Governance and Government Debt

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Abstract: This study examines the relationship between Worldwide Governance Indicators and Government Debt in 164 countries for the period between 2002 and 2015. For this purpose, fixed effects (FE) and generalized method of moments (GMM) models are estimated. The results suggest that governance quality is negatively and statistically related with government debt. For Low Income countries was found evidence that better governance environment is associated with lower public debt levels.

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1. Introduction

In the aftermath of the 2007/08 crisis, we witnessed an increase in public debt across countries, both developed and developing countries. The empirical evidence has shown that fiscal deficits are not sustainable (Afonso, 2005) and countries have become highly indebt. The continuous increases in debt ratios raised concerns in economic institutions concerning fiscal sustainability and its effect on world economy. Although the fiscal policies of the countries have received increased attention, little attention has been devoted to the relationship between governance quality and government debt.

Nevertheless, a handful of studies have been developed about the relation between governance quality and government debt. On the one hand, a substantial part of these studies focused on the impact of corruption on public debt using World Governance Index (WGI) or Corruption Perceptions Index (CPI) indicators as explanatory variables (Cooray et al, 2017). On the other hand, Ali & Ahmed (2017) uses all six-dimension WGI in their study to assess at what extent public debt is affected by governance quality in Middle East and North Africa countries. Also, Presbitero (2008) suggested that institutions quality has an important role in debt accumulation in low and middle-income countries. In similar lines, Woo (2003) found evidence that fiscal stance is closely related with government institution quality as well as political and social stability.

Following this, the objective of the present study is to assess the relation between governance quality and government debt reduction. To that end, the study uses the World Bank indicators of the WGI project. These aggregated governance indicators are a combination of related indicators that measure perceptions of corruption, rule of law, regulatory quality, voice and accountability and political stability and absence of violence/terrorism. Despite the critiques that were exposed by some authors (Arndt & Oman, 2006; Knack, 2006; Kurtz & Schrank, 2007; Thomas, 2009), this aggregation method has its advantages: cover a wider set of countries; permit cross-country analysis concerning governance; provide more precise governance measures (Kaufmann et al, 1999b). Furthermore, the presence of margin errors (related with this aggregation procedure) does not consequently unable governance comparisons across

countries or over time (Kaufmann et al, 2010). Indeed, Kaufmann et al (1999a) found evidence of a strong relation between better economic development results and efficient governance performance.

In order to assess the relation between governance quality and government debt, the present study uses two regression techniques. The fixed effects (FE) and generalized method of moments (GMM) are estimated with data for 164 countries for the period of 2002 and 2015. For robustness checks, the sample of countries is split into Low Income and High Income countries and empirical results are also presented for this specification. According to the aforementioned, the main contribution of this study for the existing literature is the analysis of the relation between governance indicators and debt accumulation for two opposite sets of countries: Low Income and High Income countries. This study also aims to give a deeper insight of the impact of each governance dimension (and their inter-relations) on government debt.

2. Government debt and economic growth

In the last decades government debt has been the focus of many economists research work. On the one hand, some studies focused on debt-growth relationship; on the other hand, little research has been concentrated on institution and governance quality associated with government debt and budget balance deficits. However, more common is to find studies about the importance and at what extent public debt influences the economic growth. Reinhart & Rogoff (2010a) explored the effects of high central government debt on economic growth as well as on inflation level for both advanced and emerging countries. Their main findings rely on the negative relation between growth and debt, meaning, public debt to GDP ratio above a 90% threshold is associated to a low economic growth on both sets of countries. Similarly conclusions were reached by Checherita & Rother (2010) and Reinhart et al (2012) for different sub-sets of countries. In particularly, Afonso & Alves (2014) found evidence about a negative impact of debt on growth in both short and long-term. In the same line of thought, high debt seems to impair growth for a certain threshold when exanimating industrial countries case according to Cecchetti et al (2011). The causality from growth- to-debt accordingly to Reinhart & Rogoff (2008) is also directly affected by fiscal impacts associated to banking crises for advanced and

emerging countries. A vast literature has found evidence that economic downturns lead to higher levels of debt to GDP ratios whether the source of it was a financial crisis or not (Reinhart & Rogoff, 2010b).

2.1 Fiscal sustainability

The continuous and persevering increase in government debt has sounded alarms about the fiscal sustainability and its consequences on the economic activity (Kim et al, 2017). Even today there are different definitions and methods to assess debt sustainability as Neck & Sturm (2008) pointed out. It is common knowledge that sustainability of public finances had been discussed for several years in the last decades but still exists a lot of discomfort about it and especially about the explanation of the considerable cross-country differences. It is believed that economic arguments are not sufficient to explain public debt ratio differences across similar countries like OECD countries. Looking at an example of PIIGS countries again, Fincke & Greiner (2011) found to be the countries in Euro area who raised more concerns about debt sustainability in the last decades. The authors found evidence that Ireland, Portugal and Spain followed sustainable debt policies in last decades however for Greece the same does not apply.

Some studies followed what is called the "Ricardian Equivalence" such as Barro (1979). The seminal work by Barro (1979) through tax smoothing theory showed that public debt and budget deficits could improve welfare and thus positively influence economic performance. This means that fiscal deficits rise when government spending is high, working as a buffer. Summarizing, the government (the social planner) should keep the tax rate constant. The present value of spending should equal the present value of taxes and that is how the level of taxes is determined (Alesina & Perotti, 1995). Notwithstanding, Woo (2003) criticizes Barro because is quite difficult to harmonize this view when deficits are very large and there are wide variations in countries.

Other views state that the positive effect of debt has to do with egalitarian redistribution of the costs between generations. Public investment today will benefit future generations; therefore, the current cohort should not bear all the costs meaning that by issuing debt to sustain investment make future generations as contributors.

Apart from this, Alesina (1988) argued that economic policy models cannot be disassociated from politics, highlighting the importance of the link between political competition and government debt. Moreover, Alesina & Perotti (1995) study reinforced this idea, summarizing other models that suggest a relation between debt accumulation and preference polarization, the effect of elections and also party competition.

The party polarization problem is also investigated by Roubini & Sachs (1989) which stated that there was a clear evidence of larger deficits in governments with multiple political parties in the "ruling coalition", for a certain period in time. More precisely, debt accumulation comes from postponed fiscal adjustments typically associated to weaker coalition governments. Nevertheless, this result was contested by De Hann & Sturm (1997) research which found that there is no positive association between government debt increases and power dispersion index used their work.

