Lisbon School of Economics & Management
Universidade de Lisboa

MASTER

MONETARY AND FINANCIAL ECONOMICS

MASTER´S FINAL WORK

DISSERTATION

THE IMPACT OF GOVERNANCE AND EDUCATION FOR TRUST IN GOVERNMENT

HENRIQUE MARANHÃO ARAÚJO

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SUPERVISION:
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To my parents that gave me the opportunity to study. It was thanks to their love, support, and patience that this journey has been concluded.

GLOSSARY

Cefco – Control of Corruption.

CPI – Consumer Price Index.

EDC – Adult Education Level.

FE – Fixed Effects.

GDP – Gross Domestic Product.

GE – Government Effectiveness

GFCF – Gross Fixed Capital Formation.

GGD – General Government Debt.

GGFCE – General Government Final Consumption Expenditure.

OECD – Organization for Economic Co-operation and Development.

OLS – Ordinary Least Squares.

PCA – Principal Component Analysis.

PSV – Political Stability and Absence of Violence/Terrorism.

RF – Random Effects.

RL – Rule of Law.

RQ – Regulatory Quality.

TG – Trust in Government

VdA – Voice and Accountability

WGI – World Governance Indicators.

ABSTRACT, KEYWORDS AND JEL CODES

This dissertation examines the relationship between Governance, Education and Trust in Government using a sample of 41 countries for the period of 2006 to 2021. For this purpose, Ordinary Least Squares (OLS) and Fixed Effects (FE) models are estimated. The results suggest that there is a positive and significant relation between Governance and Trust in Government while there is a negative and significant relation between Education and Trust in Government. For the Upper-income countries the results are similar but for the Middle-income countries Education has a positive but not significant relation with Trust in Government.

KEYWORDS: Trust; Trust in Government; Governance; Education; Expectations; Panel data analysis.

JEL CODES: C33; C38; H11; H30; O16; I20

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Acknowledgments

First, I wish to thank Professor Maria João Guedes, for her guidance, and support. Also, for always being readily available to clarify doubts and help me in this journey. Likewise, I am thankful to Professor António Afonso, for allowing me to take this masters course.

I am also grateful to my classmates for numerous discussions. But especially for my closest friends in their help and support in this work.

Finally, I am also thankful for the support that my parents and sister gave me, being patient and supportive while I pursued this project.

1.INTRODUCTION

The COVID - 19 pandemic brought into question the abilities of the governing bodies that rule over different countries. This is especially true for the matter of Trust in the public sector which seems to be wavering in a negative direction. Trust is a commodity since every transaction has a level of Trust implied with itself (Arrow, 1972). Governance and Education are fundamental to understand why current events are playing out the way they are. To better understand the economy and the action of its agents a deeper understanding of Trust is needed, particularly in respect to what makes its levels vary. Governance can be seen as a proxy to measure competence of the public sector and Education is a tool to understand the development of expectations.

Trust in Government is a cornerstone for a healthy democratic society (Hetherington, 2005), enabling a more effective application of public policies, while also facilitating a more fluid function for public services and lawful conduct. Trust comes first from the Trustee beliefs, that are established from the accumulation of past experiences, together with the expectations and beliefs for the intended Trustor (PytlikZillig & Kimbrough, 2016; Schoorman et al., 2015, Offe, 1999). A important issue that affects the literature is the existing heterogeneity of the Trust analysis, with individual differences and time variations (Wilkes, 2014). Simplifying, there exists some variations for the implementation of Trust (Robbins, 2016; Uslaner, 2003). First, there is how Trust is created, from personal experiences and/or cultural and social norms. Then, whom can we Trust, being focused on a person or a group. Finally, and most importantly, is what we are Trusting them to do.

A greater understanding of Governance is useful to help in managing efficiency levels both for private companies and public administration. Governance is a topic that

has gained popularity in recent decades, even if the existing studies do not universally agree on a final definition. A generally accepted idea is that we can think of Governance as rules for positive social interactions, that leads to moral behavior inside business and also for society as a whole (Kjaer, 2023). But for such abstract concept we need measurable data, for that end, a considerable handful of studies are using the six Worldwide Governance Indicators (WGI) created by the World Bank. Even with the acceptance by the academic community, the WGI project is not without critic, as claimed by Thomas (2010). Trust in Government and good Governance have a positive relation, were the quality of existing laws and the abilities of the ruling Government are a reflection on the level of Governance (Braithwaite & Levi, 1998), which effects the Trust that the citizens have for the Government.

On the other hand, the literature on Education points that a more educated population bring great benefits for the economy (Brewer & McEwan, 2010; Temple, 2002). The association of Education and Trust in Government goes beyond the productivity of the economic agents as the matter of Trust is more related with past experience and future expectations, (e.g. Dalton, 2005). Building on the works of Dalton (2005) and Gozgor (2022), this study considers that as years of Education increases so does the expectations for the quality of Government actions, meaning that if public policies are not effective as desired then the levels of Trust in possible future endeavors falls.

The objective of this study is to analyses the relationship of Governance and Education with Trust in Government. To that end, we use data retrieved from the World Bank database, the Worldwide Governance Indicators, and the Organization for Economic Cooperation and Development (OECD) database. For 41 countries, between

the period 2006 and 2021. The results show that Governance and Education are statistically related to Trust in Government levels, but Education has a negative impact on Trust in Government. The study also contributes with a perspective of Upper- and Middle-income countries helping develop new insights for the literature of Trust.

The remaining chapters are organized as follows: Section 2 is the literature review, providing an over-view of past studies; Section 3 presents the methodology and explains the data set used; Section 4 presents the empirical findings; Section 5 shows the conclusions, pointing out some of its limitations and future possibilities for new related research.

