

Government Spending and Debt's Impact on Economic Growth in High-Income and Low-Income Countries

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Abstract

The information in this study looks at how government spending and debt affect economic growth in High-Income Countries (HICs) and Heavily Indebted Poor Countries (HIPCs) from 2002 to 2021. The study uses Two-Stage Least Squares (2SLS) econometric estimation with a rolling window method to deal with possible endogeneity problems. The results show both what the two groups have in common and what makes them different. The negative effect of debt on growth is the same for both HICs and HIPCs, but their growth causes are very different. HICs depend on things like trade openness, inflation, human capital, financial growth, and how well the government works. HIPCs, on the other hand, focus more on trade openness, inflation, and governance, especially voice and accountability. Both groups' progress is slowed down by government spending, which could be because it blocks private investment and wastes money. The quality of governance has a bigger effect on the growth of HICs than it does on HIPCs. Both groups are affected by government debt and spending in different ways. HIPCs are affected more severely because their institutions and financial systems are not as strong. These results suggest specific ways for the government to handle its debt and spending. They stress the need for responsible fiscal policies and focused investments to help the economy grow while dealing with problems caused by debt. These findings also show how important it is for all countries, no matter what their economic situation is, to keep their debt levels low as a preventative step for long-term economic growth and fiscal stability.

Keywords: Government Debt, Government Spending, Economic Growth, High-Income Countries, Heavily Indebted Poor Countries.

1. Introduction

Lawmakers and academics are becoming more and more interested in the connection between government spending, debt, and economic growth. Government

debt has long been a major issue in industrialised countries, and it is currently receiving more attention in developing countries as well ([Asteriou, Pilbeam, & Pratiwi, 2021](#)). Academic observations from financial and treasury departments globally indicate a burgeoning necessity for augmented government spending directed towards the execution of diverse welfare initiatives addressing natural calamities and mitigating financial crises represent focal areas of concern, ([Akhmadi & Sumardjoko, 2022](#)). Moreover, the diverse relief measures extended by governmental entities in response to the COVID-19 pandemic, coupled with endeavours to attain sustainable development objectives, impose supplementary pressure on government expenditures ([Moll & Quayle, 2021](#)). According to [Mpofu \(2022\)](#), seeking to expand government expenditure, administrations frequently encounter the hurdle of enhancing their revenue streams, frequently resorting to heightened taxation. However, this pursuit can prove notably formidable within the framework of developing and emerging economies.

The extant literature offers diverse findings regarding the impact of public debt on economic growth. Classical economists often express criticism towards the accrual of government debt, whereas Keynesian economists advocate its utilization as a mechanism to foster economic growth ([Marangos, 2022](#)). [Reinhart and Rogoff \(2010\)](#) potential nonlinear association between economic growth and public debt was introduced, positing a U-shaped relationship. This research suggests that government debt exerts a favourable influence on growth up to a particular threshold, beyond which its effect turns adverse. The identified threshold of 90 percent across a cohort of 44 countries instigated debates concerning its validity and dependability. [Barua and Barua \(2020\)](#), lower thresholds were identified for emerging and developing nations. The significant impact of the Great Economic Depression of the 1930s contributed significantly to the evolution of Keynesian Economics, advocating for governmental intervention to stabilize national economies, contrasting with classical economic viewpoints. Economic policies can be broadly classified into two categories—monetary and fiscal policies—each targeting economic stability and distinct macroeconomic objectives ([Chenet, Ryan-Collins, & Van Lerven, 2021](#)). Despite the utilization of distinct tools and frameworks within these policies ([Kanan, 2020](#); [Kanan](#)

et al., 2023), they collectively pursue a shared goal: ensuring economic stability within a nation (Ozili, 2024).

Furthermore, Chirisa et al. (2024) underscored the ramifications of disjointed and ineffective government expenditures paired with limited income generation. These elements may precipitate macroeconomic instability and exacerbate the fiscal deficit disparity. Embracing fiscal reforms, structural adjustments, and adopting government expenditure strategies conducive to both short- and long-term growth modalities can augment a nation's potential for economic advancement (Miao et al., 2023). In light of the aforementioned discourse, this study undertakes a comparative analysis of the effects of government consumption and government debt on economic growth, employing data from a sample comprising 48 countries. This dataset encompasses both high-income economies and highly indebted poor countries (HIPC) over the period from 2002 to 2021. Kaya (2020) notes that the elevated debt levels observed in both high-income and low-income nations stem from a myriad of persistent internal and external challenges. Among the internal issues prevalent in the highly indebted poor countries (HIPC) analysed in this investigation are ineffective tax policies, mismanagement of debt, and diminished government revenue due to vulnerabilities in the rule of law (Steinbach, 2019). Conversely, the heightened debt levels observed in the high-income countries scrutinized in this study can be attributed to substantial government spending on diverse welfare initiatives, infrastructure projects, military outlays, and various political determinations (Gelpern, Hagan, & Mazarei, 2020).