Some authors associate left-wingers with higher spending in areas like social security and welfare which implies more public spending and ultimately higher deficits (Afonso & Guedes, 2018). Roubini & Sachs (1989) in their study also found evidence that supports the idea that left-wing parties are bigger spenders when compared to right- wing governments or coalition governments. However, Muller et al (2016) in their results dissect this idea and show that left-wing governments tend to increase debt accumulation only during recessions unlikely right-wing ones. Indeed, right-wing governments are more leaning to adopt debt accumulation policies in "normal" times.

2.2 Public debt and Institutions quality

As aforementioned, there is a vast literature about the relationship between public debt and economic growth. Apart from it, little attention has been given to the importance of the institutions and good governance which are seen as fundamental to preserve a sustainable economic growth and a stable fiscal stance. Budgetary institutions produce effects on fiscal outcomes and, therefore, might explain cross-country differences in debt accumulation (Alesina & Perotti, 1995). According to Kim et al (2017), good institutions reduce uncertainty for economic decision-makers

leading to a better productivity. Also, Masuch et al. (2016) in their recent working paper argued that quality of institutions is crucial determinant of GDP per capita growth. The authors found evidence (for OECD countries) that good institution quality is a major instrument to smooth government debt since it allows a better management of government expenditures and thus ensuring economic growth sustainability. Another study that provides empirical results about debt-institutions relation is Cordella et al (2010). The authors argue that countries with a good institution and policy quality deal with debt overhang in much lower thresholds than on developing countries which perform bad policies and have inefficient institutions. Similarly, Kraay & Nehru (2006) studied the determinants of "debt distress" and found that countries with good policies are able to deal with debt levels three times higher than the ones who have the same "debt distress" problems. Following the same reality, results suggested by Presbitero (2008) demonstrate also that policies and institutions might have an effect either on debt accumulation and growth in Low and Middle-income countries. Woo (2003) goes beyond and argue that socio-political stability is fundamental to explain the existing differentiation on fiscal outcomes of countries, but government institutions have an important role on fiscal stance.

A broad consensus has been stablished in recent years about the role of institutions on economic performance and government debt. Nonetheless, the measurement of this "good governance" and "institution quality" is not that linear. In the few literatures which takes into account these kind of themes, the majority of them use indices related to corruption measures as a proxy for good institutions. Several studies use CPI index published by Transparency International as a measurement of corruption where lower levels mean more corruption (Cooray et al, 2017); or use the Country Policy and Institutional Assessment Index (CPIA) where higher values are associated with a superior policy environment (Cordella et al, 2010).

Notwithstanding the foregoing, the present study follows another strategy which does not only consider corruption but also other dimensions to determine what could be accounted as good governance and institution quality. Following Ali & Ahmed (2017) and Barisik & Baris (2017) studies, the present study uses the six worldwide governance indicators created under WGI project of the World Bank in order to assess their impact on government debt.

2.3 Governance and WCGI

Although various studies focus on the governance and its impact, the idea and the concept of governance is not clear and there is not a broad consensus about the definition. Several authors defined governance in a more embracing way, others presented more narrowly meanings. Nevertheless, Kaufmann et al (2010) work suggests an intermediate definition: governance is seen as "the traditions and institutions by which authority in a country is exercised" Kaufmann et al (1999a, p. 3). The authors constructed the first indicators covering three major areas measured: «the process by which governments are selected, monitored and replaced» capture by Voice and Accountability and Political Stability and Absence of Violence/Terrorism indices; «the capacity of the government to effectively formulate and implement sound policies», measured by Governance Effectiveness and Regulatory Quality indices; «the respect of citizens and the state for the institutions that govern economic and social interactions among them» corresponding to the Rule of Law and Control of Corruption indices dimension.

Due to the asymmetry in country coverage and score ratings, all the individual sources are rescaled in order to be possible to do comparisons over time. Considering this fact, the authors constructed aggregated governance indicators (mentioned above) which takes into account these differences. The aggregation procedure called unobserved components model allows for meaningful aggregation across sources (Kaufmann et al, 1999a; 1999b; 2007b; 2010). This approach has the ability to put into common units all the data collected from the individual sources and uses a framework that allows a weighting of the indicators by their relative precision. In the end, the aggregated indicators are more informative about unobserved governance than the individual governance sources separately as Kaufmann et al (2007b) refer.

Governance estimation measures follow a normal distribution with mean of zero and a standard deviation of one every period which implicate that governance scores be between -2.5 and 2.5, where lower scores mean worst ratings and, therefore, non-desirable outcomes. Governance rankings instead are from 0 to 100 (percentile rank) across all countries covered. As consistently reported in Kaufmann, Kraay and Mastruzzi working papers, governance estimations are accompanied with margins of

errors entirely attributable to the inevitable uncertainty related with governance measuring. With the wider coverage of countries and with the addition of new data sources to the aggregated indicators, margins of errors have substantially been reduced (Kaufmann et al, 2007b). It is of major importance to consider them when interpreting country scores, especially because small differences in country's rankings are improbable to be statistically significant (Kaufmann et al, 1999b). However, this does not mean that the indicators cannot be used in cross-country comparisons (Kaufmann et al, 2010).

Despite the merits of this governance measure. some authors have criticized the WGI project. Critics stem from the lack of comparability, the construct validity and the reliability and comparability across countries as summarized by Arndt (2008). One criticism is that comparisons over time and across countries are not possible using WGI (Arndt & Oman, 2006; Knack, 2006). They state that when comparing two countries scores, governance estimations could have roots on different underlying sources. Kaufmann et al (2007a) in their working paper answer this critic arguing that despite the fact that could happen, the aggregation method used permit putting different underlyingdata sources in common units, thus enabling comparisons across countries. The fact that different data sources could measure different concepts of corruption does not seem to be a problem when comparing two countries scores. This might be true either because the aggregated indicator pulls out the common component from the underlying sources and distinct forms of a component measurement tend to be highly correlated among them. Following this response, Knack (2006) argument that may be more appropriate to use data from a single source rather than a composite index because of the loss of conceptual precision in aggregation seems to be inadequate.

On the other hand, Kurtz & Schrank (2007) states that WGI suffer from potential perceptual and selection biases towards the firm/business' views present on surveys. This fact might imply that firm answers about governance could divergence from the ones of common good defenders. Nevertheless, as stated in Kaufmann et al (2007a), the evidence that exists is quite robust, with correlations across all types of governance data sources.

Another important question was raised by Thomas (2009) work is the "construct validity". Thomas criticizes the WGI in the sense that they do not present a suitable definition for each of the six dimensions of governance, in other words, if WGI are valid measurements of what they are supposed to measure. According to the author, construct measure to be valid have to meet two points: have to represent the theoretical definition of the construct and there must be a one-to-one relationship between measurement proposed and the observable variables. Therefore, the argument of criticism is based on the non-evidence of construct validity. Despite this fact, Kaufmann et al (2007a) emphasis that governance definition is not consensual among the academia, therefore, the definitions for all the six dimensions are quite reasonable since their founded on some existing definitions and on understandings of the concepts. Regarding to the "discriminant" and "convergent" validity failure, the authors in their previous work[4] demonstrated evidence that rejects these critics.