2. LITERATURE REVIEW

2.1. Trust

Trust is not an easy subject to incorporate into a solid definition. According to a widely accepted more general definition, expectations of Trust basically forms as the result of the Trustee beliefs on the capability of the Trustor to perform a specific action (PytlikZillig & Kimbrough, 2016; Schoorman et al., 2015). A another definition is that Trust is based on the trustor's prior interactions and his knowledge of the trustee (Offe, 1999). However, in a new situation with incomplete information the brain automatically ‘fill in’ the gaps (Crick & Koch, 2003), which leads to being able to navigate the new environment. Jumping to conclusions allows us to predetermine our level of Trust for people or institutions in any context, with the level fluctuating according to social and cultural standards. In essence, it varies with experience, either to lower levels of expectation or to higher levels of Trust; it is never a constant but rather more of a fluid concept.

Trust in Government is the basis for a democratic country to function and prosper (Hetherington, 2005; Uslaner, 2002; Wilkes, 2014). The term "public Trust" is so straightforward that economic agents associate it with the effectiveness and capacity of the president or national congress in charge, using their perception on the state of the economy as a benchmark for the quality of governing actions (Chanley et al., 2000; Craig, 2019; Hetherington, 2005; Keele, 2007). Every time the citizens' faith in their public servants is betrayed (by corruption, scandals, defaults on policy, among other things) it is an insult to their feeling of patriotism and national pride. Since Trust is correlated with willingness to pay taxes (Anderson, 2017), this type of negative behavior has profound implications on the country as a whole. It also has detrimental impacts on social norms and law-abiding behavior. According to Robbins, (2016, p. 972): “To state it plainly, Trust matters. It matters for interpersonal relationships, group dynamics, civic engagement, and society at large”.

Besides the search for a definitive definition this theme faces other challenges. The first problem is that this topic is not talked about enough, with its psychological and philosophical theoretical work, and empirical academic literature being small (Simpson, 2012). This is especially true when compared to the literature on subjects like justice, knowledge, and truth. The second issue is the heterogeneity of Trust, where the analysis that it is most often found in existing research differs in macro and in the micro level, as articulated by Wilkes (2014, p. 117): “focusing either on differences across individuals or on differences across time”. Third and final, we also face the problem of the analysis of its different dimensions which are *how*, *whom,* and *what* to Trust, or better known as the *varieties of Trust* (Robbins, 2016; Uslaner, 2003).

The microlevel analyses are more often found in older studies of public Trust, which were usually more focused in the personal levels of Trust (Wilkes, 2014), with the idea of personality shocks and smaller social demographics with different cultural conduct stirring in a more behavioral direction. The contributions of those works are meaningful, but not without flaws. The main issue with the micro examination of Trust stems from the fact that it's not possible to obtain significant explanations on the variation of Trust in respect to the impact of time changing variables (Brehm & Rahn, 1997), it ends up being a more point-focused and static approach. In the macrolevel investigations of Trust there is the advantage of a more broader sample oriented way and as pointed out by Keele, (2007, p. 241) there is "another advantage of a macrolevel research design is that it will allow us to fully understand the temporal nature of Trust.". In this regard, we can claim that for the purposes of this thesis we used micro level data on individual Trust in Government from survey responses available in the OECD databank to get results on the impact to the macro level of Trust that the population of the country has for its Government.

There are also varieties of Trust. First, *how* Trust develops usually depend on two psychological traits, either being strategic, were life experiences and close social bonds are its building blocks (Cook et al., 2005; Paxton & Glanville, 2015; Robbins, 2016), or a more moralistic form of Trust that is more broadly acquired by the cultural norms that the individual was raised in and also the one he is currently in (Dinesen, 2013; Robbins, 2016; Uslaner, 2008). Second, *whom* to Trust can be divided in particular or general Trust (Robbins, 2016). The descriptions are very straightforward in their definition, particular Trust refers to the select few people that we know or think that we know, and general Trust applies to different groups of economic agents that are divided and grouped together

depending on each individual trustor's perception. Finally, is *what* we Trust those individuals or groups to do, being in the levels of simplex versus multiplex Trust (Robbins, 2016). Simplex as the name implies refers to one simple or specific task that we Trust the trustee to complete (Cook et al., 2005; Farrell, 2009; Hardin, 2002; Robbins, 2016). With a rise in the complexity and number of the assignment then what we Trust then to do (or not to do) reaches the multiplex level (Robbins, 2016; Uslaner, 2002).

Trust in Government is of crucial value for the public policies that any country wants to implement with efficiency and quality. Perhaps the greatest impact of the need for Trust can be seen with monetary policies that include exchange rates and inflation control strategies. A great example that borderline dependency on Trust in Government would be the "cold turkey" disinflation policy, which consists on an immediate change in spending behavior, by the state, to be able to keep a very tight monetary policy (Giamattei, 2015), with the objective of a consistent and arguably fast rate of which prices reduces. But to achieve such results the economic agents of the country needs to have forward looking expectations and believe (Trust) that the government has the ability and will credibly implement the fiscal and monetary policies to control the oscillations in prices, or else the costs of such policy will outweigh its benefits and in some cases simply not work at all (Celasun et al., 2004). This type of policy can backfire simply because people do not Trust in the ability of the ruling Government, since one of the important predictors of inflation is the 'belief in future inflation' meaning that this deficit in public confidence will hold back the disinflationary efforts.

Trust is also subject to changes. According to Paxton and Glanville (2015), general Trust expectations do change depending on the environment. The authors conclude that the participants of their study modified their positions on Trust depending

on the exposure to different environments compared to what they were, allegedly, used to. We could argue that such results are to be expected since as humans our experiences influence and shape us.

2.2. The WGI project and the influence of Governance

Governance is often portrayed as a form of steward to government and corporate actions, even though the existing literature does not present a concluding and complete definition. Some authors still face the challenge of categorizing this important social, political, and economic topic. One pivotal work is from Kaufmann et al., (2011) that argues for a definition that is derived from how social traditions influence private and public institutions in their interactions with the people of the country. Going further, and being more specific, the description of Governance extends to; first the method of governmental selection, its political renovation and the surveillance of governmental behavior; second the ability to implement efficient and beneficial public policies and programs; third the perceived quality of the state and the level of respect for the existing institutions, public and private, that are active in the social and economic market (Kaufmann et al., 2011). An overview of the existing definitions also tell us that Governance is more than just an concept for government and non-public companies, we can say that it applies to the rules of the game (Kjaer, 2023), helping us to steer and direct our social interactions independently of being financially related or not.

