023	0.835	0.082
Dependency share $>$ 64	0.022	0.411	0.479	0.218	0.004	0.002	0.011	0.977	0.641	1.000	0.001
Urbanization	0.851	0.458	0.001	0.231	0.338	0.311	0.008	0.884	0.020	0.005	0.001
Population growth	0.075	0.019	0.416	0.232	0.341	0.009	0.524	0.014	0.654	0.891	0.003
Trade openness	1.000	0.006	0.003	0.704	0.078	0.588	0.106	0.502	0.169	0.365	0.041
Term of trades (ToT)	1.000	1.000	0.702	0.869	0.002	0.589	0.006	0.010	0.026	0.026	0.001
Trade openness $\times$ ToT	1.000	0.878	0.721	0.001	0.001	0.001	0.002	0.491	0.009	0.003	0.038
Gross inequality	0.345	0.914	0.775	0.177	0.252	0.086	0.997	0.908	0.829	0.276	0.829
Central government debt	0.004	0.191	0.016	0.082	0.001	0.001	0.018	0.227	0.352	0.051	0.720
FDI liabilities	0.011	0.229	0.000	0.003	0.148	0.423	0.004	0.002	0.021	0.003	0.013
Inflation	0.371	0.240	0.013	0.064	0.000	0.402	0.000	0.234	0.382	0.000	0.713
Democracy score	0.004	0.006	0.002	0.725	1.000	0.001	0.005	0.001	0.007	0.313	0.006
Political competition index	0.558	0.008	0.004	0.015	1.000	0.654	0.007	0.002	0.234	0.010	0.787
Presidential systems	0.084	0.059	0.969	0.130	0.967	0.594	0.906	0.012	0.019	0.284	0.758
Plurality systems	0.503	0.054	0.824	0.716	0.881	0.016	0.068	0.369	0.016	0.289	0.052
Political Rights index	0.548	0.818	0.917	0.738	0.004	0.642	0.894	0.359	0.013	0.316	0.009
GDP per capita	0.968	0.883	0.749	0.652	0.722	0.441	0.458	0.701	0.790	0.479	0.917
					Panel B: Central Government						
Centralization	0.864	0.255	0.019	0.136	0.011	0.944	0.056	0.070	0.917	0.060	1.000
Warfare score	0.614	0.319	0.154	0.608	0.999	0.191	0.198	0.133	0.353	0.454	0.990
Land area	0.948	0.435	0.996	0.622	0.005	0.683	0.248	0.350	0.981	0.308	0.916
Population	0.091	0.026	0.032	0.036	0.199	0.692	0.013	0.007	0.992	0.021	0.049
Dependency share $<$ 15	0.950	0.379	0.006	0.008	0.001	0.219	0.531	0.001	0.343	0.470	1.000
Dependency share $>$ 64	0.020	0.006	0.008	0.010	0.049	0.003	0.007	0.001	0.343	0.007	0.012
Urbanization	0.957	0.006	0.007	0.008	0.049	0.003	0.522	0.038	0.325	0.005	1.000
Population growth	0.830	0.015	0.324	0.532	0.001	0.002	0.536	0.002	0.009	0.462	0.043
Trade openness	0.190	0.005	0.005	0.056	0.019	0.001	0.773	0.001	0.955	0.136	0.990
Term of trades (ToT)	0.012	1.000	1.000	0.004	0.018	0.033	0.014	0.002	0.839	0.012	0.014
Trade openness $\times$ ToT	0.001	1.000	1.000	0.001	0.015	0.000	0.001	0.092	0.897	0.002	0.999
Gross inequality	0.980	0.325	0.156	0.159	0.080	0.062	0.397	0.130	0.578	0.223	0.722
Central government debt	0.741	0.837	0.018	0.004	0.268	0.003	0.447	1.000	0.001	0.009	0.043
FDI liabilities	0.996	0.990	0.003	0.552	0.002	0.000	0.487	0.944	0.441	0.023	0.003
Inflation	1.000	1.000	0.000	0.522	0.000	0.002	0.527	0.959	0.428	0.977	0.039
Democracy score	0.006	0.937	0.485	0.012	1.000	0.001	0.478	0.960	0.348	0.130	0.993
Political competition index	0.789	0.889	0.527	0.020	0.003	0.002	0.004	0.003	0.002	0.002	1.000
Presidential systems	0.109	0.856	0.034	0.128	0.960	0.305	0.038	0.027	0.018	0.182	0.067
Plurality systems	0.096	0.057	0.465	0.119	0.881	0.316	0.438	0.030	0.016	0.010	0.065
Political Rights index	0.759	0.871	0.004	0.584	0.931	0.002	0.489	1.000	0.361	0.002	0.009
GDP per capita	0.742	0.912	0.978	0.592	0.995	0.180	0.528	0.484	0.451	0.335	0.881

Table B13: **Linear Bayesian Model Averaging Estimations**

The table provides the Bayesian Model Averaging estimation of the baseline model without taking into account the endogeneity of the determinants. Time and country fixed effects (unreported) are included in each model.

	General Government			Central Government		
	PIP	Posterior Mean	Posterior SD	PIP	Posterior Mean	Posterior SD
Centralization	1.000	-0.311	0.042	0.148	0.009	0.025
Warfare score	0.060	0.011	0.070	0.074	0.016	0.077
Land area	0.050	-0.920	12.118	0.050	-0.627	10.279
Population	0.170	1.126	3.086	0.062	0.149	1.117
Dependency share ¡15	0.987	-0.248	0.073	0.962	-0.187	0.067
Dependency share ¿64	0.086	-0.022	0.103	0.381	-0.167	0.244
Urbanization	0.702	0.186	0.145	0.876	0.225	0.115
Population growth	0.836	-1.139	0.654	0.765	-0.855	0.583
Trade openness	0.086	-0.002	0.010	0.062	-0.001	0.006
Gross inequality	0.067	0.004	0.023	0.064	0.003	0.020
Central government debt	1.000	0.080	0.013	1.000	0.073	0.012
FDI liabilities	0.903	1.757	0.806	0.924	1.525	0.656
Inflation	0.107	0.000	0.001	0.104	0.000	0.001
Democracy score	0.124	0.037	0.134	0.187	0.063	0.159
Political competition index	0.628	-0.620	0.569	0.792	-0.743	0.489
Presidential systems	0.107	-0.209	0.796	0.190	-0.447	1.097
Plurality systems	0.749	4.422	3.105	0.821	4.418	2.623
Political Rights index	0.552	-0.852	0.878	0.642	-0.857	0.743
GDP per capita	0.259	-0.671	1.323	0.254	-0.551	1.103

Table B14: **Least Squares and Instrumental Variable Estimations**

The table provides the least square and instrumental variables estimations, and IV estimation of the best 3 models (base on the posterior model probability) for the total government general and central expenditure. Time and country fixed effects (unreported) are included in each model. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	General Government Total Expenditure					Central Government Total Expenditure				
	Full		1st	2nd	3rd	Full		1st	2nd	3rd
Estimator	LS		IV			LS		IV		
Centralization	-0.316***	-0.286	-0.408***	-0.393***	-0.384***	0.048	-0.021	-0.141	-0.111	-0.134
	(0.051)	(0.617)	(0.111)	(0.104)	(0.112)	(0.043)	(0.342)	(0.117)	(0.114)	(0.117)
Warfare Score	0.267	-0.745	-0.850	-0.616		0.282	-0.701	-0.856		-0.738
	(0.260)	(0.967)	(0.563)	(0.520)		(0.222)	(0.536)	(0.543)		(0.543)
Land Area	6.861	142.894	117.205		77.624	7.341	114.788	113.701	104.041	
	(60.179)	(162.166)	(91.929)		(89.302)	(51.292)	(89.919)	(103.014)	(101.746)	
Population	3.557	-11.441	-10.432		-9.557	0.034	-11.524	-12.832*	-11.709*	
	(4.873)	(13.017)	(7.708)		(7.790)	(4.153)	(7.218)	(6.962)	(6.853)	
Dependency Share < 15	-0.283***	-0.457	-0.331***	-0.342***	-0.364***	-0.233***	-0.306			
	(0.072)	(0.720)	(0.122)	(0.116)	(0.121)	(0.061)	(0.399)			
Dependency Share > 64	-0.250	-1.261	-0.496	-0.425	-0.404	-0.346	-0.773	0.069	0.232	0.100
	(0.280)	(3.634)	(0.496)	(0.474)	(0.499)	(0.238)	(2.015)	(0.467)	(0.451)	(0.469)
Urbanization	0.249**	-0.345				0.246***	0.023	0.482***	0.545***	0.452***
	(0.107)	(1.977)				(0.092)	(1.096)	(0.132)	(0.124)	(0.131)
Population Growth	-1.414***	-10.096	-4.523**	-4.039**	-4.492**	-1.163***	-4.519			
	(0.493)	(26.705)	(1.771)	(1.665)	(1.795)	(0.420)	(14.807)			
Trade Openness	-0.030	0.200	0.092	0.083	0.106	-0.020	0.075	-0.088	-0.100	-0.099
	(0.025)	(0.662)	(0.070)	(0.064)	(0.070)	(0.022)	(0.367)	(0.069)	(0.068)	(0.065)
Gross Inequality	0.084	0.544	0.162	0.203	0.214	0.076	0.143	-0.363**	-0.384**	-0.300*
	(0.082)	(1.992)	(0.198)	(0.186)	(0.197)	(0.070)	(1.104)	(0.164)	(0.161)	(0.161)
Central Government Debt	0.082***	0.083	0.020	0.034	0.015	0.072***	0.036	-0.036	-0.047	-0.011
	(0.016)	(0.320)	(0.039)	(0.036)	(0.039)	(0.013)	(0.177)	(0.037)	(0.036)	(0.035)
FDI Liabilities	1.946***	1.173	2.554*	1.662	2.159	1.675***	1.717	3.926***	3.571**	3.291**
	(0.677)	(6.275)	(1.538)	(1.395)	(1.536)	(0.577)	(3.479)	(1.498)	(1.465)	(1.472)
Inflation	0.002	-0.036	-0.007	-0.007	-0.011	0.002	-0.001	0.028*	0.028*	0.029*
	(0.002)	(0.142)	(0.017)	(0.016)	(0.017)	(0.002)	(0.079)	(0.016)	(0.016)	(0.016)
Democracy Score	0.286	1.034	0.753	0.841	1.153*	0.280	0.405			
	(0.239)	(1.540)	(0.650)	(0.625)	(0.602)	(0.204)	(0.854)			
Political Competition Index	-1.478***	-5.525	-3.729***	-4.226***	-4.280***	-1.359***	-3.186	-0.048	0.038	-0.353
	(0.450)	(9.602)	(1.279)	(1.178)	(1.243)	(0.384)	(5.324)	(0.404)	(0.396)	(0.375)
Presidential Systems	-1.388	-7.616				-2.076	-3.112	2.014	-0.040	3.205
	(1.787)	(24.066)				(1.523)	(13.344)	(5.566)	(5.355)	(4.706)
Plurality Systems	5.929**	5.275				5.403***	2.253			
	(2.324)	(16.748)				(1.981)	(9.287)			
Political Rights Index	-1.506**	-6.507	-4.343**	-4.584***	-4.241**	-1.204**	-4.194			
	(0.611)	(12.733)	(1.822)	(1.639)	(1.846)	(0.521)	(7.060)			
GDP per Capita	-1.883	-10.029	-10.330***	-7.820**	-10.755***	-1.842	-8.160*	-4.139	-3.928	-0.367
	(1.565)	(7.979)	(3.514)	(3.067)	(3.550)	(1.334)	(4.424)	(3.180)	(3.143)	(2.462)
Posterior Model Probability			0.0328	0.031	0.0208			0.0648	0.0454	0.0296