As articulated by Rasiel Vellos (2013); R Vellos (2013), numerous high-income nations bear a heavier debt burden compared to many significant developing countries. For instance, Japan, classified as a high-income nation, maintains the world's highest debt-to-GDP ratio at 262%, as reported by the IMF by WiseVoter (2023). In highly indebted poor countries (HIPC), governmental debts often channel towards non-productive expenditures, primarily concentrated on consumption of goods. According to the United Nations Conference on Trade and Development (UNCTAD), a 46% surge in total debt was observed in low-income countries from 2007 to 2016. Onofrei et al. (2022) and Romer and Romer (2019) investigate how a

country's response during a crisis correlates with its debt-to-GDP ratio, serving as a dependable predictor. They specifically examine how a country's access to borrow funds in the international market, termed sovereign credit market access, influences its fiscal response during such crises.

This study makes several contributions to the literature. Firstly, it explores the impacts of government debt and expenditure by distinguishing between highly indebted poor economies and highly indebted rich economies, unlike previous research that treated all countries uniformly. Secondly, it delves into the nonlinearity of the relationship between economic growth and government debt/expenditure, a concept previously overlooked in research. By dividing countries into two groups and analysing this nonlinearity separately, significant variations were identified in both cases. Subsequent sections of the paper will review existing literature, detail the methodology, interpret the results, and conclude with key findings and implications.

2. Literature Review

The nexus among government policies, government consumption, government debt, and economic growth constitutes a subject of substantial interest within economic literature (Nawaiseh et al., 2021). Per endogenous growth models, government policies exert enduring effects on economic growth, albeit the extent of these impacts hinges upon the character of government consumption (Poot, 2000). For instance, investments in education are anticipated to yield a favourable impact on economic growth (Maneejuk & Yamaka, 2021). The extant understanding of government consumption, government debt, and their repercussions on economic growth necessitates additional scrutiny owing to incongruent findings in preceding studies. These disparities may stem from diverse fiscal policies among nations and methodological decisions made by researchers (Huber & Helm, 2020).

In line with Yumashev et al. (2020), the scale of the government, delineated by its consumption, is regarded as a pivotal determinant influencing a nation's economic growth. Ur Rahman et al. (2020), employing a disaggregated analytical framework and employing the Johansen Cointegration approach, Vector Error Correction model, and Granger Causality test, revealed a direct association

between government consumption and economic growth in specific developing countries. Similarly, [Kimaro, Keong, and Sea \(2017\)](#) utilizing panel data, the study affirmed the existence of a beneficial effect of government consumption on economic growth in Sub-Saharan African countries, employing fixed-effects and random-effects estimation methodologies. [Gherghina, Simionescu, and Hudea \(2019\)](#) observe that, significant and advantageous associations were uncovered between government consumption, capital formation, trade openness, and private investment concerning the economic growth of Southeast European nations. [Awaworyi Churchill, Ugur, and Yew \(2017\)](#) utilizing multiple linear regression methodologies, the study substantiated a direct correlation between the magnitude of government and economic growth.

While a substantial volume of literature upholds a positive correlation between economic growth and government consumption, conflicting evidence challenges this association. [Islam, Alsaif, and Alsaif \(2022\)](#) conducted research employing the ARDL approach, concentrating on various middle-income countries, and unveiled a negative correlation between government consumption and the economic growth of these nations. Increased government consumption in specific economic sectors was discovered to impede economic growth. Furthermore, some scholars argue against a significant link between economic growth and government consumption ([Hajamini & Falahi, 2014](#)). Conversely, literature suggests a nonlinear connection between government consumption and economic growth. Several researchers have amassed evidence bolstering the existence of a nonlinear relationship between these variables. This nonlinearity is influenced by diverse macroeconomic factors, including structural breaks and shocks ([Koop & Potter, 2000](#)). Institutional factors, such as the quality of institutional infrastructure, also factor into this relationship. [Chen, Pinar, and Stengos \(2020\)](#) contend that a specific threshold point exists, and if government consumption exceeds this point, it results in a decline in economic growth. They have proposed a U-shaped relationship between these variables employing the system GMM panel modelling approach.

