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DOES PUBLIC DEBT AFFECT ECONOMIC GROWTH? AN EMPIRICAL INVESTIGATION OF UPPER-MIDDLE-INCOME COUNTRIES

ABSTRACT

Public debt has increased dramatically over the past few decades. The emergence of budget crises in developing countries has led to this phenomenon. Using panel data from 2013 to 2022, this study investigates the impact of public debt on economic growth in 11 upper-middle-income countries. The panel data regression model was estimated using the fixed effect model. The findings show that public debt has a significant and positive impact on economic growth. Therefore, the government must cut back on public debt procurement, implement structural reforms, and establish a credible regulatory framework to ensure long-term economic growth and debt sustainability.

Keywords: Economic Growth, Panel Data, Public Debt, Upper-Middle-Income Countries
JEL Classifications: F43, H63, N10

INTRODUCTION

Rising public debt over the past few decades has worried most countries in the world (Law et al., 2021). The emergence of budget deficits, resulting from insufficient state revenues to fund development needs, is a consequence of debt policy implementation (Rahman, 2012; Adom, 2016). Recent crises, particularly the COVID-19 pandemic, have accelerated this trend. Global debt soared by 28 percentage points to 256% of GDP in 2020, with the worldwide public debt ratio reaching a record 99% of GDP.[1] Government borrowing accounted for more than half of this increase, and debt ratios changed unusually due to economic recovery from COVID-19 and a rapid rise in inflation (Gaspar, Medas and Perrelli, 2022).

In 2022, the projected total global public debt, encompassing both domestic and foreign debt, is expected to reach USD 92 trillion.[2] This surge is predominantly attributed to developing countries, particularly numerous middle-income countries (Kose and Ohnsorge, 2023). Furthermore, the expense associated with their debt surpasses that of any other income group (World Bank, 2024). The escalation in public debt in

developing nations can be attributed to various factors, including increased funding needs during the COVID-19 pandemic, challenges related to cost-of-living crises, the impacts of climate change, and a lack of alternative financial sources (Amponsah, 2015; UNCTAD, 2021). In certain middle-income countries, the advancement of development encounters hurdles marked by fragility, conflict, and violence (World Bank, 2022).

The substantial rise in debt requires justification due to the imperative need to safeguard people's livelihoods, sustain employment, and prevent a wave of bankruptcies (Gaspar, Medas and Perrelli, 2021; Nagou, Bayale and Kouassi, 2021). One component of a successful development plan is the prudent use of debt. In times when governments in developing countries face constraints on taxation or face the unsavoury prospect of printing money, which could threaten macroeconomic stability, this allows them to invest in a multitude of infrastructure and social sector projects, hence facilitating growth (IMF, 2022). By shifting taxes from the present to future generations, debt enables tax smoothing and anti-cyclical fiscal policies, which are critical for lowering output volatility and achieving a more equitable distribution of benefits and costs for long-term projects (Gill and Pinto, 2005). Therefore, public debt will naturally become a countercyclical resilience policy tool to reduce system vulnerabilities (Owusu-Nantwi and Erickson, 2016; Gatto and Busato, 2020; Gatto and Drago, 2020) and an economic stimulus (Hung, 2021).

This study employs panel data analysis to investigate the impact of public debt on economic growth in 11 upper-middle-income developing countries from 2013 to 2022. Panel estimates are utilized to enhance parameter estimations, providing greater flexibility by incorporating both cross-sectional and time series data. This approach enables better control over seasonality and variable bias (Hsiao, 2003). The research contributes to academic literature, informs policy decisions, and enhances understanding of the complex

relationship between public debt and economic growth in upper-middle-income developing countries. Focusing on this specific group holds practical implications for policymakers and establishes a groundwork for future research.

LITERATURE REVIEW

The theoretical discourse surrounding the impact of public debt on economic growth is characterized by divergent perspectives, with notable contributions from Keynesian, classical, neo-classical, and New Keynesian economists. The Keynesian viewpoint, supported by scholars such as Aspromourgos (2018) and Castelnuovo, Lim and Pellegrino (2018), posits that public debt can function as a catalyst for economic growth. According to this perspective, increased public debt can amplify the expenditure multiplier, fostering investment, job creation, and demand-side stimulation.

In contrast, Classical and Neo-Classical theorists, as criticized by Elmendorf and Mankiw (1999), Spilioti and Vamvoukas (2015), and Barreyre and Delalande (2020), challenge the Keynesian stance. They argue that while public debt might be beneficial during crises, it has detrimental effects in normal economic conditions. These effects include raising interest rates and crowding out the private sector, thereby limiting capital and overall economic growth.