2.4 Government debt and Governance indicators

Apart from the abundant literature on economic growth and governance relationship, little has been done concerning government debt and governance quality. In any case, should be analyzed whenever and at what extent governance indicators affect public debt. Some studies focused particularly on the effects of corruption on government debt accumulation. First empirical works appeared in the late 1990s, especially through Mauro (1995) research who found evidence that public investment is negatively affect by corruption which consequences extended to economic growth. So, corruption can broadly be seen as an impediment of economic development and growth. This is corroborated by Méon & Sekkat (2005) which found evidence about it by presenting results in favor of "sand the wheels" hypothesis[5] in contrast with "grease the wheels" hypothesis which affirms that bad governance could be offset by corruption. Again, the authors found evidence of a positive association between corruption and public investment (Tanzi & Davoodi, 1997) where a deficient resource allocation is present on government spending (Mauro, 1998). A more insight look on Tanzi & Davoodi (1997) results, suggest that corruption reduces economic growth by decreasing government revenue through losses in tax revenues. Also, Al-Marhubi (2000) found statistical evidence of a positive association between corruption and

inflation, also argue that tax evasion costs tend to be higher in more corrupt countries. This tax revenue reduction is intimately related with the expansion of shadow economy activity (Friedman et al, 2000). Dreher & Schneider (2006) corroborates this finding by arguing that fiscal burden is negatively associated with unofficial activity for a 10% level of significance. The authors go further and present evidence that confirms a complementarity of shadow economy and corruption for Low Income countries. Actually, corruption do not allow governments to have an efficient tax collection and, therefore, permitting an upward trend in tax evasion. Furthermore, shadow economy diminishes the tax base and, consequently, even higher tax rates are imposed. This "mechanism" creates a viciouscircle and, ultimately, leads to a worsening of economic growth, reduction of exports, hinders productivity and also hampers foreign direct investment (Kaufmann, 2010). Apart from this, corruption can also worsen government expenditure composition by decreasing education and health expenditures in favor to other investments (Mauro, 1996; 1998). Suchlike conclusions are put forward by Delavallade (2006): government expenditure allocation is directly affected by corruption where the share of social expenditures is reduced in favor of public services and order.

Following this corruption view, can be understood that, ultimately, corruption can be favorable to well-connected private individuals and, therefore, affecting income distribution. According to Gupta et al (2002) study, an increase in corruption lead to higher propensity to a reduction in social services at disposable to the poorest and, thus, increases poverty. The authors also believe that corruption is harmful to government income distribution since negatively affects human capital formation and human capital distribution. Consequently, economic growth suffers a downward impairing country's fiscal stance. Finally, public expenditures can also be negatively affected by corruption through the adoption of riskier decisions over public debt composition which might lead to a more expensive debt servicing (Kaufmann, 2010).

Many studies, the majority of them already identified on this study, have shown the negative effects and the channels through with corruption hamper growth and debt accumulation with a greater focus on developing countries (which are associated to bad governance). Nevertheless, this phenomenon is not entirely devoted to this cohort, Industrialized countries also suffer from high fiscal deficits and destabilized

public finances. Kaufmann (2010), using WGI, emphasis that there is a dispersion between industrialized countries in controlling corruption. Moreover, found evidence of a highly correlation between corruption and fiscal deficits for the same sample of countries. Similar results were obtained by Cooray et al (2017) study when using WGI of corruption just like Kaufmann did. Authors state that corruption negatively affects public debt through an increase in government expenditure and shadow economy size.

From these outcomes can be inferred that misgovernance and, more specific, corruption is not a problem exclusively of low income per capita countries but also ofricher ones (Kaufmann, 2005). In line with this argument, the first proposed hypothesis is that bad governance is associated with higher government debt, stated as:

H1: Higher levels of government debt are associated with poor governance.

This imply that country's government should be aware of the importance of governance on their fiscal stances and also that economic and financial institutions which cover both Low and High income countries should promote implementation of policies targeting better governance.

Notwithstanding the foregoing, contrasting views about this topic have been released. Actually, some studies claim that corruption can increase countries' efficient in the presence of inefficient institutions. Méon & Weill (2010), using corruption and government effectiveness indexes of WGI project, found that corruption is less detrimental in countries with more ineffective institution quality. This may so because sometimes corruption could accelerate decision-process widely plagued with bureaucracies or either as form of trespassing a weak regulatory and institutional framework. Leff (1964) attributes importance to corruption in improving welfare and economic growth since may indulge economic development by enhancing higher rates of investment and promoting innovation.

Another line of research was concerned about the other 5 governance indicators which have impact on government debt either through direct or indirect mechanisms. Kaufmann et al (2010) claim that WGI cannot be though as independent of each other

and give the example that that less corruption could come from better accountability framework. Seems that all six-dimension governance indicators cannot be analysed independently, de facto, corruption and government effectiveness have close tights relations. As Tanzi & Davoodi (1997) refer, government becomes more inefficient on spending and investment function due to high levels of corruption. Not only country's output performance but also politics contributes to the lack of effectiveness of governments. In fact, government debt deterioration is closely related with weak coalition governments (Roubini & Sachs, 1989). Alesina & Perotti (1995) work notes that coalition governments affect government effectiveness by the delaying the implementation of necessary fiscal adjustments to combat budget deficits. La Porta et al (1999) addresses this issue by claiming that there are differences between rich and poor countries concerning quality of public good provision and public sector efficiency. Government size is also emphasized as being positively associated in a better performance. Bigger government might imply higher costs inherent to it, however, the gain of efficiency on government management seems to have a wider effect on public debt (due to a higher collection of taxes, for example). Nonetheless, Méon & Sekkat (2005) believe that corruption might also be a consequence rather than a cause of government ineffectiveness. The authors state that corruption on investment increase due to ineffective governments' decisions.

As can be seen, there is no space for an analysis of government effectiveness without exploring rule of law determinants impact. This inter-relation was noted by Dreher & Schneider (2006) paper where authors have reasons to believe that a better rule of law and greater democracy can positively affect government effectiveness by substantially reducing corruption in a country. Unofficial activities, also known as shadow economy activities, tend to be smaller in countries with better rule of law and, thus, strengthening public finances according to Friedman et al (2000). Nevertheless, Weingast (2009) presents a contrasting view arguing that implementing and improving a better rule of law in developing countries tend to be harder that in developed countries.