Appendix C

Table C1: **Variable Description**

Variable	Question	Answer
Help Poor	Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government's responsibility, and that each person should take care of himself.	People (1) - Government (5)
Hard Work Vs Luck	Some people say that people get ahead by their own hard work; others say that lucky breaks or help from other people are more important. Which do you think is most important?	Hard work most important (1), Hard workand luck equally important (2), Luck most important (3)
Medical Help	In general, some people think that it is the responsibility of the government in Washington to see to it that people have help in paying for doctors and hospital bills. Others think that these matters are not the responsibility of the federal government and that people should take care of these things themselves.	People take care (1) - Government help (5)
Country's Problem	Some people think that the government in Washington is trying to do too many things that should be left to individuals and private businesses. Others disagree and think that the government should do even more to solve our country's problems. Still others have opinions somewhere in between.	Government doing too much (1) - Government do more (5)
Death Penalty	Do you favor or oppose the death penalty for persons convicted of murder?	Oppose (0), Favor (1)
Courts	In general, do you think the courts in this area deal too harshly or not harshly enough with criminals?	Too harshly (1), Not harshly enough (2), About right (3)
Discrimination (Black)	Some people think that (Blacks/Negroes/African-Americans) have been discriminated against for so long that the government has a special obligation to help improve their living standards. Others believe that the government should not be giving special treatment to (Blacks/Negroes/African-Americans).	No special treatment (1) - Government help (5)
Discrimination (Homosexual)	What about sexual relations between two adults of the same sex–do you think it is always wrong, almost always wrong, wrong only sometimes, or not wrong at all?	Always wrong (1) - Not wrong at all (4)
Republican Vs Democrats	Generally speaking, do you usually think of yourself as a Republican, Democrat, Independent, or what?	Strong Republican (1) - Strong Democrat (7)
Conservatives Vs Liberal	We hear a lot of talk these days about liberals and conservatives. I'm going to show you a seven-point scale on which the political views that people might hold are arranged from extremely liberal to extremely conservative. Where would you place yourself on this scale?	Extremely conservative (1) - Extremely liberal
Religion in School	The United States Supreme Court has ruled that no state or local government may require the reading of the Lord's Prayer or Bible verses in public schools. What are your views on this–do you approve or disapprove of the court ruling?	Disapprove (0), Approve (1)
Afterlife	Do you believe there is a life after death?	No (0), Yes (1)
Abortion (Any Reason)	Please tell me whether or not you think it should be possible for a pregnant woman to obtain a legal abortion if the woman wants it for any reason.	No (1), Yes (0)
Abortion (Rape)	Please tell me whether or not you think it should be possible for a pregnant woman to obtain a legal abortion if she became pregnant as a result of rape.	No (1), Yes (0)
Fairness	Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair?	Would take advantage of you (0), Would try to be fair (1)
Trust	Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?	Can't be too careful (0), Most people can be trusted (1)
Age	Age divided by 10	
Age Aquare	Age square	
Female	Is the individual female?	No (0), Yes (1)
Black	Is the individual black?	No (0), Yes (1)
Married	Is the individual married?	No (0), Yes (1)
Unemployed	Is the individual unemployed?	No (0), Yes (1)
Secondary	Is the individual attainted or completed secondary education? (constructed - value 1 at degree question)?	No (0), Yes (1)
Tertiary	Is the individual attainted or completed tertiary education? (constructed - value 2, 3, 4 at degree question)?	No (0), Yes (1)
Income	In which of these groups did your total family income, from all sources, fall last year before taxes, that is?	1:Under $1,000 - 12:$25,000 or over

Table C2: **Descriptive Statistics**

Variable	**Obs**	**Mean**	**S.D**	**Min**	**Max**
Help Poor	26,208	3.109	1.180	1	5
Hard Work Vs Luck	32,941	1.455	0.698	1	4
Medical Help	26,292	3.535	1.231	1	5
Country's Problem	25,674	2.958	1.229	1	5
Death Penalty	45,191	0.716	0.451	0	1
Courts	43,748	2.066	0.439	1	3
Discrimination (Black)	26,522	2.468	1.274	1	5
Discrimination (Homosexual)	31,109	1.918	1.298	1	5
Republican Vs Democrats	50,950	4.332	1.990	1	7
Conservatives Vs Liberal	45,467	3.912	1.369	1	7
Religion in School	27,564	0.407	0.491	0	1
Afterlife	34,133	0.799	0.401	0	1
Abortion (Any Reason)	30,200	0.588	0.492	0	1
Abortion (Rape)	35,426	0.179	0.384	0	1
Fairness	30,235	0.602	0.490	0	1
Trust	32,968	0.400	0.490	0	1
Age	51,897	4.523	1.708	1.8	8.9
Age Aquare	51,897	23.37	17.10	3.24	79.21
Female	51,897	0.552	0.497	0	1
Black	51,897	0.135	0.342	0	1
Married	51,897	0.537	0.499	0	1
Unemployed	51,897	0.033	0.179	0	1
Secondary	51,897	0.516	0.500	0	1
Tertiary	51,897	0.277	0.448	0	1
Income	51,897	9.999	2.856	1	12

Table C3: **Least Squares - Ordered Logit - Ordered Probit Estimations**

The table provides the Least Square, (Ordered) Logit and (Ordered) Probit estimations for the full set of socioeconomic beliefs. Standard errors, clustered at the region at 16 level, are in parentheses. All models include region fixed effects, region at the age of 16 fixed effects, time fixed effects and the interaction of region at the age of 16 fixed effects with time fixed effects. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Estimation	Least Squares	(Ordered) Logit	(Ordered) Probit	Least Squares	(Ordered) Logit	(Ordered) Probit	Least Squares	(Ordered) Logit	(Ordered) Probit	Least Squares	(Ordered) Logit	(Ordered) Probit
Variable		Abortion (Any Reason)			Abortion (Rape)			Fairness			Trust	
Age	-0.057***	-0.272***	-0.162***	0.033***	0.245***	0.137***	0.051***	0.204***	0.128***	0.083***	0.388***	0.231***
	(0.014)	(0.069)	(0.041)	(0.007)	(0.054)	(0.030)	(0.011)	(0.055)	(0.033)	(0.014)	(0.064)	(0.040)
Age Square	0.007***	0.034***	0.020***	-0.003***	-0.025***	-0.014***	0.000	0.004	0.002	-0.004***	-0.020***	-0.012***
	(0.001)	(0.007)	(0.004)	(0.001)	(0.005)	(0.003)	(0.001)	(0.006)	(0.003)	(0.001)	(0.006)	(0.004)
Female	0.003	0.013	0.009	0.020***	0.153***	0.083***	0.047***	0.218***	0.133***	-0.021***	-0.100***	-0.062***
	(0.010)	(0.043)	(0.026)	(0.006)	(0.040)	(0.022)	(0.008)	(0.039)	(0.023)	(0.007)	(0.035)	(0.022)
Black	-0.007	-0.031	-0.020	0.053**	0.327**	0.186**	-0.215***	-0.949***	-0.579***	-0.182***	-1.014***	-0.592***
	(0.017)	(0.081)	(0.049)	(0.026)	(0.143)	(0.085)	(0.017)	(0.076)	(0.046)	(0.012)	(0.052)	(0.030)
Married	0.103***	0.464***	0.283***	0.055***	0.416***	0.233***	0.030***	0.138***	0.086***	0.022***	0.097***	0.059***
	(0.012)	(0.054)	(0.033)	(0.005)	(0.030)	(0.017)	(0.005)	(0.027)	(0.016)	(0.003)	(0.011)	(0.007)
Unemployed	-0.016	-0.077	-0.048	-0.008	-0.054	-0.025	-0.007	-0.022	-0.014	-0.031*	-0.158*	-0.092*
	(0.019)	(0.085)	(0.052)	(0.012)	(0.093)	(0.052)	(0.016)	(0.072)	(0.043)	(0.017)	(0.088)	(0.052)
Secondary	-0.088***	-0.446***	-0.267***	-0.080***	-0.507***	-0.290***	0.106***	0.494***	0.298***	0.144***	0.722***	0.433***
	(0.012)	(0.061)	(0.036)	(0.014)	(0.071)	(0.043)	(0.011)	(0.050)	(0.030)	(0.010)	(0.053)	(0.032)
Tertiary	-0.212***	-0.970***	-0.591***	-0.108***	-0.730***	-0.412***	0.248***	1.196***	0.720***	0.315***	1.479***	0.897***
	(0.015)	(0.067)	(0.041)	(0.018)	(0.096)	(0.056)	(0.016)	(0.074)	(0.044)	(0.010)	(0.056)	(0.032)
Income	-0.009***	-0.044***	-0.027***	-0.009***	-0.065***	-0.037***	0.010***	0.049***	0.030***	0.011***	0.059***	0.035***
	(0.001)	(0.007)	(0.004)	(0.002)	(0.008)	(0.005)	(0.001)	(0.007)	(0.004)	(0.001)	(0.007)	(0.004)
Observations	22294	22294	22294	26175	26175	26175	22352	22352	22352	23427	23427	23427
Variable		Discrimination (Black)			Discrimination (Homosexual)			Medical Help			Country's Problem	
Age	-0.089***	-0.150***	-0.083***	-0.015	0.040	0.025	0.045	0.099*	0.052*	-0.104***	-0.179***	-0.094***
	(0.029)	(0.044)	(0.026)	(0.035)	(0.075)	(0.045)	(0.034)	(0.056)	(0.032)	(0.031)	(0.050)	(0.029)
Age Square	0.008***	0.013***	0.007***	-0.011***	-0.029***	-0.017***	-0.012***	-0.020***	-0.011***	0.003	0.005	0.002
	(0.003)	(0.004)	(0.003)	(0.003)	(0.008)	(0.005)	(0.003)	(0.005)	(0.003)	(0.003)	(0.005)	(0.003)
Female	0.056**	0.092**	0.054**	0.125***	0.265***	0.145***	0.108***	0.151***	0.095***	0.195***	0.320***	0.183***
	(0.027)	(0.041)	(0.025)	(0.016)	(0.024)	(0.015)	(0.024)	(0.035)	(0.021)	(0.013)	(0.021)	(0.012)
Black	1.307***	2.001***	1.153***	-0.261***	-0.583***	-0.303***	0.474***	0.754***	0.457***	0.647***	1.034***	0.601***
	(0.049)	(0.084)	(0.046)	(0.027)	(0.035)	(0.019)	(0.043)	(0.066)	(0.041)	(0.050)	(0.082)	(0.047)
Married	-0.084***	-0.127***	-0.076***	-0.303***	-0.576***	-0.333***	-0.143***	-0.222***	-0.127***	-0.114***	-0.180***	-0.106***
	(0.023)	(0.036)	(0.021)	(0.022)	(0.048)	(0.027)	(0.024)	(0.035)	(0.021)	(0.023)	(0.036)	(0.021)
Unemployed	0.059	0.072	0.052	0.012	0.057	0.033	0.160**	0.254**	0.155**	0.170***	0.278***	0.158***
	(0.056)	(0.089)	(0.051)	(0.038)	(0.074)	(0.041)	(0.070)	(0.113)	(0.066)	(0.051)	(0.076)	(0.047)
Secondary	-0.170***	-0.224***	-0.148***	0.168***	0.548***	0.312***	-0.261***	-0.454***	-0.250***	-0.353***	-0.562***	-0.327***
	(0.028)	(0.049)	(0.026)	(0.027)	(0.051)	(0.027)	(0.039)	(0.059)	(0.035)	(0.050)	(0.082)	(0.046)
Tertiary	0.084	0.177**	0.092**	0.634***	1.309***	0.752***	-0.281***	-0.502***	-0.273***	-0.460***	-0.723***	-0.423***
	(0.052)	(0.078)	(0.046)	(0.053)	(0.038)	(0.028)	(0.057)	(0.084)	(0.051)	(0.068)	(0.107)	(0.062)
Income	-0.022***	-0.034***	-0.020***	0.013***	0.034***	0.020***	-0.038***	-0.062***	-0.036***	-0.027***	-0.043***	-0.025***
	(0.005)	(0.009)	(0.005)	(0.004)	(0.006)	(0.004)	(0.003)	(0.005)	(0.003)	(0.006)	(0.009)	(0.005)
Observations	19676	19676	19676	22884	22884	22884	19482	19482	19482	19066	19066	19066

Table continued on next page ...