A nuanced position emerges from New Keynesian thinkers, exemplified by Greenwald and Stiglitz (1987), who contend that public debt can be advantageous for governments to develop capital and make substantial investments that, in turn, multiply demand. Debt has become a major issue since many economists warn that a huge quantity of debt may lead to a debt trap where the state budget cannot pay principal and interest (Krugman, 1988). Large debt principal and interest payments threaten macroeconomic stability by causing fiscal deficits and pressuring foreign exchange reserves (Gill and Karakulah, 2019; Lian, Presbitero and Wiriadinata, 2020; Mauro and Zhou, 2021). This is called the public debt load since each generation burdens

the next, reducing capital stock (Dombi and Dedák, 2019).

Rapid debt buildup has been linked to financial crises and economically damaging banking defaults (Badia, 2016; Kose et al., 2021). Reinhart and Rogoff (2010) recommend a worldwide debt threshold of 90%, even though developing countries default 41% to 60%, to maintain sustainable growth (Reinhart and Rogoff, 2009). Due to fluctuating financial flows, developing countries have a high debt default risk (Tran, 2018). Analysts are increasingly worried about the repercussions of high debt. Massive debt growth again raised questions about fiscal sustainability and how government obligations affect financial markets and real economic performance (Aizenman, Kletzer and Pinto, 2007; Cecchetti, Mohanty and Zampolli, 2011). Higher public debt will cause tax distortions or inflation to fund it, decreasing future growth (Mhlaba and Phiri, 2019).

Empirical studies, such as those by Eberhardt and Presbitero (2015), suggest a positive influence of debt on long-term economic growth on average, but the short-term impact lacks statistical significance. Other research indicates that public debt, especially during crises, can stimulate economic growth by fostering substantial investment, achieving full employment, and generating significant demand (Hilton, 2021; Yusuf and Mohd, 2021).

On the other hand, growth is stunted as the national debt rises. Onofrei et al. (2022) concluded that high public debt negatively and considerably affected EU economic development over 25 years (1995–2019). Similar findings were reported in investigations by Bal and Rath (2014) and Asteriou, Pilbeam and Pratiwi (2021), which revealed that elevated levels of debt adversely impact the rate of economic growth in India and 14 other Asian countries. In a study focusing on nations in Sub-Saharan Africa, Manasseh et al. (2022) found that reliance on loans creates a considerable negative impact on the expansion of the economy. Additionally, as Pegkas (2018) highlighted, local investment will be hindered because foreign investors will

perceive high levels of foreign debt as unsafe.

Therefore, debt policy may benefit or harm a nation. Overreliance on public debt makes economic growth and stability vulnerable to rollover issues and rapid market swings, restricting fiscal policy and private investment (Huang, Panizza and Varghese, 2018). Thus, debt should be utilized cautiously; unsustainable debt might threaten macroeconomic stability, but it also accelerates development (Castro et al., 2015; Badia et al., 2020). In developing countries, maintaining fiscal discipline is crucial for the effective and efficient utilization of current loans. These funds should be directed toward highly prioritized projects, such as infrastructure expenditures or investments, that undergo a thorough evaluation and are sustainable. This strategic approach aims to enhance GDP over time.

DATA AND METHODS

This study utilized 110-panel data observations spanning the years 2013 to 2022 and encompassing 11 upper-middle-income developing countries: Albania, Belarus, Bosnia and Herzegovina, Brazil, Bulgaria, Colombia, Georgia, Indonesia, Jamaica, Moldova, and Peru. The choice of countries is determined by the availability of data, while these upper-middle-income countries encompass a diverse spectrum of economic conditions, structural characteristics, and developmental challenges. The dependent variable, representing economic growth, is quantified as Gross Domestic Product (GDP) in USD. Public debt is the primary independent variable, which is also measured in USD. Additionally, other independent variables are incorporated to explore the impact of various determinants on economic growth, apart from public debt. These include real interest rates as a percentage, trade openness as a percentage of GDP, gross fixed capital formation as a percentage of GDP, public expenditure as a percentage of GDP, and inflation as a percentage. The sources of data for all regression variables were the World Development Indicators (WDI).