The Worldwide Governance Indicators (WGI) created in the WGI project by the World Bank, was initially presented by Kaufmann et al., (1999) in his paper of *Governance Matters,* with a cross section of more than 150 countries and generating six indicators. Later on, in his work Kaufmann et al., (2009) updated it to a cross section of

212 countries, with six indicators being based on hundreds of disaggregated individual variables, obtained from 35 data sources created by 33 different organizations.

It is important to note that the WGI research is not without critic. The work of Thomas (2010) tries to demonstrate that the WGI creation methodology presents some serios concerns. The first observation relates to the concern that not all constructs are well defined, some possibly being even without value. The core of this argument basically states that the creator of the six indicators used the existing descriptions of the underlying variables, the ones used to create the Worldwide Governance project, as the summary for final definitions of the six variables, creating a cluster of definitions rather the developing a more fitting and unique one for each case. The second issue of the critic points out that the used measures employ questionable and unproved assumptions about the essence of good Governance. The concern is that the huge cluster of used assumptions may present with itself some inaccurate data that can corrupt the final indicators to a very serios point. Thomas (2010, p. 41) goes as far as to say that, "the assumptions of the model are neither intuitive nor justified by the authors". The third, and perhaps most important issue pointed out in the work by Thomas (2010), is the lack of evidence in the WGI project for construct validity. Basically the idea of construct validly surged in psychology in the 1950s as a tool to help define and measure individuals personalities attributes, being helpful in judging abstract ideas and observable proxies (Kaufmann et al., 2010). All taken together, it could be argued that Kaufmann and colleagues never presented evidence that demonstrates the construct validity of the indicators, meaning that the created model presents an, "elaborate unsupported hypothesis about the nature of Governance" (Thomas, 2010; p. 47).

Nevertheless, they addressed the concerns pointed out by Thomas (2010), were in the first place is natural for different scholars to have disagreements with the crated definitions of the WGI indicators, but that there is no regulations for what can be created and defined in the current 'market' of Governance research, and if the critics have disagreements with the created definitions then they can supply their on definitions for their Governance indicators. The second point is that the criteria of construct validity may not be useful to measure the quality of the WGI project. Lastly, even if this standard were to be taken seriously as a measure of the work by Kaufmann and his colleagues, the critic by Thomas seems to forget to provide empirical evidence that the WGI fails (or succeeds) to meet these criteria (Kaufmann et al., 2010).

Good Governance, the one related with corporate Governance and government, has some defined codes that can help in the development of economic markets, policy making, and implementing decisions. The adoption of such codes contributes to better economic levels, social interaction, and cultural development (see, Aguilera & Cuervo-Cazurra, 2009; Smith, 2007). But what is good Governance? According to Smith, (2007, p. 4) it, "implies government that is democratically organized within a democratic political culture and with efficient administrative organizations, plus the right *policies*, particularly in the economic sphere". In other worlds good Governance is the efficient application of *good policies*, that in essence drive forward the economy and help in the development of a positive workplace culture.

The relationship between good Governance and the level of Trust in Government seems pretty straight forward, were quality of Governance can be a reflection of the abilities and the character of the present leaders and also from the quality of the existing laws (Braithwaite & Levi, 1998), including the quantities of Trust that they inspire, and

likewise Trust in Government can be a result of the extent in higher quality Governance. Taken all into consideration, the proposed hypothesis is:

H1: *Better Governance leads to higher levels of Trust in Government.*

2.3. The impact of Education

An important concept to understand human behavior is their level of Education, not that we should judge a person's character by how many years he or she spend studying, but the returns that economic agents gains for the amount of years spend in schools and college has been a very popular subject in empirical studies (Psacharopoulos & Patrinos, 2018). The core idea is that Education is able to increase productivity for the economic market (e.g. Brewer & McEwan, 2010; Temple, 2002), but we must also take in to account the effects that Education have in changing expectations and behavior (Dalton, 2005).

The role of Education has transformed the recipients of the teachings and enabled the development of civilization. One of the greatest's aspects that separates humans from other animals is the ability to impart knowledge outside already existing genetical instincts (Vallortigara, 2021). This behavior of passing on information to new generation can also be observed in other mammals like some communal living primates. However, is our ability to have a complex language and later a written language that made it possible for humans to progress in great strides towards civilization. As pointed out by Pinker (2010, p. 8995): "an obvious interdependency connects language and know-how. The result of learning survival skills is information stored in one's brain. Language is a means of transmitting that information to another brain". Educating allows future generations to focus on new problems or to make already existing techniques and tools more efficient

so that there is no need to reinvent the wheel every few years. The technologies of the XXI century, as in the case of all eras, was built upon the *accumulation of knowledge* from the very beginning of human history, with stones and bone tools, to the present where we divide particles to obtain energy (Bird, 2007, 2008).

The importance of Education goes beyond the development of human capital to society. It is a process that changes and evolves human behavior and expectations. Those expectations are connected with Trust and specially with Trust in Government, as the study of Dalton (2005) demonstrates. According to the author (p. 134): "the results suggest that changing citizen values and political expectations have created a new political *Zeitgeist*, which stimulates greater skepticism of government". The author claims that together with the rise in the Education level, the population will expect and demand more positive results from the public institutions and political leaders. When those expectations are not met public Trust falls. We could relate Trust as being a part of, or the result and extent of the quality in Education (Temple, 2002).

