

Does External Debt Lead to Growth in the Presence of Quality Institutions?

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I. Introduction

Debt, domestic as well as external, has always been a part of the lives of nations. Governments borrow to cover budget deficits, invest on physical and human capital in order to kick start the economy and to maintain balance of payments. External debt in particular has grown into importance since the end of the Second World War when international lending organizations such as the Bretton Woods Institutions were established.

The stock of external debt owed by low- and middle-income countries reached US \$6.7 trillion in 2015 (World Bank, 2017). In 2015, external debt accounted for 26 percent of the Gross National Income (GNI) of the low- and middle-income countries and 98 percent of their export receipts.

In this study, we intend to examine the role that institutional quality plays in defining the debt-growth relationship. The objective is to understand whether the presence or absence of quality institutions determines and influences the direction and magnitude of debt's effect on growth.

II. A brief review of literature

A vast literature has examined the macroeconomic effects of debt.

Evidence on the effect of debt on growth and economic development is mixed. For example, Shabbir (2013) finds a negative relationship between external debt and growth rate of per capita GNI for the developing countries. The study uses the data for 70 developing nations for the period of 1976 to 2011. The results support the debt overhang theory, as the increase in debt stock first reduces the fiscal space to service the debt and then further reduces the pace of economic growth. Likewise, Chowdhury (2001) examines debt and growth in developing countries and finds a negative relationship. Presbitero (2006) reports a negative relationship between debt and growth that could be explained by decrease in total factor productivity growth. Mensah et al. (2017) shows in the case of 24 African economies that debt growth reacts negatively to output growth in the medium term. Fosu (1999) examines the effect of external debt on the growth of 35 countries and reaches the same conclusion.

On the other hand, the debt-growth relationship is found to be trivial for industrial nations (Schclarek, 2004). Recent empirical studies linking debt with growth found that indebtedness can promote economic growth. They argue that positive relationship exists when debt resources are used for financing public investment expenditure. However, when the debt is very high it can negatively affect economic growth (Bilan, 2014). In another study, Spilioti and Vamvoukas (2015) also found positive relationship between debt and growth for the euro area.

The relationship between debt and growth can also be affected by the quality of institutions. In recent years, institutions are considered an important determinant in shaping the overall performance and growth of different economies (North, 1990; Mauro 1995; Stiglitz, 1998). Institutional difference is now seen as a most important factor that creates a major disparity in per capita growth rates across nations. For instance, at the time of independence South and North Korea were homogenous in terms of ethnicity, economic resources, language, and culture. However, today the significant differences arising due to the economic success of South Korea can possibly be ascribed to their institutions (Robinson and Acemoglu, 2012). In the context of the debt, growth and institutions interaction, Akoto (2013) found that the quality of institutions do impact the debt-growth relationship. Cambridge university pre

Kim et al. (2017) use the data for 77 countries over the period of 1990 to 2014 to show that public debt increases economic growth in countries with a highly transparent system. In the same way, Benfratello et al. (2017) use a large panel of countries over the period 1995–2015 and show that corruption is positively related to public debt. The effect, however, appears to be

significant for advanced economies, but trivial and less robust for developing nations.

All in all, there is a considerable literature on the external debt and growth relationship. Also, a few studies incorporate the institution role in defining the growth and public debt relationship. However, in the case of external debt the role of institutions has not been explicitly examined. Better institutions might induce investment and therefore lead to sustainable growth. Therefore, this study examines whether the quality of institutions determines and influences the direction and magnitude of external debt's effect on growth.

III. Data and methodology

After downloading the required data from the World Bank World Development Indicators (WDI) database, we drew the dataset by cleaning data, generating period-wise indicators and taking logarithms wherever required. Our dataset contains data on 107 developing countries for the time period of 1996 to 2015. Although on average a 3-year period was also obtained and used in estimations, only the annual data results will be discussed. Using the data described above, I will be estimating the following relationship:

First, I estimate an augmented Solow growth model by adding an aggregate indicator of institutional quality. This aggregate indicator is generated by using the first component of the Principal Component Analysis (PCA) performed on the six indicators of governance provided by the World Bank. These governance indicators include political stability, absence of violence /terrorism, voice and accountability, government effectiveness, regulatory quality, rule of law, and control of corruption.