In this study, dependent and independent variables were chosen based on economic theories and empirical literature (Fischer, 1993; Eggoh and Khan, 2014; Swamy, 2020) concerning the correlation between public debt and economic growth in developing countries. Logarithms are needed to linearize macroeconomic variables that expand geometrically. Coefficients become elasticities with log transformation. Equation 1 estimates the panel data regression equation:

$$\text{LogGDP}_{it} = \beta 0 + \beta_1 \text{LogCGD}_{it} + \beta_2 \text{IR}_{it} + \beta_3 \text{TO}_{it} + \beta_4 \text{GFCF}_{it} + \beta_5 \text{FCE}_{it} + \beta_6 \text{INF}_{it} + \varepsilon_{it} \quad \ldots\ldots (1)$$

in the equation, LogGDPit measures economic growth, LogCGDit measures public debt, IRit measures real interest rate, TOit measures trade openness, GFCFit measures gross fixed capital formation, FCEit measures public expenditure, INFit measures inflation, i represents the observed country, t represents time, and εit represents cross-section and time series.

Gross domestic product (GDP) is a country's total goods and services production over time. Another critical economic indicator is the central government debt (CGD), which encompasses all fixed-term contractual commitments made by the government to third parties with specific payment deadlines. Real interest rates (IR) are calculated by adjusting loan interest rates for inflation using the GDP deflator. Trade openness (TO) is assessed by measuring the percentage of exports and imports relative to the GDP. Gross fixed capital formation (GFCF) comprises expenditure on new fixed assets and changes in inventory. Public expenditure (FCE) encompasses expenditures on household and general government final consumption. Additionally, inflation (INF) gauges the annual percentage variation in the average consumer's expenditures for a set of goods and services that may undergo enhancement or modification.

Three techniques for panel data—namely, the common effect model (CEM), fixed effect model (FEM), and random effect model (REM)—are employed to estimate the empirical

model specified in equation (1), aiming to assess the robustness of the results. Subsequently, the Hausman test is applied to compare the estimates derived from the fixed effect model against those from the random effect model. The objective of this comparison is to determine which specification is better suited for the panel data under consideration.

RESULTS AND DISCUSSION

Table 1 presents statistical summaries for the variables selected in this study. The mean of GDP and public debt in 11 upper-middle-income developing countries is 986,142.8 billion USD and 376,845.4 billion USD, respectively. The average real interest rate is 7.10%, trade openness is 77.39%, and gross fixed capital formation is 22.94%. The average public expenditure is 84.22%, and inflation is 4.88%. All variables show oscillations in their minimum and maximum values.

Table 1. Descriptive Statistics

Variables	Obs.	Mean	Std. Dev	Minimum	Maximum
GDP (billions of USD)	110	986,142.8	2,893,145	27.41	11,700,000
Public debt (billions USD)	110	376,845.4	1,071,237	9.30	5,375,794
Real interest rate (%)	110	7.10	8.73	-9.86	41.71
Trade openness (%)	110	77.39	33.44	24.31	139.39
Gross fixed capital formation (%)	110	22.94	4.32	14.55	37.18
Public expenditure (%)	110	84.22	11.22	60.69	107.38
Inflation rate (%)	110	4.88	4.57	-1.58	28.73

Source: Authors' own work

Table 2 displays the CEM, FEM, and REM estimate findings. The three techniques yield identical fixed and common effects but slightly different random effects in significance.

Fixed effects estimates are superior based on the Hausman test; therefore, we focus on these. The Hausman test is 54.52 with a chi-square probability below 0.05; therefore, we may accept the null hypothesis and conclude that the fixed effect is in the model.

Table 2. Estimated Coefficients for OLS, FEM, and REM

Dependent variable: Log(GDP)	Common Effect	Fixed Effect	Random Effect
Log(public debt)	0.900***	0.199***	0.416***
	(0.017)	(0.024)	(0.039)
Real interest rate	-0.012*	-0.002**	0.001
	(0.006)	(0.001)	(0.002)
Trade openness	-0.005**	0.000	-0.000
	(0.002)	(0.000)	(0.001)
Gross fixed capital formation	0.040***	-0.002	0.003
	(0.010)	(0.002)	(0.004)
Public expenditure	-0.020***	-0.007***	-0.010***
	(0.003)	(0.001)	(0.002)
Inflation rate	-0.002	0.002*	0.004
	(0.008)	(0.001)	(0.002)
Constant	4.838***	23.20***	17.50***
	(0.879)	(0.690)	(1.164)
Observations	110	110	110
R-squared	0.991	0.654	
Number of countries		11	11
Hausman test (chi2)		54.52	
Prob > chi2		0.000	
Standard errors in parentheses.			

Source: Authors' own work

* p<0.1 ** p<0.05 *** p<0.01.