The empirical studies that address the relation between Education and Trust have presented mixed conclusions. While a significant part of the literature shows that there is a negative relation between Education and Trust in Government (Dalton, 2005; Gozgor, 2022), other studies show opposing results (e.g. Knack & Keefer, 1997; Knack & Zak, 2003). We could argue that knowing more about the government and its actions makes us less inclined to Trust it. In addition, knowing more about the idea and motivations behind those actions makes us feel like we know more about how it works, which in turn allows our expectations to be adjusted to better reflect reality. We often fear what we do not know, ignorance can give rise to distrust which can lead to hate. Certainly, a case can be made that if the population is more knowledgeable about public affairs then they would

be more willing to participate in political decisions and perform more logical voting decisions, funded in facts as opposed to emotions. As noted by Knack & Zak (2003) Education is an sign of a more health democracy. The authors also advance that (p. 1254): "knowledge of politics and public affairs by large numbers of citizens, and their participation, are important potential checks on the ability of politicians and bureaucrats to enrich themselves or narrow interests that they are allied with". An earlier work by Knack & Keefer (1997), showed a strong positive association between Trust and the estimated mean of Education, concluding that Trust can grow directly as the result of an increase on the years of schooling for the average population.

Despite the unconclusive evidence, for the purpose of the thesis, we will follow the majority of the evidence and propose the view that higher Education levels translate to lower levels of Trust in Government. To that end, the proposed second hypothesis is:

H2: *Higher levels of Education is negatively associated with Trust in Government.*

3. DATA AND METHODOLOGY

3.1. Data

The data used for this study comes from the World Bank Databank[1], the Worldwide Governance Indicators database[2], and from the OECD database[3]. All datasets are available online. The study covers the periods from 2006 to 2021 (sixteen years) and consists of a sample of 41 countries. Table A.I. in the appendices shows the countries that were used in the analysis and also divides them in High-income and Upper Middle-

[1] https://data.worldbank.org/

[2] https://info.worldbank.org/governance/wgi/

[3] https://data.oecd.org/

income level. The income deference is defined for the current fiscal year of 2023 as per the World Bank definition[4].

3.2. Variables

The study investigates the relation between Governance, Education and, Trust in Government. The dependent variable is Trust in Government (TG), that was obtained from the OECD database, and is being used as a proxy for the level of Trust that the citizens of a country have in their public institutions and on their actions. It is a percentage of all survey responses from respondents answering the question of their perceived confidence in the national government. This variable has been seen in previous studies (e.g., Dalton, 2005; Gozgor, 2022; Spiteri & Briguglio, 2018) with each of them using a different method to extract and calculate the variable. For this case, the data was obtained from the OECD databank and also used in other research such as in the case of Alexandre (2022).

The first independent variable is the WGI_{index}, and it represents the level and quality of the Governance of a nation. The variable WGI_{index} was created by combining the six Governance indicators from the World Bank database. To generate the index we used the Principal Component Analysis (PCA) which is a mathematical algorithm that retains data variation while also reducing the dimensionality in the sample (Ringnér, 2008). As in Abdi & Williams (2010) study, the six dependent variables of Governance are analyzed to be able to extract important information creating a set of new orthogonal

[4] https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

variables. In essence, Governance refers to a concept broader than just government, one more common definition relates to the rules of the game and also to the ability to steer and direct (Kjaer, 2023) or in other words the traditions (rules) and institutions by which the control in a country is exercised (steered and directed) as pointed out by the World Bank definition. A closely related WGI_{index} variable was also created and used in studies such as Imaginário & Guedes (2020) and Alexandre (2022).

The six individual variables that compose the WGI_{index}: Voice and Accountability (VdA), Political Stability and Absence of Violence/Terrorism (PSV), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RfL) and Control of Corruption (CfC). These are used in many studies (e.g., Hassan et al., 2020; Keser & Gökmen, 2018; Spiteri & Briguglio, 2018). The data vary from -2,5 to 2,5. The following definitions were in part taken from the Kaufmann et al. (2011) study:

Voice and Accountability (VdA) measures the extent of which the population of a country can participate in the political decision-making process, and their level of liberty regarding free press, freedom of voice and association. Political Stability and Absence of Violence/Terrorism (PSV) is the possibility of the present ruling democracy being conquered or overthrow, internally, by an unjust coup, and includes acts of aggression motivated by political and/or religious beliefs. Government Effectiveness (GE), refers to the conditions of the public and civil services, trying to measure their ability to stay firm in the face of political coercion. Perhaps more significantly the effectiveness of policy making and its enforcement. Regulatory Quality (RQ) is related to the perceived capability of the decision-making process in governmental policies to incentive and promote the development of the private sector. Rule of law (RfL) describes the quality of which the economic agents abide by the rules of the nation and the level of Trust they

have on those rules. But it also refers to how well property rights and legal contracts are enforced as well other influences such as the police force, the courts of law and the probability of violence and crime. Control of Corruption (CfC) is a variable that seeks to measure the extent of which political power and influence is used for private profit and just how much of the government is in the hands of corrupted officials and private lobbyists.

The second independent variable for our model is the Adult Education Level (EDC) that indicates the highest level of Education completed by a percentage of the population in the 25-64 age gap group. It was used the Upper secondary Education level which implies the completion of compulsory Education such as high school and vocational training, in other words is the Education just below university level. This variable intends to analyze the social impacts, relating with the broader behavioral transformation that can occur as a result of different levels of schooling, in respect to the general population.