Another linkage is expressed by Kaufmann et al (2010) which states that better regulatory environment can be achieve through more effective governments. And how it affects government debt? Rules and regulations through which government

budgets are design and implemented are a responsibility of budgetary institutions and they might explain the present of difference on debt across countries. Indeed, Alesina & Perotti (1995) found evidence that fiscal policy outcomes are influenced by budget institutions. Regulatory quality can enhance economic development, especially in some Low Income group of countries like in sub-Saharan Africa (Kaufmann, 2005). Good regulatory infrastructure promotes private sector development (Ali & Ahmed, 2017) but also productivity and public goods provision. Nevertheless, when there is room for over- regulation and bureaucracies, shadow economy activities tend to develop (Friedman et al, 2000). Also, Kaufmann (2005) in his results found evidence for OECD countries that bureaucracy is a major hindrance for enterprise activity. This problematic could weaken government revenue, tax collection country's competitiveness and, therefore, negatively impacting government debt.

Last but not least, Voice and Accountability and Rule of Law indexes: according to Kaufman et al (2010), more transparent and fair processes of choosing and replacing governments can be obtained by proper rule of law respect by citizens. Both developed and developing countries benefit in terms of tax performance by improving voice and accountability and control of corruption (Bird et al, 2008). Legit and responsive governments seem to be an important factor on indulging tax effort, meaning that good governance increases the predisposition of citizens and businesses to pay taxes. Notwithstanding, other study suggests that government debt could be negatively affected with improvements in Voice and Accountability of a country. Schultz & Weingast (2003) claimed that liberal governments normally have a greater access to credit comparing with illiberal governments which face a premium payment to obtain it leading to a credit rationing. The simple fact that government officials are constrained by limited government institutions increases the likelihood of debt repayment because electoral accountability in liberal countries have a greater power in punishing governments in the case of default. Consequently, state's borrowing power is expanded, greater amount of loans is conceded to the country at low interest rates and, ultimately, government debt increases. In this latter case, political stability plays a key role. Indeed, sovereign loans tend to be larger in the presence of political instability for unconstrained regimes (Ozler & Tabellini, 1991). Moral hazard and perceiving country risk positively affect political instability which in turn might lead

to a more expensive debt serving and an increase in demand for sovereign loans.

Summarizing, the main goal of this study is to assess at what extent governance has an impact in government debt. Governance itself does not influence public debt in the same way on countries; therefore, we pretend to assess this fact by analysing two sets of countries: Low Income and High Income countries. Following this line of thought, Hypothesis 2 proposes that governance improvements have a greater impact on government debt in Low Income countries.

H2: For Low Income countries, government debt is lower with a better governance environment.

3. Data and methodology

3.1 Sample

The data used in this study was collected from the World Bank (World Bank DataBank) as well as from International Monetary Fund (IMF DataMapper) and Worldwide Governance Indicators database. It covers the period between 2002 and 2015 for a sample of 164 countries. The countries were divided into Low Income and High Income countries for robustness purposes, as presented in Table A.I. (Appendix section). The Low Income countries are those who present low per capita income measured by Gross National Income (GNI) per capita in US dollars, according to the World Bank classification, a threshold below $958. They can be classified as part of Developing countries. Inversely, High Income countries are those who have the highest thresholds of per capita income (above $12,056), previously called as "industrialized" countries. This income group division is mainly based on operational threshold for "civil work preference" (World Bank's Data Help Desk). According to the World Bank Atlas method, GNI per capita is calculated and four groups are defined corresponding a certain threshold as previously described. Despite the fact that GNI per capita does not account for income distribution inequalities, has demonstrated to be a useful indicator when measuring some parameters that summarize a country's level of development.

3.2 Variables

The dependent variable is General Government Gross Debt in percentage of gross domestic product (GDP) as a proxy for government debt. It is defined as consolidated general government gross debt at nominal value outstanding at the end of the year, according to the Maastricht Treaty. It includes debt liabilities, currency and deposits, debt securities and loans. This set of data comes from the IMF database which has been widely used in other studies (e.g. Kim et al, 2017; Cooray et al, 2017).

Governance can be defined «as the traditions and institutions by which authority in a country is exercised» as referred by Kaufmann et al (1999a). This kind of definition implies that governance itself includes: «the process by which governments are selected, monitored and replaced» capture by Voice and Accountability and Political Stability and Absence of Violence/Terrorism indices; «the capacity of the government to effectively formulate and implement sound policies», measured by Governance Effectiveness and Regulatory Quality indices; «the respect of citizens and the state for the institutions that govern economic and social interactions among them» corresponding to the Rule of Law and Control of Corruption indices dimension (Kaufmann et al, 1999a; 2010).

This study uses six measures of institution's quality which were constructed under the WGI project of the World Bank. Recalling the their descriptions, we have: Control of Corruption (CC) which tries to quantify how «public power is exercised for private gain as well as "capture" of the state by elites and private interests»; Government Effectiveness (GE) concerns about the «perceptions of public service provision and bureaucracy quality, civil servants competence, civil service independence from political pressures and government's credibility»; Regulatory Quality (RQ) index captures «perceptions of unfriendly market policies incidence and excessive regulation burden»; Political Stability and Absence of Violence/Terrorism (PS) concerns to the«perceptions measurement of the likelihood government destabilization and overthrown by violent or antidemocratic means»; Rule of Law (RL) measures to what extent «society rules are obeyed and trusted by the agents»; Voice and Accountability (VA) indicator measure «to what extent citizens are able to select a country government and have freedom of speech». Here the estimations range from (-2,5) to (2,5), with the lower values be representative of lower governance

performance. More details about the underlying sources, aggregation method and their interpretation can also be found in the WGI methodology paper by Kaufmann et al (2010).

The control variables that follow the related literature are: GDP per capita (current US$) which is used to measure the level of development of a country and to capture some socio-political effects (Cooray et al, 2017; Tanzi & Davoodi, 2002; Woo, 2003). Furthermore, whereby government consumption expenditure is directly affected by existing countries' corruption (has a negative impact), then it is also taken into account in the empirical analysis as Gupta et al (2002) suggests. Accordingly, it is used General Government Final Consumption Expenditure as percentage of GDP (LOG_GGFCE) since could be seen as a macroeconomic variable that accounts for government spending, following Swamy (2015a) research. Public investment and foreign direct investment can be negatively influenced by corruption through different channels (Mauro, 1996, 1998; Kaufmann, 2010; Cooray et al, 2017; Kim et al, 2017; Tanzi & Davoodi, 1997). Therefore, other variable used in the model is Gross Fixed Capital Formation as percentage of GDP (LOG_GFCF) in an attempt to proxy fiscal policy which is representative of gross net investment. Unemployment (LOG_UNEM) which refers to the share of labour force that is available and seeking for a job but is not working is point out as been an important variable in what concerns to the debt-growth nexus (Swamy, 2015a; Cecchetti et al, 2011). Ali & Ahmed (2017) acknowledge that unemployment can be directly affected by corruption and other macroeconomic dimensions capture by the WGI leading to an increase in government debt. It is also included the rate of inflation (LOG_INF) measured by the consumer price index. As Woo (2003) presents, fiscal deficits are widely affected by inflation through multiple channels. Rising inflation is positively correlated with high nominal interest payments as well as with lower real tax revenues. The previous variables are subject to a log transformation in order to turn the data distribution less skewed (mechanism largely used in the related literature).