Table C3 continued

Estimation	Least Squares	(Ordered) Logit	(Ordered) Probit	Least Squares	(Ordered) Logit	(Ordered) Probit	Least Squares	(Ordered) Logit	(Ordered) Probit	Least Squares	(Ordered) Logit	(Ordered) Probit
Variable		Death Penalty			Courts			Republican Vs Democrats			Conservatives Vs Liberal	
Age	0.039***	0.218***	0.129***	-0.004	-0.013	-0.008	0.312***	0.306***	0.177***	-0.125***	-0.178***	-0.098***
	(0.010)	(0.053)	(0.031)	(0.009)	(0.053)	(0.026)	(0.030)	(0.031)	(0.015)	(0.034)	(0.047)	(0.027)
Age Square	-0.004***	-0.020***	-0.012***	0.002**	0.010**	0.005**	-0.031***	-0.029***	-0.017***	0.004	0.006	0.003
	(0.001)	(0.006)	(0.003)	(0.001)	(0.005)	(0.002)	(0.004)	(0.004)	(0.002)	(0.003)	(0.004)	(0.002)
Female	-0.079***	-0.437***	-0.261***	-0.005	-0.035	-0.012	0.181***	0.169***	0.096***	0.099***	0.144***	0.078***
	(0.007)	(0.036)	(0.021)	(0.005)	(0.027)	(0.014)	(0.037)	(0.034)	(0.020)	(0.023)	(0.030)	(0.018)
Black	-0.254***	-1.176***	-0.713***	-0.098***	-0.623***	-0.303***	1.560***	1.533***	0.912***	0.318***	0.440***	0.244***
	(0.020)	(0.092)	(0.055)	(0.014)	(0.093)	(0.042)	(0.084)	(0.091)	(0.053)	(0.030)	(0.048)	(0.024)
Married	0.035***	0.192***	0.112***	0.009***	0.041**	0.030***	-0.253***	-0.233***	-0.131***	-0.281***	-0.377***	-0.217***
	(0.009)	(0.051)	(0.030)	(0.003)	(0.018)	(0.009)	(0.037)	(0.034)	(0.020)	(0.016)	(0.022)	(0.012)
Unemployed	-0.029***	-0.154***	-0.092***	-0.033*	-0.210*	-0.100*	0.146**	0.123**	0.071*	0.058	0.075	0.045
	(0.011)	(0.059)	(0.034)	(0.020)	(0.122)	(0.058)	(0.071)	(0.060)	(0.039)	(0.056)	(0.077)	(0.043)
Secondary	0.035**	0.202**	0.122**	0.016***	0.095***	0.050***	-0.319***	-0.298***	-0.175***	-0.091***	-0.124***	-0.071***
	(0.018)	(0.093)	(0.055)	(0.005)	(0.027)	(0.014)	(0.050)	(0.046)	(0.028)	(0.027)	(0.035)	(0.022)
Tertiary	-0.064**	-0.337**	-0.199**	0.080***	0.489***	0.236***	-0.413***	-0.382***	-0.218***	0.044	0.030	0.030
	(0.030)	(0.156)	(0.093)	(0.005)	(0.037)	(0.017)	(0.065)	(0.062)	(0.037)	(0.055)	(0.074)	(0.041)
Income	0.010***	0.049***	0.030***	0.002*	0.013*	0.007**	-0.012*	-0.011*	-0.007*	-0.008***	-0.013***	-0.005**
	(0.002)	(0.010)	(0.006)	(0.001)	(0.007)	(0.003)	(0.007)	(0.007)	(0.004)	(0.003)	(0.003)	(0.002)
Observations	33376	33376	33376	32272	32272	32272	36560	36560	36560	32736	32736	32736
Variable		Help Poor			Hard Work Vs Luck			Religion in School			Afterlife	
Age	0.082***	0.149***	0.082***	0.060***	0.192***	0.113***	-0.098***	-0.435***	-0.265***	0.006	0.039	0.029
	(0.027)	(0.048)	(0.026)	(0.013)	(0.039)	(0.023)	(0.015)	(0.068)	(0.041)	(0.006)	(0.036)	(0.021)
Age Square	-0.015***	-0.026***	-0.015***	-0.005***	-0.016***	-0.009***	0.006***	0.026***	0.016***	0.000	-0.003	-0.002
	(0.003)	(0.005)	(0.003)	(0.001)	(0.004)	(0.002)	(0.001)	(0.007)	(0.004)	(0.001)	(0.004)	(0.002)
Female	0.163***	0.281***	0.160***	-0.067***	-0.183***	-0.118***	-0.036***	-0.164***	-0.101***	0.062***	0.415***	0.237***
	(0.015)	(0.022)	(0.014)	(0.013)	(0.039)	(0.024)	(0.006)	(0.028)	(0.017)	(0.006)	(0.030)	(0.017)
Black	0.590***	0.995***	0.581***	0.091***	0.253***	0.153***	-0.123***	-0.627***	-0.372***	-0.017*	-0.123*	-0.072*
	(0.038)	(0.065)	(0.040)	(0.017)	(0.052)	(0.029)	(0.018)	(0.086)	(0.052)	(0.010)	(0.067)	(0.037)
Married	-0.080***	-0.144***	-0.078***	-0.054***	-0.149***	-0.095***	-0.046***	-0.207***	-0.127***	0.036***	0.237***	0.135***
	(0.021)	(0.033)	(0.020)	(0.007)	(0.021)	(0.012)	(0.008)	(0.035)	(0.022)	(0.006)	(0.046)	(0.026)
Unemployed	0.115**	0.214***	0.113**	0.067***	0.187***	0.109***	-0.022	-0.090	-0.052	-0.009	-0.046	-0.030
	(0.046)	(0.068)	(0.044)	(0.014)	(0.045)	(0.024)	(0.017)	(0.075)	(0.047)	(0.007)	(0.041)	(0.023)
Secondary	-0.296***	-0.532***	-0.288***	0.031***	0.128***	0.068***	0.021*	0.121**	0.071**	0.063***	0.394***	0.225***
	(0.038)	(0.063)	(0.037)	(0.010)	(0.032)	(0.019)	(0.011)	(0.055)	(0.034)	(0.009)	(0.042)	(0.025)
Tertiary	-0.364***	-0.648***	-0.351***	0.070***	0.283***	0.150***	0.190***	0.854***	0.522***	0.059***	0.358***	0.206***
	(0.052)	(0.086)	(0.050)	(0.015)	(0.043)	(0.027)	(0.009)	(0.047)	(0.028)	(0.007)	(0.038)	(0.022)
Income	-0.044***	-0.075***	-0.043***	-0.008***	-0.022***	-0.014***	0.002**	0.011**	0.007**	0.000	0.000	0.000
	(0.004)	(0.008)	(0.004)	(0.003)	(0.007)	(0.004)	(0.001)	(0.004)	(0.003)	(0.001)	(0.008)	(0.005)
Observations	19428	19428	19428	23761	23761	23761	20261	20261	20261	25360	25360	25360

Table C4: **Endogenous Effect - Simple Average**

The table presents the endogenous effects of equation 2.3 when social identity (w_{ij} is based on equation 2.6). All models include region fixed effects, region at the age of 16 fixed effects, time fixed effects and the interaction of region at the age of 16 fixed effects with time fixed effects. Standard errors, clustered at the region at 16 level, are in parentheses. *significant at 10%,**significant at 5%, ***significant at 1%.

	Age			
	10 - 17	**18 - 25**	**26 - 33**	**34 - 41**
Abortion (Any Reason)	1.138***	1.240***	1.273***	1.553***
	(0.347)	(0.209)	(0.162)	(0.230)
Abortion (Rape)	0.529	0.759***	0.941***	0.767***
	(0.345)	(0.127)	(0.232)	(0.190)
Fairness	0.534***	0.512***	0.664***	0.215
	(0.185)	(0.172)	(0.130)	(0.137)
Trust	0.311	0.261*	0.626***	0.615***
	(0.201)	(0.138)	(0.137)	(0.136)
Discrimination (Black)	0.386***	0.350***	0.426***	0.163
	(0.132)	(0.100)	(0.104)	(0.181)
Discrimination (Homosexual)	1.164***	1.615***	1.464***	1.180***
	(0.165)	(0.142)	(0.170)	(0.170)
Medical Help	0.295**	0.342***	0.345***	0.290*
	(0.139)	(0.081)	(0.126)	(0.167)
Country's Problem	0.299***	0.286***	0.451***	0.248*
	(0.105)	(0.073)	(0.109)	(0.139)
Death Penalty	0.479***	0.769***	0.597***	0.648***
	(0.131)	(0.138)	(0.166)	(0.091)
Courts	-0.210	0.299***	0.292*	0.015
	(0.236)	(0.115)	(0.153)	(0.075)
Republican Vs Democrats	0.996***	1.186***	1.400***	1.254***
	(0.151)	(0.173)	(0.199)	(0.199)
Conservatives Vs Liberal	1.504***	1.979***	1.740***	1.712***
	(0.217)	(0.216)	(0.204)	(0.199)
Preference for Redistribution	0.057	0.293**	0.161	0.189
	(0.083)	(0.142)	(0.112)	(0.126)
Hard Work Vs Luck	0.204	0.305***	0.355	0.266
	(0.151)	(0.103)	(0.238)	(0.166)
Religion in School	0.888***	1.187***	1.103***	1.450***
	(0.128)	(0.216)	(0.232)	(0.243)
Afterlife	0.936***	1.215***	1.603***	1.808***
	(0.148)	(0.161)	(0.168)	(0.115)

Table C5: **Endogenous Effect - Non Movers**

The table presents the endogenous effects of equation 2.3 when social identity (w_{ij} is based on equation 2.4). Refer only to individual that have the same resident region at the time of the survey and at the age of 16. All models include region fixed effects, region at the age of 16 fixed effects, time fixed effects and the interaction of region at the age of 16 fixed effects with time fixed effects. Standard errors, clustered at the region at 16 level, are in parentheses. *significant at 10%,**significant at 5%, ***significant at 1%.

	Age			
	10 - 17	**18 - 25**	**26 - 33**	**34 - 41**
Help Poor	0.014	0.126*	0.101***	0.122***
	(0.037)	(0.067)	(0.038)	(0.041)
Hard Work Vs Luck	0.043	0.102**	0.152	0.069
	(0.063)	(0.041)	(0.099)	(0.083)
Medical Help	0.133**	0.165***	0.148***	0.187**
	(0.060)	(0.043)	(0.056)	(0.076)
Country's Problem	0.131**	0.118***	0.227***	0.137**
	(0.067)	(0.044)	(0.055)	(0.056)
Death Penalty	0.155***	0.281***	0.248***	0.307***
	(0.054)	(0.057)	(0.061)	(0.039)
Courts	-0.120	0.230***	0.152**	0.049
	(0.110)	(0.044)	(0.073)	(0.048)
Discrimination (Black)	0.109**	0.192***	0.161***	0.084
	(0.047)	(0.031)	(0.045)	(0.092)
Discrimination (Homosexual)	0.435***	0.592***	0.572***	0.497***
	(0.067)	(0.049)	(0.070)	(0.079)
Republican Vs Democrats	0.439***	0.512***	0.571***	0.495***
	(0.074)	(0.086)	(0.101)	(0.098)
Conservatives Vs Liberal	0.627***	0.783***	0.713***	0.725***
	(0.075)	(0.076)	(0.068)	(0.063)
Religion in School	0.322***	0.467***	0.477***	0.549***
	(0.053)	(0.077)	(0.071)	(0.079)
Afterlife	0.314***	0.448***	0.643***	0.670***
	(0.055)	(0.088)	(0.062)	(0.057)
Abortion (Any Reason)	0.420**	0.545***	0.522***	0.649***
	(0.181)	(0.107)	(0.067)	(0.107)
Abortion (Rape)	0.237**	0.291***	0.390***	0.275***
	(0.105)	(0.068)	(0.091)	(0.071)
Fairness	0.269**	0.295***	0.310***	0.139**
	(0.123)	(0.084)	(0.049)	(0.062)
Trust	0.181*	0.138**	0.356***	0.244***
	(0.101)	(0.068)	(0.071)	(0.056)

Table C6: **Decomposition of Social Identity - Wild Bootstrap**

Replication of Tables 2.3, with the use of Cameron, Gelbach, and Miller (2008) wild bootstrap. All models include region fixed effects, region at the age of 16 fixed effects, time fixed effects and the interaction of region at the age of 16 fixed effects with time fixed effects. *significant at 10%,**significant at 5%, ***significant at 1%.