For the control variables we use: Inflation (CPI) which is the consumer price index that serves to demonstrate the increase of prices in goods and services that are consumed by households, obtained as annual growth rate from the OECD database. The rate of the increase in the cost of living is a very relevant source of great concern for households (Jacobs et al., 2014), which in turn leads to the way that the population sees their ruling government. Economic agents often blame or attribute the increase in prices to governmental actions, which should negatively affect their levels of Trust in their political leaders and public services. The two variables General Government Debt (GGD), and Gross domestic product per capita (GDP) were log transformed to enable a less skewed regression. For the general government debt (LOG_GGD) it is calculated as a percentage

of GDP, its important variable to analyze the opinion of the general population in respect to the government. As it was with the case of inflation, GGD can easily related to the level of Trust in Government. Studies such as Foster & Frieden (2017) demonstrates how debt can impact the levels of Trust in European countries were (p. 516): "Eurozone debtor countries indicating that they Trust or mostly Trust their national governments has declined from 40 to 50% before the crisis to below 20% in 2015", meaning that the European Sovereign Debt Crisis, started in 2009, created a trend were the debt started to increase leading to the decline in Trust. The GDP per capita, measured in dollars US$, can be used analyses the level of the development in a country. This control variable is needed to understand the relation of Trust in Government and the country GDP size, according with existing literature (Uslaner, 2004) there is a weak negative relation between growth of GDP and Trust. General Government Final Consumption Expenditure (GGFCE), being a percentage of GDP, is a variable that includes the costs of the work force used in public services while also adding the acquisition of all goods and services by the government and the expenses on national defense. Gross Fixed Capital Formation (GFCF), calculated as percentage of GDP, is an attempt to proxy fiscal policy which is representative of gross net investment. As seen in case studies such as Kanu & Nwaimo (2014), GFCF is an important macroeconomic variable that is formally used in nations accounts.

3.3. Methodology

The empirical analysis uses an unbalanced panel data for the period from 2006 to 2021, it covers 41 countries and 518 country-years observations. The regressions used the Ordinary Least Squared (OLS) and the panel Fixed Effects (FE) models. The two types

of regressions are being used for the sake of a more complete analyses, allowing us to observe the results of both cases. For the latter choice of model, while it is true that a Random Effects (RE) test can have the advantages of eliminating heteroscedasticity (Zulfikar, 2018) the regression of choice being the FE comes first from the interpretation that the FE test is better for withing country variation data (Geller & Guedes, 2017). This methodology can intercept some of the differences between the subjects of the study (Zulfikar, 2018) permitting a smoother comparison. To confirm the test of choice we performed the Hausman Test as suggested by Hausman (1978), from its results it was possible to confirm that the panel FE was the best suited test for our model.

The Principal Component Analysis (PCA) was used to generate the $\text{WGI}_{\text{index}}$. The mathematical representation of this linear combination is as it follows:

1) $$\text{WGI}_{index_{i,t}} = (\sum_{j=1}^{k} w_j \, z_j)_{i,t} \qquad (i = 1, \dots, n); (j = 1, \dots, k)$$

where the $\text{WGI}_{index_{i,t}}$ represents the Governance quality score for the country i at the period t. The index is the sum of the multiplication of each vector of weights (w_j) by each vector that contains the six Governance variables (z_j), for country i at the period t.

Finally, leading us to the panel data model presented in the following equation:

2) $$TG_{i,t} = \beta_0 + \beta_1 \text{WGI}_{index_{i,t}} + \beta_2 EDC_{i,t} + \beta_3 X_{1i,t} + \varepsilon_{i,t}$$

where $TG_{i,t}$ is representative of the level of Trust in Government for the country i at the period t. The $\text{WGI}_{index_{i,t}}$ is the index variable for Governance and $EDC_{i,t}$ represents the Adult Education Level. In $X_{1i,t}$ it represents the vector of controls variables being

Inflation (CPI); General Government Debt (GGD); General Government Final Consumption Expenditure (GGFCE); Gross Domestic Product per capita (GDP); Gross Fixed Capital Formation (GFCF). The $\varepsilon_{i,t}$ is a random error term used to represent the possibility of omitted variables. Finally, we have the β_0, β_1, β_2 and β_3 that are the unknown coefficients being estimated.

4. EMPIRICAL ANALYSIS

Table I presents the descriptive statistics for the variables of the model. In a simple analysis of the Minimum and Maximum values for the observations we can conclude that some present a higher level of heterogeneity then others, in the cases were there was the biggest disparities such as General Government Debt (GGD) and Gross Domestic Product per capita (GDP) the data was transformed in to logarithmic values to approximate then to the other ones in the model. The dependent variable, Trust in Government, presents a high level of heterogeneity given the fact that the sample consists of 41 different country's including high-income and upper-middle-income ones.

From the data of 2021, the five countries with the highest levels of Trust in government are the Nordic countries of Switzerland, Norway, Finland, Denmark, and the country of New Zealand. The ones that are the lowest on the list of Trust in Government are Slovak Republic, Chile, Poland, Czech Republic, and Colombia. Coincidently 3 of those five countries are also on the top 5 nations with the highest Adult Education level for the 2021 data, being the Czech Republic, Slovak Republic, and Poland. More detail of the placement can be seen in Table A.II. on the appendices.

TABLE I

VARIABLES DESCRIPTIVE STATISTICS

VARIABLES	Mean	S.D.	Min	Max
TG	42.84	15.52	6.87	84.99
WGI_{index}	0.00	1.00	-2.43	1.57
CPI	2.63	2.69	-4.47	19.59
LOG_GGD	3.94	0.73	1.32	5.57
GGFCE	19.13	3.67	10.29	27.93
GFCF	22.21	4.23	10.68	54.30
EDC	42.31	13.70	13.76	76.80
LOG_GDP	10.23	0.75	8.23	11.80

Note: S.D. is the standard deviation; Min and Max are the minimum and maximum value for each variable, respectively

Among the independent variables is important to comment that in the minimum value of Inflation (CPI) we find a negative number, this is explained by the fact that some countries presented in the sample have at some point in the observation, from 2006 to 2021, have gone thru a period of deflation. Countries like Japan, Switzerland, Greece, and among a few others from the studied sample presented with such cases. Especially in the example of Japan, as pointed by Nishizaki et al., (2014), the battle ageist chronic deflation have been going for many years since the country's least period of economic growth in the early 1990s.

Finally, on Table I another important observation is that the mean of the variable WGI_{index} is 0.00 when in truth the value is a proximally -1.46e-09, making it in practice an exceedingly small number and by only presenting the first two decimals in the Table this value appears as zero. The same case can be seen in the study of Alexandre (2022), were even with a different number of observations, the mean of its created variable (WGI) is still approximately zero.

