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The asymmetric effects of external debt on economic growth in selected MENA countries: Some insights from a panel quantile regression

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Abstract: The increased level of debt is a major risk for the financial stability and questions the ability of countries to balance fiscal vulnerabilities with development goals. With the rising debt wave and additional pressures induced by the pandemic and the Russian/Ukrainian war on sources of development finance, this study uses a panel quantile regression to re-examine the asymmetric relationship between the external debt and economic growth in six highly indebted MENA countries, namely**,** Bahrain, Egypt, Jordan, Lebanon, Morocco, and Tunisia over the period 2006-2019. The outcomes support the main hypothesis that high debt reduces economic growth, yet this effect seems not to be homogeneous across the various quantile levels. Currently, the global macroeconomic conditions and Russia's war with Ukraine add another layer of complexity to the high external indebtedness and will likely affect these countries' ability to refinance their foreign currency-denominated debt, threatening to overwhelm these economies.

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Keywords: External debt to GDP; economic growth; MENA countries; Panel quantile regression; endogeneity bias.

For full and detailed paper, please contact authors.

1. Introduction

The main objective of this study is to examine whether the debt-to-GDP ratio has a negative or positive impact on different quantiles of economic growth for the six Arab countries (Bahrain, Egypt, Jordan, Lebanon, Morocco, and Tunisia). Indeed, the literature is divided on the impact of debt on economic growth which gives room for conducting this research (Raham et al., 2019). A second purpose of this study is to investigate the impacts of other variables including gross capital investment, military expenditures, open trade, global geopolitical risk and global economic uncertainty on the quantiles of economic growth.

Our study is unique in that we utilize the quantile regressions of economic growth to investigate the impact of the independent variables on economic growth for the highly indebted developing countries located in the MENA region. Quantile regressions have the ability to estimate specific effects on the means and the tails of the distribution. One of the main characteristics of the quantile regression technique is its capability to enable the major estimated slope parameter to fluctuate with the varying quantile levels of the dependent variable (i.e., the economic growth). Our study also focuses on the impact of the debt-GDP ratio on different quantiles of economic growth during times of low interest rates. We also account for the potential endogeneity of public debt arising from measurement errors, omitted factors, and/or reverse causation.

2. Literature review

The literature has examined the relationship between debt and economic growth from different angles and has come up with different conclusions (Carner et al., 2010; Reinhart and Rogoff, 2010; Minea and Parent, 2012; Wright and Grenade, 2014; Egert, 2015). Caner et al.

(2010) find a threshold value of 77 % for the public debt-to-GDP ratio for the relationship to be signifcant. Minea and Parent (2012) demonstrate that there exists a significant threshold around a debt-to-GDP ratio of 115%, above which the negative linkage between debt and economic growth changes sign. Égert (2015) and Wright and Grenade (2014) find different threshold values using different data sets for other regions.

Rahman et al. (2019) selected 33 articles to review in their study on the effect of public debt on economic growth and concludes that the connection can be positive, negative, or even non-linear. Moreover, the 90% threshold wrongly calculated in the Reinhart-Rogoff (2010) paper does not apply to all countries. Calderon and Fuentes (2013) argue that strong institutions, good quality policy responses and «outward-oriented policies » partly alleviates this effect.

Sovereign debt can be internal and external. External sovereign debt is a debt that a government borrows from foreign markets in order to cover its budget deficit. Sen et al. (2007) and Presbitero (2012) find evidence to support the negative effect of external debt on economic growth. Presbitero (2012) shows that economic growth negatively affects the external debt rates for 114 developing countries over the period 1980–2004. Almahadin and Tuna (2019) show that US interest rates have a spillover effect on the growth of the Turkish banking sector. The Congressional Budget Office (CBO, 2019[1]) finds that the higher the national debt, the higher the interest rates are for the central bank for that country.

Most of the research on the relationship between debt and economic growth uses the standard linear panel data models. Instead, in this paper we use the quantile panel data model because this model examines the impacts of debt on growth during different states of the

[1] For more details, please refer to this link : https://www.cbo.gov/publication/54918

economy: recessions, normalcy and booms when interest rates are falling, which the standard model fails to do. We also handle the endogeneity of the debt in the regression by using a newly developed method as explained below, which to our knowledge, the literature on the debt growth relations has not done before.

3. Methodology and data

We employ a panel quantile regression with fixed effects to study the asymmetric effects of the Debt-to-GDP-ratio on economic growth in the selected MENA countries Bahrain, Egypt, Jordan, Lebanon, and Morocco. This approach makes it possible to obtain a more complete picture of the distributional relationships between the economic variables of interest. It allows for assessing the empirical linkage among a set of covariates and the distinct parts of the response distribution. Please see full paper for more details on methodology.

We also address the endogeneity issue in that debt is endogenous which may be significantly impacted by economic growth. This issue of endogeneity in a quantile regression framework has widely been explored, and various methods to solve this problem have been proposed (e.g., Kim and Muller, 2004; Ma and Koenker, 2006; Kim and Muller, 2013). To the best of our knowledge, no study has tested the presence of endogeneity in the public debt-growth relationship in conditional quantile models. We test the null hypothesis that there is no endogeneity in the τ^{th} quantile as testing this hypothesis mainly consists of assessing the presence of the endogeneity bias at diverse quantile levels.

Panel data for the six relatively highly indebted countries (2006-2019) are the growth rate of real GDP per capita (*GDP*) regressed on the external debt-to-GDP ratio (*DEBT*) and a set of relevant control variables commonly considered to be the major determinants of per capita growth in the existing literature, including the real GDP per capita(-1), capital formation or

the net capital accumulation (*CF*), trade openness (*OPEN*), military expenditure (*Mil*), global geopolitical risk (*GPR*), global economic policy uncertainty (*GPU*) and changes in international crude oil prices (*Oil*). Detailed tables, equations and results can be found in the full paper, to be requested from the authors.

4. Conclusions

Many countries, developed and developing, are taking on more debt, particularly influenced by the low interest rate environment. Some studies have been conducted on the deleterious impact of debt on economic growth, but the overall research shows that this impact can be positive or negative or there is no impact.

Our results show that debt-GDP ratio has a negative impact on economic growth when the latter is low. This implies that borrowing money and incurring debt does not enhance economic growth in periods of recessions and crises like the global financial crisis and global pandemics. Another finding of this study is that capital formation enhances economic growth at all levels of the quantiles as expected, while open trade has a detrimental effect on economic growth at the lower quantiles, that is, recessions and crises. Moreover, the sample period does not cover the COVID-19 pandemic because of unavailability of data for 2020 when we embarked on this study; however, the results do not justify enhancing economic growth by incurring debt in a crisis period.

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