	Age			
	10 - 17	**18 - 25**	**26 - 33**	**34 - 41**
		Help Poor		
Euclidean Distance	0.035	0.119*	0.059	0.129***
Father Education	-0.017	0.115**	-0.022	-0.023
Mother Education	0.098*	0.079	-0.065	0.071
Race	-0.025	-0.040	0.075	0.066
Religion	0.001	0.217**	0.176***	0.252***
		Hard Work Vs Luck		
Euclidean Distance	0.061	0.120***	0.122	0.099
Father Education	0.015	-0.019	0.065	0.107
Mother Education	0.077	0.122**	0.025	-0.096
Race	-0.067	-0.018	-0.078	0.055
Religion	0.119	0.203**	0.181**	0.124
		Medical Help		
Euclidean Distance	0.123*	0.144***	0.142**	0.196**
Father Education	0.037	0.074	0.003	0.164***
Mother Education	0.111	0.033	0.072	0.214***
Race	0.031	0.036	0.152	0.164**
Religion	0.037	0.115	0.099*	0.096
		Country's Problem		
Euclidean Distance	0.117**	0.115**	0.193***	0.149***
Father Education	0.071	0.095**	0.108	0.015
Mother Education	0.126	0.004	0.163***	0.068
Race	0.216**	0.107***	0.199***	0.279***
Religion	-0.020	0.131	0.112*	0.173***
		Death Penalty		
Euclidean Distance	0.166***	0.309***	0.233**	0.272***
Father Education	0.247**	0.300***	0.227***	0.207***
Mother Education	0.195	0.333***	0.170**	0.225***
Race	0.006	0.192*	0.062	0.239*
Religion	0.163**	0.265***	0.267*	0.299***
		Courts		
Euclidean Distance	-0.061	0.156***	0.131*	0.109
Father Education	-0.056	0.100	0.145	0.073
Mother Education	-0.190	0.055	0.067	0.028
Race	-0.019	0.028	0.066	0.071
Religion	-0.060	0.091*	0.091	0.132*
		Discrimination (Black)		
Euclidean Distance	0.130**	0.134***	0.173***	0.107
Father Education	0.155**	0.049	0.099	0.021
Mother Education	0.111	0.047	0.011	-0.025
Race	0.154	0.147	0.246	0.122
Religion	0.013	0.177***	0.172***	0.154
		Discrimination (Homosexual)		
Euclidean Distance	0.422***	0.596***	0.554***	0.527***
Father Education	0.054	0.305***	0.242***	0.064
Mother Education	0.090**	0.383***	0.244*	0.057
Race	-0.034	0.248**	0.173*	0.050
Religion	0.442***	0.434***	0.615***	0.540***

Table continued on next page ...

Table C6 continued

	Age			
	10 - 17	18 - 25	26 - 33	34 - 41
	Republican Vs Democrats			
Euclidean Distance	0.423***	0.486***	0.557***	0.497***
Father Education	0.096	0.189**	0.257***	0.164**
Mother Education	0.222***	0.208***	0.356***	0.275**
Race	0.184*	0.193	0.370***	0.080
Religion	0.341***	0.508***	0.621***	0.570***
	Conservatives Vs Liberal			
Euclidean Distance	0.600***	0.803***	0.714***	0.763***
Father Education	0.146	0.325***	0.252**	0.176*
Mother Education	0.238**	0.406**	0.289**	0.319***
Race	0.101	0.261*	0.017	0.084
Religion	0.514***	0.641***	0.636***	0.622***
	Religion in School			
Euclidean Distance	0.356***	0.479***	0.472***	0.585***
Father Education	0.103	0.197***	0.089	0.331***
Mother Education	0.133	0.098	0.151***	0.308***
Race	0.052	0.168*	0.019	0.201**
Religion	0.324***	0.444***	0.443***	0.499***
	After life			
Euclidean Distance	0.360***	0.489***	0.639***	0.741***
Father Education	-0.026	0.007	0.157*	0.264***
Mother Education	-0.025	0.124	0.150**	0.205**
Race	-0.029	0.005	0.236***	0.187**
Religion	0.400***	0.419***	0.567***	0.641***
	Abortion (Any Reason)			
Euclidean Distance	0.483**	0.534***	0.527***	0.650***
Father Education	0.049	0.122	0.144	0.270**
Mother Education	0.121	0.117	0.032	0.323**
Race	0.087	0.060	0.084	0.156
Religion	0.314**	0.461***	0.485***	0.539***
	Abortion (Rape)			
Euclidean Distance	0.204	0.274***	0.333***	0.273***
Father Education	-0.114	0.004	0.148*	-0.010
Mother Education	0.006	0.112	0.200*	0.002
Race	-0.001	0.183	0.286***	0.224**
Religion	0.257*	0.422***	0.431***	0.539***
	Fairness			
Euclidean Distance	0.262**	0.225**	0.286***	0.194**
Father Education	0.129	0.326***	0.133*	0.078
Mother Education	0.239**	0.301**	0.090	0.114
Race	0.110	0.249*	0.266***	0.282***
Religion	0.185	0.017	0.421**	0.181**
	Trust			
Euclidean Distance	0.192*	0.137*	0.299***	0.284***
Father Education	-0.014	0.069	0.170*	0.231***
Mother Education	0.071	0.134	0.143*	0.150
Race	-0.004	0.069	0.249***	0.318***
Religion	0.213*	0.085	0.246*	0.250***

Table C7: **Endogenous Effect - Global Weights**

The table presents the endogenous effect for the model using global weights his is the case where the $N \times N$ distance matrix D (and the relevant sociomatrix W) is the Hadamard product of D^{GD} and D^{P}, only (see equation 2.4). Standard errors, clustered at the region at 16 level, are in parentheses. *significant at 10%,**significant at 5%, ***significant at 1%.

	Age			
	10 - 17	**18 - 25**	**26 - 33**	**34 - 41**
Help Poor	-0.073	0.026	-0.084	-0.020
	(0.109)	(0.120)	(0.068)	(0.075)
Hard Work Vs Luck	0.169	0.265	0.067	-0.181
	(0.177)	(0.220)	(0.180)	(0.161)
Medical Help	-0.146	0.075	0.114	-0.011
	(0.116)	(0.138)	(0.099)	(0.153)
Country's Problem	0.248***	0.105	0.117	-0.018
	(0.081)	(0.089)	(0.094)	(0.146)
Death Penalty	0.199	0.296***	0.090	-0.112
	(0.126)	(0.082)	(0.139)	(0.136)
Courts	-0.157	0.544*	0.152	-0.137
	(0.350)	(0.308)	(0.240)	(0.196)
Discrimination (Black)	0.119	-0.086	0.016	-0.168
	(0.236)	(0.144)	(0.160)	(0.189)
Discrimination (Homosexual)	0.052	0.172	0.153*	-0.118
	(0.164)	(0.166)	(0.088)	(0.118)
Republican Vs Democrats	0.137	-0.010	0.242***	0.001
	(0.200)	(0.131)	(0.086)	(0.105)
Conservatives Vs Liberal	0.305	0.061	0.120	-0.150
	(0.201)	(0.245)	(0.161)	(0.207)
Religion in School	0.149	0.144	-0.116	0.256**
	(0.207)	(0.107)	(0.129)	(0.119)
Afterlife	0.008	-0.063	0.255**	0.350***
	(0.111)	(0.097)	(0.106)	(0.095)
Abortion (AnyReason)	-0.129	0.087	-0.050	0.076
	(0.358)	(0.260)	(0.137)	(0.095)
Abortion (Rape)	-0.064	-0.112	0.195	-0.134
	(0.476)	(0.153)	(0.238)	(0.147)
Fairness	0.056	-0.011	0.092	-0.082
	(0.175)	(0.148)	(0.064)	(0.103)
Trust	0.216	-0.176*	0.059	0.117
	(0.300)	(0.096)	(0.154)	(0.135)

Appendix D

Table D1: **US vs Europe Descriptive Statistics**

	US	Europe	Austria	Belgium	Denmark	Finland	France	Germany	Netherlands	Norway	Sweden	UK
GDP per capita	41784	32196	31974	31114	32621	29448	29399	31077	34013	39456	32627	30237
Growth	1.6%	2.2%	2.7%	1.9%	1.9%	2.1%	1.5%	2.3%	2.0%	2.9%	2.1%	2.1%
Total-Factor Productivity	100%	94%	84%	101%	92%	79%	102%	85%	103%	119%	88%	86%
Household Consumption (% of GDP)	67%	53%	58%	57%	50%	49%	57%	59%	51%	38%	48%	64%
Gross Capital Formation (% of GDP)	25%	26%	29%	28%	25%	30%	25%	25%	23%	26%	27%	21%
Government Consumption (% of GDP)	11%	18%	16%	19%	21%	19%	19%	15%	19%	15%	22%	18%
Merchandise Exports (% of GDP)	9%	49%	43%	98%	50%	44%	26%	40%	68%	54%	47%	24%
Merchandise Imports (% of GDP)	13%	48%	50%	102%	49%	42%	29%	39%	64%	33%	45%	30%
Trade Openness (% of GDP)	22%	98%	93%	199%	99%	86%	55%	79%	132%	87%	92%	55%
Pre-tax, Pre-transfer Gini Index	47.7	45.3	43.7	45.4	42.1	44.6	47.5	47.2	45.9	41.3	44.8	50.8
Post-tax, Post-transfer Gini Index	35.5	25.8	27.0	25.0	23.2	23.5	28.3	27.3	25.3	23.9	21.9	32.5
Absolute Redistribution	12.2	19.6	16.7	20.4	19.0	21.2	19.2	19.9	20.6	17.4	22.9	18.3
Relative Redistribution	25.6	43.1	37.8	44.9	44.6	47.4	40.4	42.0	44.8	41.8	51.2	36.1
Income share held by lowest 20%	5%	8%	8%	8%	8%	9%	8%	8%	8%	9%	9%	7%
Income share held by second 20%	11%	14%	13%	14%	14%	14%	13%	13%	14%	14%	14%	12%
Income share held by third 20%	16%	17%	17%	18%	18%	17%	17%	17%	17%	18%	18%	17%
Income share held by fourth 20%	23%	23%	23%	23%	23%	22%	22%	22%	23%	23%	23%	23%
Income share held by highest 20%	46%	38%	39%	38%	37%	37%	40%	40%	38%	37%	36%	42%
Average Annual Working Hours	1790	1600	1783	1606	1486	1746	1595	1521	1471	1479	1592	1718
Workers (% of Total Employment)	92%	87%	86%	83%	90%	85%	87%	89%	87%	90%	90%	87%
Labor Force Participation Rate	75%	74%	72%	64%	80%	75%	69%	73%	74%	78%	79%	76%
Human Capital Index	3.54	3.16	3.07	2.89	3.23	3.08	2.87	3.49	3.09	3.32	3.18	3.39
No Schooling (% of Population)	1%	2%	1%	5%	1%	1%	4%	3%	2%	2%	2%	2%
Primary (% of Population)	5%	31%	35%	27%	26%	44%	38%	36%	18%	27%	25%	37%
Secondary (% of Population)	48%	48%	55%	48%	52%	34%	43%	45%	61%	50%	52%	42%
Tertiary (% of Population)	46%	18%	9%	21%	20%	21%	15%	16%	20%	21%	21%	19%
Average Years of Schooling	12.7	9.7	8.9	9.6	9.7	8.6	8.4	9.8	10.5	10.7	10.9	9.7
Atheists	14%	14%	10%	13%	7%	12%	16%	22%	23%	8%	9%	16%
Protestant	44%	42%	5%	1%	87%	86%	2%	34%	24%	87%	84%	9%
Roman Catholic	28%	30%	76%	78%	1%	0%	70%	33%	33%	1%	2%	9%
Eastern Orthodox	2%	1%	0%	1%	0%	1%	1%	1%	0%	0%	1%	1%
Judaism	2%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%
Sunni	1%	1%	0%	2%	2%	0%	3%	1%	0%	1%	2%	1%
Shi'a	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Buddhism	1%	0%	0%	0%	0%	0%	1%	0%	1%	1%	0%	0%
Hindu	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%
Genetic Distance	0.000	0.012	0.010	0.010	0.010	0.017	0.010	0.010	0.010	0.017	0.010	0.011
Linguistic Distance	0.000	0.827	0.894	0.894	0.931	1.000	0.966		0.894	0.931	0.931	0.000
Religious Distance	0.000	0.577	0.577	0.577	0.577	0.577	0.577	0.577	0.577	0.577	0.577	0.577
Ethnic Fractionalization	0.490	0.149	0.107	0.555	0.082	0.131	0.103	0.168	0.105	0.059	0.060	0.121
Linguistic Fractionalization	0.251	0.206	0.152	0.541	0.105	0.141	0.122	0.164	0.514	0.067	0.197	0.053
Religious Fractionalization	0.824	0.403	0.415	0.213	0.233	0.253	0.403	0.657	0.722	0.205	0.234	0.694
Preference for Redistribution	4.215	4.716	3.891	4.906	4.480	4.783	4.423	5.282	5.023	5.138	4.606	4.628
Ideology (Right vs Left)	5.173	5.603	5.587	5.554	5.436	5.204	6.120	5.995	5.607	5.339	5.528	5.657
Hard Work vs Luck	3.654	4.765	4.066	4.832	6.057	3.953	4.911	4.677	4.968	4.919	4.555	4.708