Table II presents the correlation matrix. All independent variables present a strong and significant correlation at 1% level with the dependent variable Trust in Government, except for Inflation (CPI) that curiously has no significance and the case of General Government Final Consumption Expenditure (GGFCE) that is only statistically significant at 5% level. The regression also presents no problem with the multicollinearity levels since the mean of Variance Inflation Vector (VIF) is only 2.18.

Inflation has a strong correlation of statistical significance (p-value less de 0,01) for all the independent variables, but contrarily to expectations it was fund that CPI correlation to Trust in Governance, our dependent variable, is not statistically significant. How can the levels of a countries inflation rate not be related with the way that its citizens perceive the quality and capability of the respective governing body? In truth it does. As we can see by means of influencing the other variables. The fact is that in an economy with imperfect information the belief in public policies and competency gets distorted (Amato & Shin, 2003) not that this makes those ideas less valuable in understanding the market. But CPI can lose some informativeness related to the economy state (Fazio et al., 2018). Table III presents the results of the estimations using the system OLS and FE for the full sample of countries in the study. As such, the results will be reported and interpreted for both estimation methods.

Models 3 and 4 of Table III present the results with the application of the created variable WGI_{index}, and models 1 and 2 present the results using the 6 variables, separately, of which the index is composed – *Voice and Accountability (VdA), Political Stability no Violence (PSV), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RfL), and Control of Corruption (CfC)*. As argued by Kaufmann et al. (2011) those indicators even with existing margins of error still enables others researchers to arrive in meaningful results.

For the regressions with the created WGI_{index} there is in both cases a positive coefficient and a positive relation with the dependent variable, together with a strong statistical significance at 1%, indicating the robustness of the variable and confirming the first Hypothesis. In other words, higher Governance levels contribute to higher levels of Trust in Government.

For all the OLS and Fixed Effects regressions, models 1 to 4, the Adult Education Level (EDC) has a strong statistical significance of 1%, with the only exception being in the second model where there is a 5% level of statistical significance, leading to the rejection of the null hypothesis. Meanwhile the variable is negatively associated with the dependent variable in all instances of the Table III, so we can confirm Hypothesis 2 were higher levels of Education leads to lower levels of Trust in Government. The variable EDC presents robustness of negative coefficient in all cases but only robustness of statistical significance in the last two regressions. The results appears to agree with existing literature such as the study from Dalton (2005) were the regressions demonstrate that higher Education levels in part translate to new expectations of government capability in directing the country, leading to a deterioration of Trust in the ruling institutions of a nation.

TABLE II

CORRELATION MATRIX

VARIABLES	TG	WGI_{index}	CPI	LOG_GGD	GGFCE	GFCF	EDC	LOG_GDP
TG	1.000							
WGI_{index}	0.491***	1.000						
CPI	-0.001	-0.422***	1.000					
LOG_GGD	-0.199***	0.070*	-0.356***	1.000				
GGFCE	0.081**	0.386***	-0.216***	0.316***	1.000			
GFCF	0.176***	0.131***	0.153***	-0.379***	-0.213***	1.000		
EDC	-0.186***	0.053	-0.205***	-0.178***	0.153***	0.133***	1.000	
LOG_GDP	0.431***	0.835***	-0.474***	0.222***	0.359***	0.116***	0.058	1.000

Note: *, ** and *** represent statistical significance at levels of 10%, 5% and 1%, respectively

TABLE III

TRUST IN GOVERNMENT, FULL SAMPLE

METHOD	(1) OLS	(2) FE	(3) OLS	(4) FE
WGI_{index}	----	----	5.094***	8.143***
	----	----	(1.287)	(2.583)
VdA	-14.486***	-2.118	----	----
	(2.984)	(5.368)	----	----
PSV	6.158***	2.010	----	----
	(1.428)	(2.481)	----	----
GE	7.562**	10.933***	----	----
	(3.361)	(3.757)	----	----
RQ	1.501	6.215	----	----
	(3.094)	(3.890)	----	----
RfL	-25.109***	-7.932	----	----
	(4.031)	(5.004)	----	----
CfC	22.213***	5.932*	----	----
	(2.368)	(3.423)	----	----
CPI	0.188	-0.539**	0.770**	-0.620***
	(0.312)	(0.225)	(0.339)	(0.224)
LOG_GGD	-2.628***	-4.258**	-5.401***	-4.880***
	(0.975)	(1.906)	(1.166)	(1.884)
GGFCE	-0.161	0.028	-0.192	-0.088
	(0.171)	(0.361)	(0.189)	(0.352)
GFCF	0.290**	0.780***	0.129	0.737***
	(0.120)	(0.173)	(0.123)	(0.171)
EDC	-0.147***	-0.425**	-0.224***	-0.425***
	(0.051)	(0.168)	(0.041)	(0.164)
LOG_GDP	10.873***	7.115**	9.849***	7.679**
	(1.399)	(3.221)	(1.540)	(3.108)
Constant	-50.512***	-28.377	-29.068*	-12.490
	(14.772)	(35.485)	(15.602)	(34.954)
Observations	518	518	518	518
R^2 - Within	0.586	0.205	0.492	0.180
R^2 - Between		0.551		0.556
R^2 - Overall		0.453		0.452

Note: *, ** and *** represent statistical significance at levels of 10%, 5% and 1%, respectively. The robust standard errors are in parentheses. Dependent variable: Trust in Government.

For the cases of the control variables of Table III there is some notable occurrences, such as in the General Government Debt (LOG_GGD) and in the Gross Domestic Product (LOG_GDP). The two cases have results with a strong statistical significance varying from 5% to 1% depending on the model. Also, the data presents the previously expected sign for their coefficients showing robustness though the four regressions of the table. Economic growth and Public Debt are closely related, were one effects the other in a negative relation, we can also easily relate those variables to others like our dependent variable TG, were as seem in empirical studies (Hesda & Yuliani, 2021) rising debt promotes a declining of Trust in Government and in Economic Growth (GDP), and a decline in GDP is associated with the falling of Trust in Government (Alexandre, 2022). Meaning that General Government Debt can have a double effect on the depend variable. For the six variables of the WGI_{index} on model 1 most of them are statistically significant at 1%, but for model 2 most of the index variables lose their statistical significance.