Trade Openness is defined as the sum of exports and imports of goods and services measured as a share of GDP according to World Bank definition. Indeed, seems to be a relevant control variable once economies with higher levels of trade volume are associated with higher levels of external debt (Colombo & Longoni, 2009). Age

Dependency Ratio (as % of working-age population) represented by the variable AGE is a measure of ageing and population structure which has a negative and statistically significant impact on growth which indirectly affects public debt (Cecchetti et al, 2011). Furthermore, the authors signalize that both industrialized and emerging countries (with some exceptions) are facing an upward trend on ageing turning it on an important variable when studying public debt in our sample. Data for all of these variables were collected from World Bank Database.

Finally, there is a categorical variable for an income grouping in order to control for economic and institutional development factors. Good institution quality is believed to have a positive impact on government debt either through a better allocation of government expenditures financed by debt (Masuch et al, 2016) or through higher investment which enhances a sustainable economic growth (Kim et al, 2017) among other channels. This idea is supported by La Porta et al (1999) who found evidence that poor countries demonstrate inferior governance performance than rich ones. Accordingly, this work seeks to assess whether governance quality affect public debt of Low and High Income countries differently. In this way, dummies LOW_INC and HIGH_INC divide the sample into a country grouping classification following World Bank methodology.

3.3 Methodology

This study uses a strongly balanced panel data of 164 countries between the period of 2002 and 2015. Some panel techniques are used to estimate the empirical model. There are some advantages in using this kind of empirical approach, as Afonso & Alves (2014) refer. The most important is that highlights the individual heterogeneity as well as some associated problems like missing data for some particular countries. To estimate the model is used panel Fixed Effects (FE) and the system General Method of Moments (GMM). Some issues arose when deciding whenever it would be adequate to estimate using Fixed Effects (FE) or Random Effects (RE) method. As mentioned by Geller & Guedes (2017), FE could be better when testing within country variation. Moreover, FE seems to the best way to better estimate a model where omitted variables and explanatory variables are correlated, as shown in Afonso & Alves (2014) research. Nevertheless, through a RE model is also

possible to deal with unobserved effects.

In order to better reckon which specification test is more suitable was applied the Hausman Test as suggested by Hausman (1978). Based on the results of the Hausman Test, FE model appears to be the right one to use since the null hypothesis is reject. Otherwise, if it was accepted, RE model would be the most convenient to employ. Thus, this work only reports the results for FE estimations.

Another recurrent problem when dealing with panel data analysis is endogeneity meaning that some explanatory variables are not completely exogenous. With the view to control for it and to avoid biased estimators, system GMM estimator is considered. Thus, the empirical model is also estimated by the GMM estimator. Despite the fact that could arise some issues in using GMM estimator with macroeconomic and cross- country data, as cited by Presbitero (2008), it is shown that is a good estimator and there is a gain of efficiency on the results obtained. Also, GMM techniques seem to work properly when the number of panel units is large and the time scope small (Blundell & Bond, 1998).

In an initial stage, it is tested for the full sample of countries and with no introduction of categorical variables, testing the Hypothesis 1. To better stand out the impact of governance quality on government debt, an index was built of overall governance indicators (an aggregation, merely representative). This aggregation was built through Principal Component Analysis (PCA) which transforms several correlated variables into a smaller set of uncorrelated variables (Jackson, 1991).

Then, the sample is split into Low Income and High Income countries. Two regressions were constructed, one for each set of countries using the dummy variable LOW_INC and using the dummy HIGH_INC . Control variables used are the same of the previous model specification. In this way can be assessed whether governance indicators are more relevant on improving government debt thresholds in countries with low per capita income comparing with the richest countries. Therefore, Hypothesis 2 – government debt level of Low Income countries benefit from a better governance performance – is verified. Developing an empirical model with these specifications can be seen as the main contribution of this research for the existing literature on this subject.

4. Results and discussion

Table I presents descriptive statistics for all variables. Taking a glance on Government Debt minimum and maximum values can be said that there is a quite big disparity between all countries, an outcome more a less expected since our sample includes both low per capita income countries and high income ones. This heterogeneity among countries is also present in Inflation. It is believed that this divergence has roots in different national central bank's views about inflation rate level. With regard to the governance indicators, Political Stability appears to be the one with lowest score where negative levels mean worst governance quality. Episodes of terrorism, democratic revolutionary events and civil wars in recent years all over the world may be the source of such low scores. Undoubtedly, Government Effectiveness and Regulatory Quality have a significant deviation between the lowest and highest score.

Insert TABLE I about here

Table II presents the correlation matrix. The correlation between WGI variables are highly positive and statistically significant. As noted by Kaufmann et al (2010), this strong positively correlation shows that governance indicators cannot be thought as being independent of each other. Interactions arise in very different ways, for example: good accountability mechanisms are an important tool to reduce corruption or a sound and effective government could potentiate a better regulatory framework. In what concerns to their correlation with the government debt, it is clear that they are low correlated but highly statistically significant. The governance indicators should have negative coefficients yet, that does not verify for all of them. However, as the seminal work of Kaufmann et al (1999a) argue, there might be some determinants of government debt which are not accounted that could invert this positive causal relationship. Therefore, this correlation does not mean that better governance impairs a reduction on government debt, as shown in this research. Macroeconomic variables are relatively low correlated with the dependent variable; however, Inflation

(LOG_INF) is negatively correlated with government debt which contradicts some of the existing literature. As Cooray et al (2017) present, high inflation is related with higher government due to a rise in interest payments and thereby increasing the stock of debt.