Table D2: **Countries**

Country	**Wave 2005 - 2009**	**Wave 2010 - 2014**	**Both Wave**
Algeria		464	464
Australia	1,159	964	2,123
Brazil	1,285		1,285
Bulgaria	636		636
Burkina Faso	535		535
Canada	1,358		1,358
Chile	655	629	1,284
Colombia		1,171	1,171
Cyprus	930	868	1,798
Ecuador		1,126	1,126
Egypt	2,014		2,014
Finland	826		826
France	826		826
Ghana	615	1,444	2,059
Hungary	826		826
India	620		620
Indonesia	1,286		1,286
Iraq		889	889
Italy	513		513
Japan	711	1,313	2,024
Lebanon		735	735
Libya		1,256	1,256
Malaysia		1,244	1,244
Mali	454		454
Mexico	1,127	1,773	2,900
Morocco	293	120	413
Netherlands	596	1,404	2,000
New Zealand	506	492	998
Nigeria		1,599	1,599
Norway	914		914
Pakistan		928	928
Peru	991	976	1,967
Philippines		1,161	1,161
Poland	662	710	1,372
Romania	805	1,033	1,838
South Africa	2,202		2,202
South Korea	1,178	1,158	2,336
Spain	852	898	1,750
Sweden	899	1,019	1,918
Switzerland	970		970
Taiwan	1,135	1,067	2,202
Thailand	1,376		1,376
Trinidad and Tobago	628	533	1,161
Tunisia		577	577
Turkey	1,021	1,320	2,341
United Kingdom	668		668
United States	1,115	2,033	3,148
Uruguay	809	805	1,614
Vietnam	1,328		1,328
Zambia	817		817
Zimbabwe		1,492	1,492
All Countries	36,141	33,201	**69,342**

Table D3: **Preferences for Redistribution**

The table presents the mean preferences for redistribution, per country and wave.

Country	**Wave 2005 - 2009**	**Wave 2010 - 2014**	**Both Wave**
Algeria		7.1	7.1
Australia	5.2	5.2	5.2
Brazil	6.6		6.6
Bulgaria	6.9		6.9
Burkina Faso	6.6		6.6
Canada	5.1		5.1
Chile	6.0	6.7	6.3
Colombia		6.3	6.3
Cyprus	6.4	7.3	6.8
Ecuador		5.4	5.4
Egypt	7.7		7.7
Finland	5.0		5.0
France	5.0		5.0
Ghana	6.5	6.0	6.1
Hungary	6.1		6.1
India	6.2		6.2
Indonesia	5.4		5.4
Iraq		8.0	8.0
Italy	6.0		6.0
Japan	6.9	7.1	7.0
Lebanon		6.1	6.1
Libya		7.0	7.0
Malaysia		5.0	5.0
Mali	5.8		5.8
Mexico	5.7	6.4	6.1
Morocco	7.3	6.4	7.0
Netherlands	5.6	5.1	5.3
New Zealand	4.6	4.7	4.6
Nigeria		6.7	6.7
Norway	5.9		5.9
Pakistan		5.2	5.2
Peru	5.1	5.8	5.5
Philippines		4.9	4.9
Poland	5.8	6.4	6.1
Romania	5.6	5.7	5.7
South Africa	5.8		5.8
South Korea	7.4	7.5	7.4
Spain	6.5	6.6	6.6
Sweden	4.5	5.3	5.0
Switzerland	4.9		4.9
Taiwan	5.8	5.6	5.7
Thailand	5.0		5.0
Trinidad and Tobago	5.9	4.7	5.4
Tunisia		7.5	7.5
Turkey	6.1	6.6	6.4
United Kingdom	4.9		4.9
United States	5.0	4.6	4.7
Uruguay	6.1	6.0	6.0
Vietnam	5.0		5.0
Zambia	6.4		6.4
Zimbabwe		7.1	7.1
All Countries	5.9	6.1	**6.0**

Table D4: **Informations on the Preferences for Redistribution and it Determinants**

	Description
Preferences for Redistribution	People should take more responsibility to provide for themselves (point 1) Vs Government should take more responsibility to ensure that everyone is provided for (point 10)
Age	Age of the individual / 10
Age Square	Age Square
Female	Dummy taking the value 1 if the individual is female
Married	Dummy taking the value 1 if the individual is married
Unemployed	Dummy taking the value 1 if the individual is unemployed
Secondary	Dummy taking the value 1 if the individual's higher level of education is secondary
Tertiary	Dummy taking the value 1 if the individual's higher level of education is tertiary
Income	Income scale: Lower step (1) - Higher step (10)
Ideology	Political scale: Right (1) - Left (10)
Hard Work Vs Luck	In the long run, hard work usually brings a better life (point 1) Vs Hard work doesn't generally bring success, it's more a matter of luck and connections (point 10)
Buddhist	Dummy taking the value 1 if the individual is Buddhist
Hindu	Dummy taking the value 1 if the individual is Hindu
Jew	Dummy taking the value 1 if the individual is Jew
Muslim	Dummy taking the value 1 if the individual is Muslim
Orthodox	Dummy taking the value 1 if the individual is Orthodox
Protestant	Dummy taking the value 1 if the individual is Protestant
Catholic	Dummy taking the value 1 if the individual is Catholic
Other Religion	Dummy taking the value 1 if the individual is other religion denomination

Table D5: **Informations on the Threshold Variables**

Data comes from the Workd Values Suvey (WVS), the Penn World Tables (PWT), the Barro and Lee Website (BL), the Standardized World Income Inequality database (SWIID), the Polity IV Project (PIV), the Political Risk Services dataset (PRS), Spolaore and Wacziarg (2016) (SW), Alesina, Devleeschauwer, Easterly, Kurlat, and Wacziarg (2003) (ADEKQ), the Quality of Government dataset (QoG) and the CEPII databases (CEPII)

	Description	**Source**
Prefer. for Redistr. (Country)	Mean score of the Preferences for Redistribution variable	WVS
Hard Work Vs Luck (Country)	Mean score of the Hard Work Vs Luck variable	WVS
General Trust	Share of the individuals who believe that most people can be trusted	WVS
Freedom of Choice	Mean score of the Freedom variable: Freedom of choice and control over the way life turns out ranging from None at all (point 1) to A great deal (point 10)	WVS
GDP per Capita	Real GDP per capita (million 2011US$)	PWT
Total Factor Productivity	Welfare-relevant Total-factor productivity (TFP)	PWT
Human Capital Index	Human capital index	PWT
Schooling	Average years of total schooling (population 25 and over)	BL
Gini (Net)	Gini index of inequality using the post-tax, post-transfer household income	SWIID
Gini (Market)	Gini index of inequality using the pre-tax, pre-transfer household income	SWIID
Democracy	Revised combined polity score, ranging from strongly democratic (+10) to strongly autocratic (-10)	PIV
Executive constraints	Executive constraints on decision rules, ranging from unlimited authority (1) to executive parity or subordination (7)	PIV
Believe in God	Share of the individuals who believe in God	WVS
Importance of God	Mean score of the Important of God in life variable: ranging from Not at all important (point 1) to Very important) (point 10)	WVS
Government Stability	A measure of both of the government's ability to carry out its declared programs, and its ability to stay in office, ranging from 0 to 12, with higher values, indicated higher stability	PRS
Corruption	A measure of corruption within the political system, ranging from 0 to 6, with higher values, indicated less corruption	PRS
Genetic Distance	Genetic distance (relative to US)	SW
Linguistic Distance	Linguistic distance index (relative to US)	SW
Religious Distance	Religious distance index (relative to US)	SW
Ethnic Fractionalization	Ethnic fractionalization	ADEKQ
Linguistic Fractionalization	Linguistic fractionalization	ADEKQ
Religious Fractionalization	Religious fractionalization	ADEKQ
Legal Origin: English	Legal Origin: English Common Law	QoG
Legal Origin: French	Legal Origin: French Commercial Code	QoG
Legal Origin: Socialist	Legal Origin: Socialist/Communist Laws	QoG
Legal Origin: German	Legal Origin: German Commercial Code	QoG
Legal Origin: Scandinavian	Legal Origin: Scandinavian Commercial Code	QoG
Geographic Distance	Geographic distance (relative to US)	CEPII
Internal Distance	Internal distance of the country	CEPII
Landlocked	Dummy taking the value 1 the country is landlocked	CEPII
Latitude	Latitude of the capital or the main city	CEPII

Table D6: **Descriptive Statistics - Preferences for Redistribution and Determinants**

	Mean	**SD**	**Min**	**Max**
Observations		69,342		
Preferences for Redistribution	5.969	2.882	1	10
Age	4.196	1.645	1.5	10
Age Square	20.316	15.357	2.25	100
Female	0.489	0.500	0	1
Married	0.625	0.484	0	1
Unemployed	0.087	0.281	0	1
Secondary	0.434	0.496	0	1
Tertiary	0.277	0.448	0	1
Income	4.951	2.245	1	10
Ideology	5.259	2.391	1	10
Hard Work Vs Luck	4.091	2.708	1	10
Buddhist	0.053	0.223	0	1
Hindu	0.013	0.115	0	1
Jew	0.005	0.072	0	1
Muslim	0.168	0.374	0	1
Orthodox	0.052	0.223	0	1
Protestant	0.126	0.332	0	1
Catholic	0.248	0.432	0	1
Other Religion	0.145	0.352	0	1