In the case of the Inflation (CPI) variable, its results were consistent with the expect negative relation with the dependent variable (TG) on models 2 and 4, while also being statistically significant at 5% and 1% respectively. In the OLS regression, models 1 and 3, the results demonstrate reverse signs, meaning a positive relation with the dependent variable. There is no statistical significance of CPI for model 1, but in model 3 results indicates a 5% level of significance, which would mean that more inflation leads to more Trust in Government. This finding may be explained by the fact that in some cases inflation can be a tradeoff for unemployment levels. In the case of the European study from Blanchflower et al. (2014) the results show that an increase in unemployment decreases well-being by more the five times comparatively with the same level of an

increase in inflation, as if following the Phillips curve. The well-being of the population could not be more closely related with its Trust in Government, so the positive relation between CPI and TG can be the result of this tradeoff.

The Gross Fixed Capital Formation (GFCF) have the expected robustness of its positive relation with dependent variable. An expected result since GFCF grossly represents domestic investment by the government and the privet market, spending in commercial and industrial buildings and also essential infrastructure such as hospitals, schools, and others socially beneficial public goods and services. The results demonstrate that it is also strongly statistically significant varying from 5% to 1% in three of the models, only on the third model that the variable loses its significance. Gross Fixed Capital Formation has been recognized at the theory level as being a crucial component in promoting economic development and in combating unemployment (Lemma et al., 2016; Meyer & Sanusi, 2019), this relation confirms and cements the existing positive findings with the variable Trust in Government.

Tables IV and V presents the results of the regression analysis considering high and upper middle-income countries respectively. Countries with a Gross National Income (GNI) per capita between $1,085 or less (in US dollars) fall in the category of low-income, the ones with economies of $1,086 to $4,255 are lower middle-income, for those with capital in the $4,256 to $13,205 level they are classified as upper middle-income and finally a nation that has a GNI per capita equal of grater then $13,205 is considered a high-income country. The method of categorization (GNI) was selected for its capacity to represent living standards, and is used in many studies for its correlation to wellbeing for low and middle income countries (Diener & Suh, 1999; Engelbrecht, 2009; Frey & Stutzer, 2002; Kroll, 2008).

TABLE IV

TRUST IN GOVERNMENT, HIGH INCOME

METHOD	(1) OLS	(2) FE	(3) OLS	(4) FE
WGI_{index}	----	----	4.101***	3.050**
	----	----	(0.769)	(1.302)
VdA	6.635	5.795	----	----
	(6.351)	(6.588)	----	----
PSV	4.572**	1.155	----	----
	(1.840)	(2.748)	----	----
GE	11.426***	12.691***	----	----
	(3.415)	(3.966)	----	----
RQ	7.497***	5.674	----	----
	(2.869)	(3.966)	----	----
RfL	-19.648***	-11.515**	----	----
	(4.175)	(5.204)	----	----
CfC	7.335**	1.934	----	----
	(2.969)	(3.551)	----	----
CPI	-0.838***	-1.143***	-1.065***	-1.196***
	(0.318)	(0.263)	(0.281)	(0.265)
LOG_GGD	-2.256**	-7.371***	-3.862***	-7.455***
	(0.981)	(1.999)	(0.990)	(1.995)
GGFCE	-0.080	0.219	0.144	0.005
	(0.167)	(0.368)	(0.162)	(0.363)
GFCF	0.328***	0.682***	0.209*	0.646***
	(0.125)	(0.174)	(0.119)	(0.172)
EDC	-0.020	-0.307*	0.021	-0.281*
	(0.050)	(0.177)	(0.046)	(0.170)
LOG_GDP	11.644***	16.612***	15.481***	15.529***
	(1.657)	(3.688)	(1.418)	(3.622)
Constant	-92.285***	-123.753***	-109.921***	-89.167**
	(16.503)	(40.737)	(16.523)	(40.886)
Observations	460	460	460	460
R^2 - Within	0.672	0.248	0.623	0.219
R^2 - Between		0.799		0.741
R^2 - Overall		0.618		0.571

Note: *, ** and *** represent statistical significance at levels of 10%, 5% and 1%, respectively. The robust standard errors are in parentheses. Dependent variable: Trust in Government.

TABLE V

TRUST IN GOVERNMENT, UPPER MIDDLE INCOME

METHOD	(1) OLS	(2) FE	(3) OLS	(4) FE
WGI_{index}	----	----	7.367**	16.082***
	----	----	(3.165)	(3.971)
VdA	-3.736	-1.363	----	----
	(9.930)	(11.877)	----	----
PSV	-5.220	-6.990	----	----
	(4.466)	(5.560)	----	----
GE	6.957	-0.602	----	----
	(9.666)	(10.105)	----	----
RQ	-38.169***	-12.618	----	----
	(13.226)	(16.369)	----	----
RfL	6.835	10.307	----	----
	(14.799)	(15.986)	----	----
CfC	43.719***	40.094***	----	----
	(10.500)	(11.471)	----	----
CPI	0.146	0.335	0.705	0.432
	(0.507)	(0.476)	(0.489)	(0.408)
LOG_GGD	-8.152**	0.130	-8.971***	0.066
	(3.364)	(8.148)	(2.517)	(6.804)
GGFCE	0.068	-0.851	1.991	-0.640
	(1.463)	(2.406)	(1.276)	(2.049)
GFCF	2.226***	0.987	2.523***	0.912
	(0.754)	(1.227)	(0.678)	(0.977)
EDC	1.181***	0.256	0.577	0.326
	(0.397)	(0.818)	(0.414)	(0.728)
LOG_GDP	-2.264	-11.122	0.799	-12.287**
	(5.395)	(6.689)	(5.527)	(5.990)
Constant	21.227	133.039	-42.222	130.494
	(54.360)	(97.751)	(52.839)	(84.308)
Observations	58	58	58	58
R^2 - Within	0.728	0.460	0.610	0.423
R^2 - Between		0.019		0.091
R^2 - Overall		0.017		0.000

Note: *, ** and *** represent statistical significance at levels of 10%, 5% and 1%, respectively. The robust standard errors are in parentheses. Dependent variable: Trust in Government.