Insert TABLE III about here

Table III shows the results for the estimations using panel Fixed Effects and the system General Method of Moments (GMM) for the full sample of countries. Thus, the results will be reported and interpreted for both estimation methods. The regressions present the basic model in order to access if government debt is reduced in the presence of better governance quality. The results for FE estimation (in column 1) in part confirm the Hypothesis 1 in the sense that Control of Corruption (CC) and Political Stability (PS) have negative coefficients and are statistically significant. Also, the Regulatory Quality index presents a negative relation with the dependent variable as previously expected but is not statistically significant. De facto, all three governance dimensions seem to influence each other. Economic and political stability is closely tight with a decent regulatory environment and, consequently, enhancing a satisfactory control of corruption.

Insert TABLE III about here

Nevertheless, the results for the remaining governance quality indices do not support the Hypothesis 1 since Government Effectiveness (GE), Rule of Law (RL) and Voice and Accountability (VA) indices have positive coefficients. Undoubtedly, VA could increase government debt in some circumstances. As Schultz & Weingast (2003) stressed out, representative institutions of liberal countries can enhance the state's borrowing power. In this way, the access to credit is more easy meaning that despite the rise in demand for funds, it won't result in tax increase due to a policy called "tax smoothing".

In what concerns to the control variables, the majority of them got the theoretical sign expected for estimated coefficients. This effect in part confirms Cecchetti et al (2011) findings that ageing is affecting more broadly the industrial countries driving their government expenditure upward and their revenue down. Besides, Gross Fixed Capital Formation and Inflation estimated coefficient get a negative sign, instead, should have got a positive one. As Reinhart & Rogoff (2010a) presented, higher inflation can affect countries by reducing the real value of debt stock. For FE model TRADE is positive associated with government debt being statistically significant at 5%. The clarification of this result has to do with some mechanisms through which trade openness negatively affects government debt being the reduction of tax collection via an increase in income inequalities one of the many examples (Savvides, 1998). Also, Inflation positively affects debt in both estimation models. Surely, when kept under control (as it happens in the majority of High Income countries), inflation can attract debt on much affordable and favourable terms than those countries with higher levels (Swamy, 2015a). Likewise, negative coefficient corroborates Al-Marhubi (2000) view that governments could create inflation in order to generate seigniorage and, thus, reducing debt (according to the theory of optimal taxation). The negative coefficient of GFCF can be explained by the inability of attracting new sovereign debt creditors due to the disequilibrium on fiscal position of the certain countries (Swamy, 2015a).

In order to strengthen the validity of the Hypothesis 1, was created an index of overall WGI (as previously mention on Methodology section). The results, for both FE and GMM estimators (column 3 and 4) seem to suggest the support to our hypothesis, meaning that, there is a negative and statistically significant relation between governance quality and government debt. Nevertheless, we cannot surely infer that poor governance leads to higher debt levels or the inverse.

To wash out possible distortions and to obtain more consistent and reliable results the sample is split between Low Income and High Income countries and the results are presented in Table IV. The results from GMM estimation (in column 2 and 4) shows that the interaction governance quality and government debt differ whenever referring to Low Income or High Income countries. By this we mean that improvements in some governance parameters seem to be associated with lower levels of public debt.

Political Stability and Absence of Violence/Terrorism and Voice and Accountability indexes have negative coefficients and are statistically significant at 5% and 1%, respectively. These results are in line with the ones of Woo (2003) which specifies that public deficits tend to be smaller in countries with better institutional procedures. However, Rule of Law show every sign of being statistically significant and positively associated with public debt (for FE model this do not apply). As shown by Weingast (2009), Low Income countries normally require some reforms on their institutions and rule of law system. These reforms aim to dismantle natural states of privilege and rents (which are a tool for controlling violence and disorder) but, in the end, threaten to make the society worse off. Therefore, societies of poor countries tend to resist to them and hundreds of billions are spent in improving rule of law system with few results at sight.

The results reported for control variables from Low Income countries are consistent with existing literature. Per capita income seems to have a negative coefficient (and statistically significant) suggesting that the higher GDP per capita, lower will be the government debt ratio. In what concerns to the negative coefficient obtained on Trade Openness, accordingly to Combes & Saadi-Sedik (2006), for a certain level of trade instability more open economies are likely to have higher budget deficits due to a higher exposure to external shocks. Authors also state that it may influence negatively public debt directly via a decrease in government revenues in short-term (when more trade activity comes from a decrease in tariffs). Notwithstanding the foregoing, Age Dependency ratio is a little muddled, still, exits some explanations for the outcomes. Cecchetti et al (2011) pointed out that the impact of ageing on real interest rates are controversial. Ageing has an ambiguous effect on capital intensity: despite the reduction of the growth of young cohort could lead to an increase in the rates of returns, there is a direct effect on interest rates (Krueger & Ludwig, 2007).

Insert TABLE IV about here

The depletion of young population causes a reduction on labour supply in the future leading to labour scarcity in relation to capital. Thus, increases capital-to-labour ratios and hence interest rates fall. This descendent pressure on real interest rates at world

level might benefit government debt through a reduction on interest payments.

Relatively to High Income countries, none of the WGI are statistically significant. This result gives support to our Hypothesis 2 – the link between good governance quality and government debt reduction is more evident for Low Income countries. Our results also meet the existing literature in the sense that Mausch et al (2016) found evidence that strong institutions have an important role in debt effect on growth. Actually, the majority of governance indicators (for GMM estimations) have positive coefficients yet not significant. For the positive (but not significant) coefficient of Control of Corruption index, Gupta et al (2002) states that as per capita GDP is a robust determinant of corruption and, once included in the regression, reduces the explanatory power of corruption index. Rothstein & Teorell (2008) also points that countries with low levels of corruption tend to be associated with greater government size. Furthermore, Government Effectiveness positive coefficient can also be explained. La Porta et al (1999) found that governments' performance is in part affected by legal origin, ethnolinguistic heterogeneity, etc, and, more important, found that larger governments perform better. Better performing governments can be linked with more expenses from a larger government size, thus, higher public debt. Nevertheless, Regulatory Quality and Political Stability ensure a positive impact on government debt. Indeed, for FE model, Regulatory Quality is statistically significant at 10% suggesting that government debt decreases 0,15% with one unit increase in the mentioned index.