Table D7: **Descriptive Statistics - Threshold Variables**

	Observations	**Mean**	**SD**	**Min**	**Max**
Prefer. for Redistr. (Country)	62	6.028	0.995	4.322	8.127
Hard Work Vs Luck (Country)	62	4.085	0.777	2.456	5.699
General Trust	61	0.253	0.184	0.028	0.694
Freedom of Choice	62	7.193	0.686	5.297	8.442
GDP per Capita	70	9.556	1.006	7.100	10.832
Total Factor Productivity	62	0.699	0.203	0.269	1.105
Human Capital Index	69	2.724	0.600	1.117	3.685
Schooling	68	9.025	2.569	1.160	13.420
Gini (Net)	66	36.943	8.011	23.36	56.61
Gini (Market)	66	46.502	5.878	32.34	63.84
Democracy	71	7.293	4.186	-7	10
Executive constraints	71	6.059	1.457	1	7
Believe in God	38	0.860	0.174	0.448	1
Importance of God	62	7.835	1.888	3.658	9.906
Government Stability	71	8.065	1.177	5.4	10.4
Corruption	71	2.997	1.232	0.342	6
Genetic Distance	51	0.026	0.014	0	0.051
Linguistic Distance	51	0.906	0.193	0	1
Religious Distance	51	0.734	0.153	0	0.979
Ethnic Fractionalization	51	0.390	0.256	0.002	0.850
Linguistic Fractionalization	51	0.346	0.283	0.002	0.873
Religious Fractionalization	51	0.438	0.266	0.003	0.860
Legal Origin: English	51	0.314	0.469	0	1
Legal Origin: French	51	0.451	0.503	0	1
Legal Origin: Socialist	51	0.098	0.300	0	1
Legal Origin: German	51	0.078	0.272	0	1
Legal Origin: Scandinavian	51	0.059	0.238	0	1
Geographic Distance	51	8.918	0.596	6.307	9.692
Internal Distance	51	5.497	0.817	3.294	7.080
Landlocked	51	0.118	0.325	0	1
Latitude	51	21.400	27.671	-44.28	60.13

Table D8: **Threshold Test**

The table presents sup Wald tests (and the relevant bootstrap p-value) for the null hypothesis of a linear model (Equation 3.1) against the alternative of a threshold model (Equation 3.4). Also shows the point estimate of the threshold parameter ($\hat{\gamma}$), along with the associated 90% confidence interval, the joint sum of square error and the sample size of the two regimes. The results refer to the specification in which the vector of regressors (X_{ict}) includes age, gender, marital and employment status, education, and income.

Threshold Variable	Bootstrap p-value	Sup Wald	Threshold Estimate ($\hat{\gamma}$)	90% Confidence Interval	Joint Sum of Square Error	N	N^{Low}	N^{High}	AIC
Prefer. for Redistr. (Country)	0.000	112.6	5.299	5.189 , 5.671	393020	53110	19033	34077	2.007
Hard Work Vs Luck (Country)	0.001	41.6	3.411	3.411 , 5.033	332520	44416	8112	36304	2.019
General Trust	0.000	156.7	0.239	0.228 , 0.297	372050	50908	27243	23665	1.995
Freedom of Choice	0.000	54.8	7.575	6.177 , 7.798	393440	53110	32827	20283	2.008
GDP per Capita	0.000	144.9	9.954	9.665 , 10.537	504110	68086	41181	26905	2.007
Total Factor Productivity	0.000	79.1	0.676	0.479 , 0.762	443320	61301	28448	32853	1.984
Human Capital Index	0.000	179.3	3.271	3.271 , 3.271	498260	67351	52285	15066	2.006
Schooling	0.000	106.7	9.410	8.680 , 11.520	496190	66473	33838	32635	2.015
Gini (Net)	0.002	31.9	30.17	28.10 , 46.68	487190	65465	11376	54089	2.012
Gini (Market)	0.000	47.1	41.64	40.34 , 51.23	487050	65465	11489	53976	2.012
Democracy	0.000	55.5	6.000	-5.600 , 9.000	517870	69342	16793	52549	2.016
Executive constraints	0.000	47.5	4.000	1.000 , 6.400	517920	69342	9630	59712	2.016
Believe in God	0.000	485.7	0.757	0.593 , 0.991	214580	30065	9713	20352	1.973
Importance of God	0.000	117.0	8.250	5.089 , 9.598	392910	53110	25788	27322	2.007
Government Stability	0.000	78.8	9.442	9.442 , 9.442	517690	69342	59059	10283	2.016
Corruption	0.000	149.8	4.000	4.000 , 4.000	517340	69342	55823	13519	2.015

Table D9: **Threshold Test**

The table presents sup Wald tests (and the relevant bootstrap p-value) for the null hypothesis of a linear model (Equation 3.1) against the alternative of a threshold model (Equation 3.4). Also shows the point estimate of the threshold parameter ($\hat{\gamma}$), along with the associated 90% confidence interval, the joint sum of square error and the sample size of the two regimes. The results refer to the specification in which the vector of regressors (X_{ict}) includes age, gender, marital and employment status, education, income, ideology, and social mobility.

Threshold Variable	Bootstrap p-value	Sup Wald	Threshold Estimate ($\hat{\gamma}$)	90% Confidence Interval	Joint Sum of Square Error	N	N^{Low}	N^{High}	AIC
Prefer. for Redistr. (Country)	0.000	483.9	5.251	5.251 , 5.251	378960	53110	17651	35459	1.971
Hard Work Vs Luck (Country)	0.000	116.7	3.445	3.411 , 3.637	321880	44416	8732	35684	1.987
General Trust	0.000	577.5	0.320	0.320 , 0.320	358650	50908	32857	18051	1.958
Freedom of Choice	0.000	178.6	7.575	7.469 , 7.575	381560	53110	32827	20283	1.978
GDP per Capita	0.000	831.9	10.469	10.469 , 10.469	487220	68086	53920	14166	1.973
Total Factor Productivity	0.000	320.5	0.712	0.712 , 0.747	432320	61301	31988	29313	1.959
Human Capital Index	0.000	865.3	2.866	2.731 , 2.866	480990	67351	37962	29389	1.971
Schooling	0.000	751.5	9.410	9.410 , 11.520	480060	66473	33838	32635	1.982
Gini (Net)	0.000	229.0	28.62	28.10 , 46.68	474350	65465	9846	55619	1.986
Gini (Market)	0.000	79.9	42.58	40.34 , 51.23	475380	65465	14419	51046	1.988
Democracy	0.000	391.2	7.000	5.600 , 9.000	502500	69342	19439	49903	1.986
Executive constraints	0.000	308.2	6.000	6.000 , 6.000	503060	69342	30271	39071	1.987
Believe in God	0.000	548.6	0.925	0.925 , 0.925	209910	30065	15227	14838	1.951
Importance of God	0.000	529.2	8.250	5.089 , 9.598	378500	53110	25788	27322	1.970
Government Stability	0.000	153.8	7.858	6.800 , 7.925	504660	69342	33513	35829	1.990
Corruption	0.000	840.4	3.858	3.858 , 3.858	499850	69342	51094	18248	1.981

Table D10: **Structural Threshold Regression Estimation**

The table presents the estimation of equation 3.4. Robust standard errors, clustered at the country level, are not reported. Constant, country and time fixed effect included in all models, are not reported. *significant at 10%,**significant at 5%, ***significant at 1%.

Regime	Low	High	Low	High	Low	High	Low	High
Threshold Variable	Prefer. for Redistr. (Country)		Hard Work Vs Luck (Country)		General Trust		Freedom of Choice	
Age	0.223***	-0.054	-0.358***	0.135***	-0.147**	0.204***	0.124**	0.009
	(0.068)	(0.056)	(0.128)	(0.050)	(0.066)	(0.059)	(0.055)	(0.068)
Age Square	-0.035***	0.003	0.038***	-0.023***	0.017**	-0.035***	-0.016***	-0.013*
	(0.007)	(0.006)	(0.014)	(0.005)	(0.007)	(0.006)	(0.006)	(0.007)
Female	-0.042	0.138***	0.094	0.097***	0.001	0.169***	0.062**	0.109***
	(0.039)	(0.030)	(0.071)	(0.028)	(0.035)	(0.033)	(0.029)	(0.040)
Married	-0.131***	0.018	0.083	-0.065**	0.013	-0.065*	-0.016	-0.084*
	(0.046)	(0.035)	(0.079)	(0.032)	(0.041)	(0.039)	(0.035)	(0.045)
Unemployed	0.357***	0.070	-0.054	0.186***	0.136**	0.240***	0.159***	0.123
	(0.092)	(0.055)	(0.105)	(0.062)	(0.062)	(0.083)	(0.060)	(0.076)
Secondary	-0.189***	-0.160***	-0.056	-0.165***	-0.108**	-0.247***	-0.207***	-0.102*
	(0.056)	(0.040)	(0.090)	(0.040)	(0.043)	(0.052)	(0.039)	(0.059)
Tertiary	-0.039	-0.250***	-0.318***	-0.138***	-0.225***	-0.156***	-0.192***	-0.123*
	(0.062)	(0.047)	(0.121)	(0.044)	(0.054)	(0.055)	(0.046)	(0.065)
Income	-0.137***	-0.125***	-0.114***	-0.128***	-0.120***	-0.143***	-0.128***	-0.135***
	(0.010)	(0.008)	(0.017)	(0.007)	(0.009)	(0.008)	(0.008)	(0.010)
Kappa	0.054		-0.035		0.085		-0.007	
	(0.042)		(0.077)		(0.183)		(0.058)	

Threshold Variable	GDP per Capita		Total Factor Productivity		Human Capital Index		Schooling	
Age	-0.011	0.075	-0.087	0.153***	0.054	0.026	0.048	0.069
	(0.053)	(0.055)	(0.064)	(0.050)	(0.044)	(0.075)	(0.061)	(0.051)
Age Square	0.002	-0.021***	0.008	-0.027***	-0.007	-0.022***	-0.006	-0.018***
	(0.006)	(0.006)	(0.007)	(0.005)	(0.005)	(0.008)	(0.007)	(0.005)
Female	0.050*	0.123***	0.075**	0.137***	0.063**	0.152***	0.060*	0.091***
	(0.028)	(0.030)	(0.035)	(0.028)	(0.025)	(0.040)	(0.032)	(0.028)
Married	-0.013	0.008	0.021	-0.035	-0.001	-0.061	-0.001	0.010
	(0.034)	(0.036)	(0.040)	(0.032)	(0.029)	(0.048)	(0.038)	(0.033)
Unemployed	0.109**	0.310***	0.069	0.266***	0.154***	0.256**	0.122**	0.229***
	(0.048)	(0.076)	(0.059)	(0.064)	(0.044)	(0.115)	(0.053)	(0.068)
Secondary	-0.187***	-0.173***	-0.155***	-0.222***	-0.178***	-0.091	-0.159***	-0.242***
	(0.035)	(0.048)	(0.045)	(0.040)	(0.031)	(0.075)	(0.039)	(0.043)
Tertiary	-0.255***	-0.090*	-0.237***	-0.184***	-0.201***	-0.039	-0.248***	-0.170***
	(0.043)	(0.051)	(0.055)	(0.043)	(0.037)	(0.077)	(0.048)	(0.046)
Income	-0.125***	-0.145***	-0.116***	-0.139***	-0.132***	-0.136***	-0.105***	-0.155***
	(0.008)	(0.008)	(0.009)	(0.007)	(0.007)	(0.010)	(0.008)	(0.007)
Kappa	-0.128**		0.219		0.074		0.065**	
	(0.056)		(0.165)		(0.056)		(0.033)	

Table continued on next page ...