For Table IV the results are similar with the full sample of Table III. Once again supporting the first hypothesis, suggesting that grater levels of good Governance is associated to higher levels of Trust in Government. In middle-income countries, Table V, the index is still statistically significant which means that in all of the cases presented in this thesis the first Hypothesis is verified.

For high-income countries the EDC variable came out as mostly not statistically significant or in the case of both models 2 and 4 with a 10% significance, but kept its robustness of its negative coefficient, leading to a weak confirmation of the second hypothesis that higher levels of Education are associated to lower levels of Trust in Government. The results in for Table V (middle income countries) are interesting because it appears to have happen a twist in the values of the coefficients of the variable, where more development in EDC levels means growth of Trust in Government. This result goes against previous statements and also rejects the second hypothesis. If the regression results did not present any statistical significance, then perhaps we could have disregarded those findings but in the first model of Table V the variable EDC does have a 1% significance. It can be argued that for developing countries growth in Education provides more institutional quality, less inequality, and more directly interpersonal Trust (Knack & Zak, 2003) comparatively to the increasing expectations in the quality and efficiency of government institutions (Dalton, 2005), leading to a positive difference when accounting for all of the effects.

For our control variables it seems that in the high-income countries analysis inflation (CPI) plays a more important role comparatively with the other results, presenting with full robustness of a negative coefficient and with a statistical level of 1% in significance in all of the models. The same can be said about our LOG_GDP variable

with the only difference being in the robustness of the positive coefficients which is expected for its affects is Trust levels. In Table V, inflation does not present statistical significance and in the GDP variable only at model 4 do we have a 5% level, but notably in this case the coefficient is negative. The case were higher levels of Gross Domestic Product leads to lower levels of Trust in Government can seem contra intuitive but in fact, especially in lower income regions, the rapid growth of GDP goes with more income inequality, so we end up with a bigger class divide which creates resentment and distrust. As mentioned by studies such Yao (1999, p. 126): "rising incomes, however, have been unequally shared among the population. As a result, China has been transformed from a highly egalitarian society into one that is comparable with the United States and the East Asian economies".

Finally, the variable for Government Debt (LOG_GGD) still plays an important role in both cases of country income levels. In Table IV it shows robustness of its expected negative coefficient and a 1% significance level for most cases except for the first model, were there is 5%. For Table V, models 1 and 3 the LOG_GGD variable has a 5% and 1% significance in the analysis. The Gross Fixed Capital Formation (GFCF) variable maintains its importance in the case for either high and upper middle-income countries, with statistical significance in almost all of the regressions and positive coefficient in all of the cases.

5. CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

The study used a sample containing 518 observations for the period of 2006 to 2021, from 41 countries. Using OLS and FE, the results shows that Governance has a significant positive impact on Trust in Government. Consequently Hypothesis 1 is confirmed, meaning that better Governance does contributes to higher levels of Trust in Government. On contrary, Education levels have a negative effect for Trust in Government, supporting Hypothesis 2.

For the sake of a more complete analysis, the study also has a section with the data being divided in Upper-Middle-Income and High-Income countries. For the first case of Upper-Middle-Income, we find that Governance is still relevant for Trust in Government once again confirming Hypothesis 1, but the second Hypothesis is rejected where it appears that Education has a positive impact on the growth of Trust. In the case of High-Income countries, the results are similar to those of the full sample regression, with the difference being that the Hypotheses only being weakly accepted in the Fixed Effects regression.

As with every study, the current dissertation has limitations. Perhaps in this case the most challenging factor was the lack of a satisfying number of available data to be used. Every researcher dream of large and easily available data samples, so that they can use in their regressions, but as it appears to be the case with the more abstract concepts such as Trust, data observations do not present itself as an easy challenge to measure and arguably study. After all, individual's beliefs can vary tremendously in respect to their culture values and life experiences. To overcome those issues in this study we choose a data set more readily available and with trustworthy sources from the OCDE, and World bank database.

Future research of this topic can conduct analyses for every country individually for their Trust levels. This way the cultural differences can be taken more readily into account and restorative policies for Trust levels can be more easily developed and applied. It would also be interesting to consider the electoral season for each case to understand its effects. Countries that develop such research will benefit of direct information that has important applications in the case of expected productivity and effectives of the future implementations on fiscal and monetary policies, besides there is also the possibilities of new acquisitions achievable to generate social and financial benefits.

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APPENDICES

TABLE A.I.

LIST OF COUNTRIES USED IN THE STUDY AND THEIR CLASSIFICATION

SAMPLE	
UPPER MIDDLE INCOME	Mexico, Turkey, Brazil, Colombia, Costa Rica, Russian Federation, South Africa.
HIGH INCOME	Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea Republic, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, United Kingdom, United States, Chile, Estonia, Israel, Latvia, Lithuania, Slovenia.

TABLE A.II.

RANKING OF COUNTRIES FOR TRUST IN GOVERNMENT AND ADULT EDUCATION DATA FROM 2021

	TG		EDC	
TOP 5 COUNTRIES	Switzerland	83.78	Czech Republic	67.88
	Norway	77.35	Slovak Republic	65.25
	Finland	71.37	Poland	59.97
	Denmark	65.17	Hungary	56.98
	New Zealand	63.48	Germany	54.18
LOWER 5 COUNTRIES	Colombia	28.91	Portugal	28.36
	Czech Republic	28.44	Spain	23.21
	Poland	25.92	Mexico	22.35
	Chile	23.21	Turkey	20.44
	Slovak Republic	21.58	Costa Rica	17.98