Countries are divided into two groups according to each country's quality of institutions above or below the worldwide median quality. The institutional quality indicator is recoded in percentile rank to take values from 0 to 100, with 100 representing maximum possible institutional quality. The baseline model can be given as:

$$GDPPCG_{it} = \beta_0 + \beta_1 GDPPC_{it} + \beta_2 EDEBT_{it} + \beta_3 EDEBT_{it} + \sum_{k=1}^k \alpha_k Z_{it} + \mu_i + \varepsilon_{it} \quad (1)$$

$$GDPPCG_{it} = \beta_0 + \beta_1 GDPPC_{it} + \beta_2 EDEBT_{it} + \beta_3 Inst_{it} + \beta_4 EDEBT_{it} * Inst_{it} + \sum_{k=1}^k \alpha_k Z_{it} + \mu_i + \varepsilon_{it} \quad (2)$$

Where, i and t index represent, country, and time, respectively, we used *GDP per capita growth* as dependent variable. The control variables are $GDPPC_{it}$, which is the lagged GDP per capita in (log). To reflect the convergence effect, initial GDP should be expected to have a negative coefficient. $EDEBT_{it}$ is the external debt to GNI, the variable of interest expected to be negative. $Inst_{it}$ shows the institutional quality variable expected to be positive coefficient. The other control variable are represented by Z_{it} , which includes: gross fixed capital formation to GDP, enrollment (secondary), population growth, trade openness, and inflation. The population growth and inflation rate coefficient is expected to be negative. However, gross fixed capital formation and enrollment are predicted to be positive. μ_i captures the unobserved heterogeneity in the sample and ε_{it} error term. All the data are retrieved from the World Bank.

Estimations are carried out using pooled OLS,

random and fixed-effect panel estimators. Hausman specification test suggests that the use of fixed effect model is warranted. Standard errors are corrected for heterogeneity and country and time-fixed effects are included.

IV. Initial findings

The preliminary findings of our empirical models estimated are given in the Table 1 below. Columns 1 and 2 respectively show baseline estimations without and with institutional quality indicator.

The GDPPC (-1) is negatively related to GDP per capita growth, reflecting the convergence effect. The result is consistent with different specifications of the model. Debt to GNI ratio is significantly and negatively associated with growth (Column 1). A 1 percent increase in external debt burden is related with 1.6 percent lower growth. This relationship loses its significance when the indicator for institutional quality is included (Column 2).

The comparison between countries with good and poor institutions is interesting: in the presence of better quality institutions (Column 3), external debt does not seem to influence growth in a significant manner. However, for countries with a poor institutional setup (Column 4), external debt appears to significantly lower GDP growth. A 1 percent increase in external debt to GNI ratio is associated with a 1.5 percent decrease in GDP growth.

These results indicate that the negative effects of external debt on economic growth reported in the literature are limited to countries with poor institutions.

Table 1: Institution, external debt and per

capita economic growth relationship

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
GDPPC(-1)	-1.057*** (0.148)	- (0.215)	- (0.318)	-0.954** (0.272)
DEBT/GNI	0.0169** (0.0043 7)	0.0188* (0.0073 6)	0.0114 (0.0203)	-0.0349** (0.0081 7)
INST		-0.144 (0.126)	0.212 (0.216)	-1.038** (0.329)
DEBT/GNI# INST		0.0005 64	- 0.0045 1	0.00816 **
		(0.0010 4)	(0.0036 4)	(0.0027 5)
EN- ROL_SEC	0.0219** (0.005 21)	0.0221* (0.0051 4)	0.0245 (0.0030 4)	-0.0357 (0.0665)
POP_GRO WTH	-0.752*** (0.160)	- (0.165)	- (0.175)	-0.967*** (0.158)
GFCF_GD P	0.107*** (0.0138)	0.112** (0.0142)	0.102** (0.0158)	0.138** (0.0426)
TRADE_O PENESS	0.00604* (0.002 67)	0.0064 5* (0.0027 3)	4.21e- 06 (0.0040 7)	0.0119* (0.0052 6)
INFLATION	-0.0210 (0.0192)	-0.0229 (0.0204)	-0.0231 (0.0192)	-0.0265 (0.0249)
Constant	9.737*** (1.318)	9.288** (1.468)	7.837** (2.446)	11.24** (1.248)
Observa- tions	441	440	251	189
R-squared	0.263	0.266	0.299	0.284
Number of period	5	5	5	5
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Growth in countries with better-quality institutions, in contrast, does not suffer as a result of external borrowings. For other control variables, the results are consistent with the expectations.

VI. Future estimations

We wish to further pursue this analysis in a number of directions:

First, we intend to examine the debt-to-growth relationship in the presence of each of the six governance indicators underlying our aggregate institutional quality index. Next, we intend to check whether the observed impact of external debt to GNI ratio is also valid for other indicators of external debt such as debt inflow, reimbursement, stock etc. We also plan to check the presence of any threshold effects beyond which debt affects growth differently. Finally, we intend to study the regional specificities involved.

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