Table D10 continued

Regime	Low	High	Low	High	Low	High	Low	High
Threshold Variable	Gini (Net)		Gini (Market)		Democracy		Executive Constraints	
Age	0.225***	0.124***	0.470***	0.082*	-0.014	0.107**	0.055	0.109***
	(0.081)	(0.044)	(0.102)	(0.042)	(0.084)	(0.043)	(0.114)	(0.040)
Age Square	-0.029***	-0.020***	-0.056***	-0.015***	0.001	-0.019***	-0.008	-0.018***
	(0.008)	(0.005)	(0.011)	(0.004)	(0.009)	(0.004)	(0.013)	(0.004)
Female	0.076*	0.091***	0.073	0.093***	-0.002	0.105***	0.194***	0.056**
	(0.046)	(0.024)	(0.050)	(0.024)	(0.042)	(0.024)	(0.056)	(0.022)
Married	0.051	-0.043	-0.140**	-0.018	0.032	-0.035	0.017	-0.017
	(0.053)	(0.029)	(0.065)	(0.027)	(0.052)	(0.028)	(0.068)	(0.026)
Unemployed	0.163	0.144***	0.103	0.150***	0.142*	0.151***	0.228**	0.142***
	(0.109)	(0.045)	(0.138)	(0.044)	(0.072)	(0.049)	(0.093)	(0.045)
Secondary	-0.165**	-0.202***	-0.378***	-0.164***	-0.186***	-0.193***	-0.311***	-0.167***
	(0.065)	(0.032)	(0.080)	(0.031)	(0.051)	(0.034)	(0.067)	(0.031)
Tertiary	-0.106	-0.207***	-0.224**	-0.193***	-0.222***	-0.188***	-0.474***	-0.140***
	(0.070)	(0.038)	(0.090)	(0.036)	(0.064)	(0.038)	(0.082)	(0.035)
Income	-0.164***	-0.127***	-0.164***	-0.127***	-0.168***	-0.121***	-0.084***	-0.137***
	(0.012)	(0.006)	(0.014)	(0.006)	(0.012)	(0.006)	(0.016)	(0.006)
Kappa	0.031		-0.040		0.005		0.009	
	(0.033)		(0.026)		(0.012)		(0.035)	
Threshold Variable	Believe in God		Importance of God		Government Stability		Corruption	
Age	0.058	-0.066	0.126**	-0.116*	0.086**	0.209**	0.022	0.099
	(0.088)	(0.072)	(0.057)	(0.068)	(0.041)	(0.096)	(0.044)	(0.074)
Age Square	-0.021**	0.003	-0.025***	0.013*	-0.014***	-0.035***	-0.005	-0.026***
	(0.009)	(0.008)	(0.006)	(0.008)	(0.004)	(0.010)	(0.005)	(0.007)
Female	0.129***	0.017	0.158***	0.010	0.065***	0.138***	0.075***	0.072*
	(0.047)	(0.040)	(0.032)	(0.035)	(0.023)	(0.052)	(0.024)	(0.041)
Married	-0.018	-0.016	-0.081**	0.039	-0.001	-0.085	0.010	-0.085*
	(0.055)	(0.046)	(0.037)	(0.042)	(0.027)	(0.062)	(0.028)	(0.048)
Unemployed	0.198	0.178***	0.210***	0.112*	0.127***	0.357***	0.138***	0.325***
	(0.140)	(0.068)	(0.078)	(0.059)	(0.043)	(0.119)	(0.043)	(0.116)
Secondary	-0.115	-0.132**	-0.277***	-0.084*	-0.170***	-0.355***	-0.186***	-0.168***
	(0.079)	(0.052)	(0.049)	(0.044)	(0.031)	(0.068)	(0.031)	(0.064)
Tertiary	0.041	-0.250***	-0.194***	-0.192***	-0.176***	-0.205**	-0.247***	0.064
	(0.082)	(0.061)	(0.053)	(0.054)	(0.035)	(0.081)	(0.037)	(0.067)
Income	-0.145***	-0.156***	-0.137***	-0.124***	-0.136***	-0.111***	-0.125***	-0.150***
	(0.012)	(0.011)	(0.008)	(0.009)	(0.006)	(0.012)	(0.006)	(0.010)
Kappa	0.000		-0.065		-0.422***		0.136***	
	(0.229)		(0.043)		(0.128)		(0.042)	

Table D11: **Structural Threshold Regression Estimation**

The table presents the estimation of equation 3.4. Robust standard errors, clustered at the country level, are not reported. Constant, country and time fixed effect included in all models, are not reported. *significant at 10%,**significant at 5%, ***significant at 1%.

Threshold Variable	Prefer. for Redistr. (Country)		Hard Work Vs Luck (Country)		General Trust		Freedom of Choice	
Regime	Low	High	Low	High	Low	High	Low	High
Age	0.050	-0.001	-0.299**	0.112**	-0.086	0.087	0.140***	-0.042
	(0.068)	(0.055)	(0.124)	(0.049)	(0.059)	(0.066)	(0.054)	(0.067)
Age Square	-0.016**	-0.002	0.029**	-0.019***	0.009	-0.021***	-0.018***	-0.006
	(0.007)	(0.006)	(0.014)	(0.005)	(0.006)	(0.007)	(0.006)	(0.007)
Female	0.001	0.103***	0.109	0.092***	0.039	0.115***	0.063**	0.105***
	(0.039)	(0.029)	(0.068)	(0.027)	(0.031)	(0.037)	(0.029)	(0.040)
Married	-0.046	-0.005	0.059	-0.035	-0.002	-0.019	-0.019	-0.052
	(0.046)	(0.034)	(0.077)	(0.032)	(0.036)	(0.043)	(0.035)	(0.044)
Unemployed	0.301***	0.109**	0.005	0.194***	0.129**	0.273***	0.157***	0.146*
	(0.094)	(0.053)	(0.101)	(0.061)	(0.056)	(0.097)	(0.059)	(0.076)
Secondary	-0.243***	-0.169***	-0.120	-0.202***	-0.159***	-0.228***	-0.226***	-0.147**
	(0.059)	(0.039)	(0.086)	(0.040)	(0.039)	(0.061)	(0.038)	(0.059)
Tertiary	-0.163**	-0.285***	-0.382***	-0.222***	-0.260***	-0.179***	-0.243***	-0.219***
	(0.063)	(0.046)	(0.114)	(0.044)	(0.047)	(0.063)	(0.045)	(0.064)
Income	-0.111***	-0.121***	-0.100***	-0.115***	-0.115***	-0.119***	-0.119***	-0.122***
	(0.010)	(0.008)	(0.016)	(0.007)	(0.008)	(0.009)	(0.008)	(0.009)
Ideology	0.283***	0.128***	0.142***	0.210***	0.119***	0.304***	0.140***	0.226***
	(0.011)	(0.007)	(0.014)	(0.007)	(0.007)	(0.010)	(0.007)	(0.010)
Hard Work Vs Luck	0.026***	-0.138***	-0.163***	-0.042***	-0.130***	0.022**	-0.123***	-0.031***
	(0.009)	(0.006)	(0.013)	(0.006)	(0.006)	(0.009)	(0.006)	(0.009)
Kappa	0.094*		-0.034		0.006		-0.005	
	(0.049)		(0.077)		(0.185)		(0.057)	

Threshold Variable	GDP per Capita		Total Factor Productivity		Human Capital Index		Schooling	
Age	0.039	0.004	-0.041	0.128**	0.049	0.029	0.056	0.027
	(0.044)	(0.071)	(0.059)	(0.051)	(0.054)	(0.053)	(0.060)	(0.050)
Age Square	-0.007	-0.012*	0.002	-0.022***	-0.006	-0.012**	-0.007	-0.011**
	(0.005)	(0.007)	(0.006)	(0.005)	(0.006)	(0.005)	(0.007)	(0.005)
Female	0.085***	0.009	0.101***	0.103***	0.082***	0.074**	0.071**	0.076***
	(0.024)	(0.040)	(0.032)	(0.029)	(0.029)	(0.029)	(0.031)	(0.028)
Married	0.002	0.050	0.008	0.020	-0.035	0.057*	-0.010	0.051
	(0.028)	(0.047)	(0.037)	(0.034)	(0.034)	(0.034)	(0.037)	(0.033)
Unemployed	0.144***	0.368***	0.112**	0.252***	0.152***	0.225***	0.133***	0.245***
	(0.043)	(0.111)	(0.056)	(0.067)	(0.048)	(0.076)	(0.052)	(0.068)
Secondary	-0.211***	-0.122*	-0.200***	-0.229***	-0.184***	-0.229***	-0.179***	-0.255***
	(0.030)	(0.068)	(0.041)	(0.042)	(0.036)	(0.046)	(0.038)	(0.042)
Tertiary	-0.247***	-0.129*	-0.313***	-0.227***	-0.272***	-0.219***	-0.303***	-0.231***
	(0.037)	(0.069)	(0.051)	(0.045)	(0.044)	(0.049)	(0.047)	(0.046)
Income	-0.116***	-0.129***	-0.111***	-0.129***	-0.105***	-0.132***	-0.097***	-0.135***
	(0.006)	(0.010)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)
Ideology	0.108***	0.351***	0.091***	0.219***	0.095***	0.240***	0.089***	0.226***
	(0.006)	(0.011)	(0.008)	(0.007)	(0.007)	(0.008)	(0.007)	(0.008)
Hard Work Vs Luck	-0.129***	0.047***	-0.117***	-0.015**	-0.171***	0.030***	-0.171***	0.010
	(0.005)	(0.010)	(0.007)	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)
Kappa	-0.054		-0.018		-0.062		0.083**	
	(0.044)		(0.182)		(0.066)		(0.033)	

Table continued on next page ...

Table D11 continued

Regime	Low	High	Low	High	Low	High	Low	High
Threshold Variable	Gini (Net)		Gini (Market)		Democracy		Executive Constraints	
Age	0.051	0.122***	0.323***	0.081*	0.035	0.090**	0.018	0.099**
	(0.084)	(0.043)	(0.091)	(0.042)	(0.077)	(0.043)	(0.064)	(0.047)
Age Square	-0.013	-0.018***	-0.038***	-0.015***	-0.006	-0.016***	-0.005	-0.017***
	(0.008)	(0.004)	(0.010)	(0.004)	(0.009)	(0.004)	(0.007)	(0.005)
Female	0.043	0.091***	0.078*	0.093***	0.004	0.107***	0.066**	0.084***
	(0.047)	(0.024)	(0.045)	(0.024)	(0.039)	(0.024)	(0.032)	(0.027)
Married	0.045	-0.034	-0.074	-0.017	-0.021	0.004	0.020	-0.012
	(0.054)	(0.028)	(0.058)	(0.027)	(0.047)	(0.028)	(0.039)	(0.031)
Unemployed	0.069	0.164***	0.096	0.166***	0.142**	0.166***	0.104*	0.225***
	(0.119)	(0.044)	(0.114)	(0.044)	(0.066)	(0.050)	(0.054)	(0.059)
Secondary	-0.186***	-0.220***	-0.258***	-0.205***	-0.194***	-0.222***	-0.172***	-0.259***
	(0.068)	(0.031)	(0.067)	(0.032)	(0.046)	(0.034)	(0.040)	(0.038)
Tertiary	-0.177**	-0.260***	-0.182**	-0.267***	-0.272***	-0.248***	-0.236***	-0.274***
	(0.072)	(0.037)	(0.077)	(0.037)	(0.059)	(0.038)	(0.049)	(0.043)
Income	-0.125***	-0.121***	-0.152***	-0.118***	-0.118***	-0.121***	-0.123***	-0.116***
	(0.012)	(0.006)	(0.013)	(0.006)	(0.011)	(0.006)	(0.009)	(0.007)
Ideology	0.245***	0.142***	0.109***	0.170***	0.080***	0.174***	0.108***	0.182***
	(0.012)	(0.006)	(0.012)	(0.006)	(0.009)	(0.006)	(0.008)	(0.007)
Hard Work Vs Luck	0.040***	-0.108***	-0.117***	-0.079***	-0.219***	-0.051***	-0.176***	-0.035***
	(0.012)	(0.005)	(0.010)	(0.005)	(0.008)	(0.005)	(0.007)	(0.006)
Kappa	0.041		-0.074***		0.008		0.000	
	(0.026)		(0.017)		(0.011)		(0.031)	