The research indicates that public debt contributes to economic growth. A 1% rise in public debt boosts economic growth by 0.199%. This supports prior studies (Shah and Pervin, 2012; Matiti, 2013; Mencinger, Aristovnik and Verbic, 2014; Ntshakala, 2015). These findings show that the appropriate use of public debt can act as a catalyst for comprehensive economic growth, especially through increasing demand and aggregate output. The importance of an investment strategy that is right on target emphasizes the need for accuracy

in allocating public debt. Additionally, these findings underscore the importance of implementing prudent financial management practices. This includes careful oversight of financial resources and strategic decision-making to ensure fiscal responsibility.

The research shows that inflation boosts economic growth. A 1% inflation increase boosts economic growth by 0.002%. This supports prior studies (Garnier, Mertens and Nelson, 2013; Baharumshah and Soon, 2014; Uddin and Rahman, 2023). Inflation does not necessarily hurt the economy, according to these findings, because inflation at some levels can be associated with positive economic outcomes. Low and stable inflation fosters an optimal investment climate by not penalizing producers, enabling continuous consumption for consumers, and reducing uncertainty for all economic participants. This, in turn, contributes to the enhancement of economic growth. Moreover, modest inflation has the potential to lessen the actual burden of debt, providing advantages to borrowers, including governments and businesses.

This differs from real interest rates, which hurts economic growth. A 1% real interest rate hike decreases economic growth by 0.002%. This matches an earlier study (Harswari and Hamza, 2017; Nucera et al., 2017). These findings suggest that as real interest rates rise, borrowing costs also rise. This has the potential to hamper investment and consumption, resulting in a slowdown in economic activity. Additionally, rising real interest rates lead to currency appreciation, which can hurt exports, which will further hamper economic expansion.

Public expenditure reduces economic growth by 0.007% per 1% increase. This supports prior studies (Aydin and Esen, 2019; Barlas, 2020; Alshammary et al., 2022). These findings show that the market economy fails to allocate resources efficiently and fairly for social and economic infrastructure. The effectiveness of public expenditure in promoting economic growth very much depends on how efficiently resources are

allocated and utilized. If public funds are spent wisely on projects that enhance productivity, infrastructure, and human capital, it can have a positive impact on economic growth.

The results show that trade liberalization does not affect economic growth. This is consistent with earlier studies (Menyah, Nazlioglu and Wolde-Rufael, 2014; Trejos and Barboza, 2015; Lawal et al., 2016). These findings show that some developing countries still heavily depend on the export of primary commodities. In a liberalized trade system, these commodities may be subject to price fluctuations and market uncertainties, affecting the overall economic growth of these nations. Furthermore, in a liberalized trade environment, developing countries face intense competition from more advanced economies. This makes it challenging for them to establish a competitive edge and experience substantial economic growth. Additionally, weak institutional frameworks, including governance issues, corruption, and a lack of regulatory capacity, can impede the positive effects of trade liberalization on economic growth.

The findings indicate that gross fixed capital formation has no impact on economic growth. This matches a prior study (Nweke, Odo and Anoke, 2017). These findings show that, in some cases, developing countries may experience challenges in efficiently allocating capital for productive purposes. Poor governance, corruption, or inadequate regulatory frameworks can contribute to the ineffective use of fixed capital, limiting its positive impact on economic growth. Additionally, the effectiveness of gross fixed capital formation in fostering economic growth frequently hinges on the existence of complementary factors, such as skilled labour, technological innovation, and supportive institutional frameworks. If these elements are lacking, the impact of increased fixed capital formation may be constrained.

CONCLUSION

Policymakers and academics have debated public debt and economic growth. Public debt considerably

stimulates economic growth in upper-middle-income emerging countries, according to our data. Panel data shows that public debt, real interest rates, public spending, and inflation affect economic growth. We also found that trade openness and gross fixed capital formation do not affect economic growth.

Considering the significant implications of public debt, it is imperative for the government to continue implementing structural reforms with the objective of curbing debt accumulation. This involves striving for greater financial independence and addressing development financing needs without an excessive reliance on debt. Key areas of focus include debt management, fiscal consolidation, public sector reform, tax restructuring, and measures to enhance competitiveness. To ensure sustainable economic growth and maintain fiscal and debt sustainability, a dependable regulatory framework is necessary to approve loan arrangements. This framework should oversee all government borrowing activities, ensuring that funds are directed towards profitable expansionary projects rather than budget deficits.

The study proposes extending this approach to investigate the relationship between public debt and economic growth in developing countries characterized by high debt levels. Notably, the study does not explore a threshold for the impact of debt on economic growth, and causality has not been addressed. These aspects are suggested for consideration in future research endeavours.

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