Concerning the results for the control variables mentioned above, they have the theoretical expected signs being the lagged Government Debt, General Government Final Consumption Expenditure, Trade Openness and Unemployment statically significant at 1% and 10% level. As Reinhart & Rogoff (2009) denoted on their work, government spending tends to rise by a lot on the years after a banking/financial crisis in an attempt to fight the recession as happen in some of High Income countries (e.g. Portugal, Spain, Ireland, Greece, etc.). Notwithstanding, per capita income seems to be statistically significant but with a positive coefficient. It is known that several High Income countries, during and after the crisis of 2008, suffered from low economic growth rates. Public debt and slow economic growth are synchronously related, yet this relation is not linear accordingly to Reinhart et al (2012). The authors

state that the majority of high debt events coincide with low economic growth times. Also, Krugman (2010) goes even further and says that causation can sometimes run from growth to debt as happen with Japan few years ago. More surprising, Swamy (2015b) found evidence that GDP growth has a significant negative effect on debt. Finnaly, Roubini & Sachs (1989)[9] noted that large budget deficits could result from economic growth slowdown and high unemployment. It is evident that after the financial crises, governments of these countries had some difficulties in dealing with social security and public safety needs by public finances. This corroborates the historical phenomena upward trend on unemployment rate which is seen after a banking or financial crisis according to Reinhart & Rogoff (2009) research. Lastly, GGFCE have a positive and statistically significant coefficient at 1% level for both FE and GMM specification models. This goes in the line with Leão (2013) research which argues that, using a Keynesian framework and under full employment, public debt ratio could be reduced with a rise in government spending.

4. Conclusions, limitations and future research

The majority of the literature focused on the relation between public debt and economic growth. In what concerns to the governance and government debt nexus the same does not apply. Little has been discussed about this issue, however, still exists some literature which explores the impact of corruption on government debt levels and budget deficits. So, this study aims to ascertain whether and to what extent all six- dimension governance quality indicators (WGI) affect government debt thresholds.

A panel data analysis is carried out using fixed effects (FE) and generalized method of moments (GMM) estimation for a set of 164 countries on a period between 2002 and 2015. The estimation results for FE model suggest that Control of Corruption (CC) and Voice and Accountability (VA) indexes are negative and statistically significant on influencing government debt. In part, this result confirms our Hypothesis 1 that better governance quality is associated with lower levels of public debt.

For robustness purposes, estimation results are presented for two other specification models: for Low Income countries and for High Income countries group. The sample

is divided into these two sets of countries with 25 and 47 countries, respectively. The results are robust in the sense that, for GMM estimation model, Political Stability and Absence of Violence/Terrorism (PS) and Voice and Accountability (VA) indexes are negative and statistically significant for Low Income countries. Therefore, can be argued that Hypothesis 2 is partially supported, only when we claim that Low Income countries have a better performance on government debt accumulation with an improved governance quality. The main contribution of this study is also related with the fact that results also suggest that improving governance is more beneficial for countries with lower levels of per capita income when comparing with high income ones.

Following the aforementioned, we can conclude that there is a positive association concerning government debt levels and institutional and regulatory quality of the country. This fact may derive some policy implications in the sense that government institutions and international economic organizations should sought to pin down sound policies with regard to strengthen governance quality. Policies that promote a better government environment may lead to a soaring economic growth and public debt sustainability.

In what concerns to the limitations, the study faced some such as a restrained time span availability for WGI variables (which only exists annually since 2002) and the lack of economic data for some countries (which could have enlarged the dataset dimension). The fact that WGI only captures "perceptions" measures which are based on surveys may constrain the present study.

For future research, the impact of politics on the interaction between government debt and governance can be explored. Political polarization as Roubini & Sachs (1989) and Alesina & Perotti (1995) refer, have an important role on government debt dynamic. Moreover, in order to better reckon debt-governance relation, analysing the impact of the banking and financial crisis of 2008 could develop another field of studies and pertinent results, especially when looking for the most plagued European countries (PIIGS).

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Table I – Descriptives

	Mean	S.D.	Min.	Max
LOG_GovDebt	1.5873	0.3311	-0.3116	2.7109
LOG_GGFCE	1.1639	0.1578	0.4371	1.5847
LOG_INF	0.5912	0.4600	-3.2109	4.3876
LOG_GDP	3.9341	0.5308	2.6366	5.0108
LOG_GFCF	1.3443	0.1464	0.3473	2.0597
LOG_UNEM	0.8007	0.3339	-0.7959	1.5711
AGE	60.9886	18.4404	16.4518	111.6156
TRADE	89.4835	51.3867	0.1750	441.6038
CC	0.0332	1.0282	-1.7728	2.4700
GE	0.0183	0.9899	-2.0415	2.4370
RQ	0.0528	0.9337	-2.2444	2.2335
PS	0.1476	0.9565	-2.8273	1.6881
RL	0.0481	1.0003	-1.9163	2.1003
VA	0.0312	0.9589	-2.0674	1.8010

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

TABLE II - Correlation Matrix

	LOG_GovDebt	LOG_GGFCE	LOG_INF	LOG_GDP	LOG_GFCF	LOG_UNEM	AGE	TRADE	CC	GE	RQ	PS	RL
LOG_GovDebt	1												
LOG_GGFCE	0.0838***	1											
LOG_INF	0.0680***	0.2879***	1										
LOG_GDP	0.1625***	0.3615***	0.3475***	1									
LOG_GFCF	0.1960***	0.0649***	0.0819***	0.1698***	1								
LOG_UNEM	0.0370	0.2721***	0.0014	0.1568***	0.0583**	1							
AGE	0.1296***	0.2188***	0.2018***	0.7818***	0.2611***	0.1019***	1						
TRADE	-0.0257	0.0967***	0.1355***	0.2823***	0.1307***	0.0013	0.2651***	1					
CC	0.0643***	0.4758***	0.4163***	0.6998***	0.1133***	0.0861***	0.5036***	0.2551***	1				
GE	0.0710***	0.4416***	0.4256***	0.7760***	0.1441***	0.0855***	0.6050***	0.2705***	0.9410***	1			
RQ	0.0208	0.4302***	0.4498***	0.7464***	0.1030***	0.1128***	0.5727***	0.2675***	0.8894***	0.9394***	1		
PS	0.0733***	0.4027***	0.3818***	0.5845***	0.2114***	0.0900***	0.4519***	0.3672***	0.7603***	0.7262***	0.7073***	1	
RL	0.0651***	0.4686***	0.4413***	0.7270***	0.1430***	0.0915***	0.5356***	0.2648***	0.9597***	0.9582***	0.9323***	0.7772***	1
VA	0.1752***	0.4284***	0.3520***	0.5455***	0.0285	0.1671***	0.3938***	0.1273***	0.8036***	0.7958***	0.8142***	0.6702***	0.8269***