Threshold Variable	Believe in God		Importance of God		Government Stability		Corruption	
Age	-0.582***	-0.044	0.086	-0.109	0.055	0.122**	0.026	0.005
	(0.091)	(0.091)	(0.056)	(0.068)	(0.055)	(0.051)	(0.047)	(0.063)
Age Square	0.053***	0.007	-0.017***	0.012	-0.010*	-0.020***	-0.005	-0.011*
	(0.009)	(0.010)	(0.006)	(0.008)	(0.006)	(0.005)	(0.005)	(0.006)
Female	0.077**	-0.001	0.140***	0.016	0.043	0.102***	0.083***	0.031
	(0.039)	(0.048)	(0.031)	(0.035)	(0.030)	(0.028)	(0.025)	(0.036)
Married	0.159***	-0.008	-0.030	0.035	0.040	-0.052	0.002	0.036
	(0.048)	(0.057)	(0.036)	(0.041)	(0.036)	(0.033)	(0.030)	(0.041)
Unemployed	0.233**	0.151*	0.225***	0.116**	0.054	0.261***	0.131***	0.309***
	(0.099)	(0.078)	(0.077)	(0.058)	(0.058)	(0.055)	(0.045)	(0.088)
Secondary	-0.104	-0.127**	-0.281***	-0.121***	-0.173***	-0.266***	-0.216***	-0.117**
	(0.064)	(0.059)	(0.049)	(0.043)	(0.040)	(0.038)	(0.032)	(0.057)
Tertiary	-0.010	-0.313***	-0.248***	-0.257***	-0.223***	-0.268***	-0.296***	-0.087
	(0.068)	(0.072)	(0.052)	(0.053)	(0.046)	(0.044)	(0.038)	(0.059)
Income	-0.124***	-0.110***	-0.116***	-0.113***	-0.132***	-0.113***	-0.113***	-0.131***
	(0.010)	(0.013)	(0.008)	(0.009)	(0.008)	(0.007)	(0.007)	(0.009)
Ideology	0.309***	0.082***	0.257***	0.111***	0.111***	0.185***	0.097***	0.314***
	(0.010)	(0.011)	(0.009)	(0.008)	(0.007)	(0.007)	(0.006)	(0.010)
Hard Work Vs Luck	0.031***	-0.181***	0.004	-0.160***	-0.132***	-0.067***	-0.141***	0.025***
	(0.010)	(0.009)	(0.008)	(0.007)	(0.006)	(0.006)	(0.005)	(0.009)
Kappa	0.000		-0.059		-0.027		0.022	
	(0.195)		(0.042)		(0.071)		(0.037)	

Table D12: **Test for the Difference in Coefficients**

The table presents the $\hat{\delta}$ from the threshold model (Equation 3.4). Constant, country and time fixed effect included in all models, are not reported. *significant at 10%,**significant at 5%, ***significant at 1%.

ThresholdVariable	Prefer. For Redistr. (Country)	Hard Work Vs Luck (Country)	General Trust	Freedom of Choice	GDP per Capita	Total Factor Productivity	Human Capital Index	Schooling
Age	0.278***	-0.493***	-0.351***	0.115	-0.087	-0.240***	0.028	-0.021
Age Square	-0.038***	0.061***	0.052***	-0.004	0.023***	0.035***	0.015*	0.012
Female	-0.180***	-0.003	-0.169***	-0.046	-0.073*	-0.062	-0.089*	-0.031
Married	-0.149**	0.148*	0.078	0.068	-0.022	0.056	0.061	-0.011
Unemployed	0.286***	-0.241**	-0.104	0.036	-0.201**	-0.197**	-0.101	-0.107
Secondary	-0.029	0.109	0.139**	-0.105	-0.014	0.068	-0.087	0.083
Tertiary	0.211***	-0.179	-0.069	-0.069	-0.165**	-0.053	-0.161*	-0.078
Income	-0.012	0.014	0.023*	0.007	0.020*	0.023**	0.004	0.050***

ThresholdVariable	Gini (Net)	Gini (Market)	Democracy	Executive Constraints	Believe in God	Importance of God	Government Stability	Corruption
Age	0.101	0.388***	-0.122	-0.054	0.124	0.242***	-0.124	-0.077
Age Square	-0.009	-0.040***	0.020*	0.010	-0.024**	-0.038***	0.021*	0.021**
Female	-0.015	-0.020	-0.107**	0.138**	0.112*	0.147***	-0.073	0.003
Married	0.094	-0.123*	0.067	0.034	-0.002	-0.120**	0.084	0.095*
Unemployed	0.019	-0.047	-0.009	0.087	0.021	0.099	-0.231*	-0.188
Secondary	0.038	-0.214**	0.007	-0.144*	0.017	-0.193***	0.185**	-0.018
Tertiary	0.101	-0.031	-0.035	-0.334***	0.291***	-0.002	0.029	-0.311***
Income	-0.037***	-0.037**	-0.047***	0.053***	0.012	-0.013	-0.025*	0.024**

Table D13: **Test for the Difference in Coefficients**

The table presents the different in means for various country level variables based on the threshold variables used in Equation 3.4. *significant at 10%,**significant at 5%, ***significant at 1%.

Threshold Variable	Prefer. for Redistr. (Country)		General Trust		GDP per Capita		Human Capital Index		Gini (Net)		Importance of God		Corruption	
	Low	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**
Prefer. for Redistr. (Country)	4.871	6.508***	6.370	5.178***	6.239	4.963***	6.325	5.545***	4.857	6.063***	5.570	6.401**	6.302	5.240***
Hard Work Vs Luck (Country)	4.024	4.217	4.157	4.193	4.064	4.290	4.019	4.215	4.536	4.104	4.501	4.150	4.008	4.309
General Trust	0.407	0.206***	0.158	0.504***	0.202	0.495***	0.168	0.380***	0.634	0.226***	0.418	0.139***	0.182	0.453***
Freedom of Choice	7.535	7.057***	7.129	7.346	7.118	7.534***	7.132	7.286	7.433	7.178	7.118	7.289	7.079	7.519***
GDP per Capita	10.138	9.316***	9.250	10.277***	9.305	10.660***	8.944	10.303***	10.514	9.379***	10.353	9.017***	9.195	10.527***
Total Factor Productivity	0.759	0.659*	0.639	0.796***	0.654	0.871***	0.632	0.767***	0.846	0.663***	0.785	0.683	0.633	0.850***
Human Capital Index	3.206	2.532***	2.503	3.281***	2.562	3.426***	2.290	3.257***	3.202	2.656***	3.221	2.346***	2.515	3.275***
Schooling	10.839	8.172***	8.080	11.014***	8.391	11.792***	7.195	11.206***	11.002	8.771***	10.920	7.597***	8.129	11.336***
Gini (Net)	34.258	39.270**	40.293	31.667***	38.674	29.889***	41.745	31.181***	26.370	38.831***	32.053	40.268***	39.236	31.272***
Gini (Market)	46.151	46.932	46.647	45.721	46.633	45.967	48.265	44.386***	46.579	46.488	45.883	47.573	46.410	46.728
Democracy	8.588	6.863	6.676	8.835*	6.828	10.000***	5.695	9.574***	9.900	7.129***	9.813	6.429***	6.304	10.000***
Executive constraints	6.588	6.017*	5.929	6.706**	5.933	7.000***	5.584	6.806***	6.900	6.039***	6.938	5.743***	5.715	7.000***
Believe in God	0.758	0.891**	0.933	0.640***	0.910	0.664***	0.960	0.745***	0.572	0.888***	0.695	0.981***	0.932	0.705***
Importance of God	6.638	8.114***	8.497	5.812***	8.232	5.858***	8.857	6.310***	4.744	7.980***	5.699	9.196***	8.464	6.027***
Government Stability	8.386	7.934	7.779	8.607**	8.025	8.308	8.138	8.048	8.150	8.086	8.067	7.411*	7.938	8.413*
Corruption	4.063	2.606***	2.493	4.307***	2.664	4.587***	2.411	3.816***	4.590	2.836***	4.181	2.162***	2.361	4.737***
Share of Buddhist	0.022	0.042	0.027	0.056	0.048	0.026	0.030	0.061	0.001	0.054**	0.039	0.000	0.057	0.003**
Share of Hindu	0.017	0.024	0.032	0.002	0.023	0.005	0.027	0.011	0.000	0.021	0.001	0.001	0.025	0.002
Share of Jew	0.005	0.007	0.007	0.005	0.001	0.020	0.001	0.009	0.002	0.006	0.003	0.002	0.005	0.005
Share of Muslim	0.050	0.254***	0.255	0.062**	0.234	0.010***	0.315	0.031***	0.056	0.185**	0.011	0.344***	0.238	0.057***
Share of Orthodox	0.004	0.069*	0.071	0.004*	0.067	0.025	0.030	0.093	0.060	0.061	0.051	0.096	0.059	0.056
Share of Protestant	0.143	0.085	0.091	0.116	0.095	0.205**	0.109	0.127	0.125	0.115	0.089	0.082	0.103	0.143
Share of Catholic	0.236	0.256	0.307	0.139***	0.273	0.179*	0.288	0.218	0.181	0.279	0.247	0.299	0.268	0.209
Share of Other Religion	0.251	0.092**	0.074	0.274***	0.110	0.173	0.092	0.160	0.254	0.105	0.211	0.110	0.104	0.217
Share of Atheists	0.272	0.171**	0.137	0.342***	0.148	0.358***	0.108	0.291***	0.320	0.175**	0.348	0.065***	0.140	0.306***

Table D14: **Test for the Difference in Coefficients**

The table presents the $\hat{\delta}$ from the threshold model (Equation 3.4). Constant, country and time fixed effect included in all models, are not reported. *significant at 10%,**significant at 5%, ***significant at 1%.

ThresholdVariable	Prefer. For Redistr. (Country)	Hard Work Vs Luck (Country)	General Trust	Freedom of Choice	GDP per Capita	Total Factor Productivity	Human Capital Index	Schooling
Age	0.051	-0.411***	-0.173*	0.182**	0.036	-0.169**	0.021	0.028
Age Square	-0.014	0.048***	0.030***	-0.012	0.005	0.024***	0.006	0.004
Female	-0.102**	0.018	-0.076	-0.043	0.076	-0.002	0.008	-0.005
Married	-0.041	0.095	0.017	0.034	-0.048	-0.012	-0.092*	-0.062
Unemployed	0.192*	-0.189	-0.145	0.012	-0.225*	-0.141	-0.073	-0.112
Secondary	-0.074	0.082	0.070	-0.079	-0.089	0.029	0.045	0.076
Tertiary	0.122	-0.160	-0.081	-0.024	-0.118	-0.086	-0.053	-0.072
Income	0.009	0.015	0.004	0.003	0.013	0.018	0.027**	0.038***
Ideology	0.155***	-0.068***	-0.185***	-0.086***	-0.243***	-0.128***	-0.145***	-0.137***
Hard Work Vs Luck	0.164***	-0.121***	-0.152***	-0.092***	-0.176***	-0.103***	-0.201***	-0.181***

ThresholdVariable	Gini (Net)	Gini (Market)	Democracy	Executive Constraints	Believe in God	Importance of God	Government Stability	Corruption
Age	-0.071	0.242**	-0.055	-0.081	-0.538***	0.195**	-0.067	0.020
Age Square	0.005	-0.024**	0.010	0.012	0.047***	-0.029***	0.010	0.006
Female	-0.048	-0.016	-0.103**	-0.018	0.078	0.124***	-0.058	0.051
Married	0.079	-0.057	-0.025	0.031	0.167**	-0.065	0.092*	-0.034
Unemployed	-0.095	-0.070	-0.024	-0.122	0.081	0.109	-0.206***	-0.178*
Secondary	0.034	-0.054	0.029	0.087	0.023	-0.160**	0.093*	-0.099
Tertiary	0.084	0.085	-0.023	0.039	0.303***	0.009	0.045	-0.208***
Income	-0.004	-0.034**	0.003	-0.007	-0.014	-0.003	-0.020*	0.018
Ideology	0.102***	-0.060***	-0.095***	-0.074***	0.227***	0.146***	-0.073***	-0.216***
Hard Work Vs Luck	0.148***	-0.038***	-0.168***	-0.141***	0.212***	0.164***	-0.065***	-0.166***