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

Table III - Government debt and Governance quality, Full Sample

	(1)	(2)	(3)	(4)
METHOD	FE	GMM	FE	GMM
L.LOG_DEBT		0.8385***		0.8419***
		(0.0503)		(0.0482)
LOG_GGFCE	0.2135	0.6200***	0.1589	0.6293***
	(0.2071)	(0.0741)	(0.2319)	(0.0794)
LOG_INF	-0.0512***	-0.0160*	-0.0450**	-0.0162*
	(0.0176)	(0.0092)	(0.0179)	(0.0090)
LOG_GDP	-0.0213	-0.0355	-0.1091	-0.0432
	(0.1214)	(0.0741)	(0.1208)	(0.0770)
LOG_GFCF	-0.4920***	0.1244*	-0.5132***	0.1145
	(0.0862)	(0.0705)	(0.0923)	(0.0710)
LOG_UNEM	0.1493**	0.0552	0.1645**	0.0473
	(0.0715)	(0.0442)	(0.0808)	(0.0442)
AGE	0.0096**	-0.0042**	0.0098**	-0.0039**
	(0.0039)	(0.0018)	(0.0038)	(0.0019)
TRADE	0.0016**	-0.0012***	0.0015***	-0.0013***
	(0.0007)	(0.0003)	(0.0005)	(0.0003)
CC	-0.1229**	-0.0430		
	(0.0492)	(0.0271)		
GE	0.0744	0.0585**		
	(0.0645)	(0.0253)		
RQ	-0.0855	-0.0441*		
	(0.0560)	(0.0231)		
PS	-0.0943***	-0.0656***		
	(0.0330)	(0.0146)		
RL	0.0769	0.0988**		
	(0.0527)	(0.0386)		
VA	0.0471	-0.0498*		
	(0.0502)	(0.0272)		
WGI_INDEX			-0.1061**	-0.0345*
			(0.0483)	(0.0202)
Constant	1.2624*	-0.1744	1.6898**	-0.1414
	(0.6675)	(0.4146)	(0.6715)	(0.4300)
Observations	1,810	1,603	1,947	1,603
Countries	157	157	157	157

Note: *, ** and *** represent statistical significance at levels of 10%, 5% and 1%, respectively. The robust standard errors are in parentheses. Dependent variable: logarithm of government debt ratio (% GDP).

Table IV - Governance quality in Low Income and High Income countries

	(1) LOW INCOME	(2) LOW INCOME	(3) HIGH INCOME	(4) HIGH INCOME
METHOD	FE	GMM	FE	GMM
L.LOG_DEBT		0.5987***		0.6191***
		(0.0886)		(0.0862)
LOG_GGFCE	-0.3812	0.0709	0.9590***	1.1335***
	(0.2821)	(0.1526)	(0.2232)	(0.2262)
LOG_INF	-0.0849**	-0.0002	-0.0498**	0.0022
	(0.0356)	(0.0211)	(0.0198)	(0.0116)
LOG_GDP	-1.6949***	-1.0189***	0.2894	0.3550***
	(0.4989)	(0.3164)	(0.2417)	(0.1270)
LOG_GFCF	-0.0680	-0.0149	-0.3911	0.0850
	(0.1612)	(0.0976)	(0.3111)	(0.1638)
LOG_UNEM	0.0420	-0.1865	0.1036	0.1708*
	(0.1435)	(0.1248)	(0.1985)	(0.0973)
AGE	-0.0069	-0.0198***	0.0220**	0.0029
	(0.0136)	(0.0074)	(0.0094)	(0.0077)
TRADE	0.0029***	0.0009**	0.0015	-0.0009
	(0.0006)	(0.0004)	(0.0010)	(0.0007)
CC	0.0297	-0.0773	-0.0085	0.0078
	(0.1502)	(0.1124)	(0.0709)	(0.0305)
GE	0.0406	0.0677	-0.1359	0.0392
	(0.1684)	(0.1435)	(0.1171)	(0.0291)
RQ	-0.2213	0.0207	-0.1548*	-0.0558
	(0.1782)	(0.1025)	(0.0885)	(0.0507)
PS	-0.1638**	-0.1660**	-0.0820	-0.0319
	(0.0673)	(0.0658)	(0.0763)	(0.0355)
RL	-0.0395	0.3128**	0.0277	0.0606
	(0.1325)	(0.1312)	(0.1297)	(0.0631)
VA	0.1846*	-0.1972***	0.1668	0.0192
	(0.0976)	(0.0696)	(0.1509)	(0.0360)
Constant	7.7021***	5.5936***	-1.4387	-2.7682***
	(2.7175)	(1.6100)	(1.2735)	(0.5927)
Observations	275	231	543	482
Countries	25	25	47	47

Note: *, ** and *** represent statistical significance at levels of 10%, 5% and 1%, respectively. The robust standard errors are in parentheses. Dependent variable: logarithm of government debt ratio (% GDP). Column (1) and (2) refers to Low Income

APPENDICES

TABLE A.I. – List of Countries in the Full Sample and their classification

SUB-SAMPLE	
LOW INCOME COUNTRIES	Afghanistan, Benin, Burkina Faso, Burundi, Central African Rep., Chad, Comoros, Congo Dem. Rep., Eritrea, Ethiopia, Gambia, Guinea-Bissau, Haiti, Liberia, Madagascar, Malawi, Mali, Mozambique, Nepal, Niger, Rwanda, Senegal, Sierra Leone, South Sudan, Tanzania, Togo, Uganda, Zimbabwe
HIGH INCOME COUNTRIES	Australia, Austria, Bahamas, Bahrain, Barbados, Belgium, Brunei Darussalam, Canada, Chile, Cyprus, Czech Rep., Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea Rep., Kuwait, Latvia, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Norway, Oman, Poland, Portugal, Saudi Arabia, Singapore, Slovak Rep., Slovenia, Spain, Sweden, Switzerland, Trinidad and Tobago, United Arab Emirates, United Kingdom, United States, Uruguay
FULL SAMPLE	Afghanistan, Albania, Algeria, Angola, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Canada, Central African Rep., Chad, Chile, China, Colombia, Comoros, Congo Rep., Costa Rica, Côte d'Ivoire, Croatia, Cyprus, Czech Rep., Denmark, Djibouti, Dominican Rep., Ecuador, Egypt Arab Rep., El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Guatemala, Guinea-Bissau, Guyana, Haiti, Honduras, Hungary, Iceland, India, Indonesia, Iran Islamic Rep., Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Korea Rep., Kuwait, Kyrgyz Rep., Lao PDR, Lebanon, Lesotho, Latvia, Lithuania, Luxembourg, Macedonia FYR, Madagascar, Malawi, Malaysia, Mali, Malta, Mauritania, Mauritius, Mexico, Moldova, Morocco, Mozambique, Myanmar, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russian Fed., Rwanda, Saudi Arabia, Senegal, Sierra Leone, Singapore, Slovak Rep., Slovenia, South Africa, South Sudan, Spain, Sri Lanka, St. Lucia, Sudan, Suriname, Swaziland, Sweden, Switzerland, Tajikistan, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Uganda, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen Rep., Zambia, Zimbabwe