Government debt, alongside government consumption, significantly influences a nation's economic growth. Economic theory posits that borrowing can

positively impact growth if funds are channeled into productive investments and macroeconomic stability is upheld (Buryk, Bashtannyk, & Ragimov, 2019). Loayza and Pennings (2020) suggest that nations can foster growth by directing borrowed funds towards productive investments, maintaining macroeconomic stability, implementing incentive-driven strategies, and preparing for adverse shocks. Sustaining this cycle can reduce poverty levels as a by-product of growth. However, Yusuf and Mohd (2021) highlight that increased government debt in Nigeria hasn't improved economic growth, with rising poverty rates. They note that government debt can burden future output and deter future investments and savings. Investor reluctance due to concerns over future production taxes tied to mounting debt can impede growth and deter investments crucial for future prosperity.

The debt overhang theory posits that government debt can deter private investments or necessitate changes in public spending (Asteriou et al., 2021). Ajayi and Edewusi (2020) establish a negative correlation between government debt and economic growth, attributing it to reduced capital for investment in infrastructure and human capital. Law et al. (2021) introduce a nonlinear effect of government debt on economic growth, focusing on productivity growth or capital accumulation. Deng et al. (2023) stress that resources for repaying government debt could otherwise fuel sustainable growth sectors, impacting economic growth negatively. Yusuf and Mohd (2021) note that debt repayment drains a significant portion of limited government revenue, hindering economic growth in developing nations. Checherita-Westphal and Rother (2012) find that surpassing a debt-to-GDP threshold of 85% results in reduced future economic growth in 18 OECD countries. Some studies indicate a nonlinear relationship between government debt and economic growth, suggesting an initial increase followed by decline after reaching a certain threshold.

The extensive research on government consumption, government debt, and economic growth reveals certain limitations and research gaps. One limitation is the lack of studies simultaneously exploring the connections among government expenditures, government debts, and economic growth. This gap necessitates a comprehensive analysis considering all these factors together. Additionally, the existing literature lacks emphasis on testing non-linear relationships between

government expenditure/debt and economic growth. Given evidence of non-linearity in some studies, investigating specific thresholds or tipping points is crucial for understanding these relationships in different contexts. In summary, while much research supports positive correlations between these factors, conflicting evidence and non-linear relationships suggest that the topic is still open for exploration. The next section will outline research objectives, data, and methodology to address these gaps and deepen our understanding of these relationship.

3. Data and Methodology

Debt and its repercussions have garnered considerable attention within economic and policy spheres. Of particular interest is understanding how a nation's debt levels influence its economic growth trajectory. This study endeavours to elucidate this pivotal matter through a comparative examination of the effects of debt on economic growth across two disparate categories of countries: HICs & HIPCs. Such an analysis is imperative as it offers valuable insights into the divergent debt dynamics observed between developed and impoverished economies.

To attain this goal, the study utilizes a rigorous econometric model, offering a thorough framework to evaluate the impacts of debt, government expenditures, and pertinent control variables on economic growth across a varied range of nations. Anchored in established economic theories, each variable within the model is theoretically substantiated, furnishing a robust basis for empirical exploration into the determinants influencing economic growth (Alesina & Perotti, 1997; Barro, 1990; Fischer, 1993; La Porta et al., 1997; Levine, 1997; Lucas Jr, 1988; North, 1971; Rodrik, 2000; Solow, 1956). In light of these theoretical and empirical investigations, the subsequent two econometric model specifications have been devised for the panels comprising highly indebted developed and impoverished nations:

$$y_{it} = \alpha_0 + \alpha_1 \text{Ln}Y_{0it} + \alpha_2 K_{it} + \alpha_3 HC_{it} + \alpha_4 DEBT_{it} + \alpha_5 FD_{it} + \alpha_6 INF_{it} + \alpha_7 TOP_{it} + \alpha_8 GOV_{it} + u_{1,it} \dots \dots \dots (1)$$

$$Y_{it} = \beta_0 + \beta_1 \text{Ln}Y_{0it} + \beta_2 K_{it} + \beta_3 HC_{it} + \beta_4 GE_{it} + \beta_5 FD_{it} + \beta_6 INF_{it} + \beta_7 TOP_{it} + \beta_8 GOV_{it} + u_{2,it} \dots \dots \dots (2)$$

In this context Y_{it} is growth of per capita income for country i and time t . α and β s are the coefficients to be estimated. $u_{1,it}$ and $u_{2,it}$ are usual error terms. Y_{0it} functions as a proxy for a country's developmental stage, in line with the convergence hypothesis and the concept of diminishing returns to capital. K_{it} reflects rates of investment and their influence on capital accumulation, in accordance with Solow's growth theory (Solow, 1956). HC_{it} variable under consideration is human capital, elucidating the significance of a proficient workforce in fostering productivity and innovation (Lucas Jr, 1988). $DEBT_{it}$ is central government's debt, its impact on economic growth is a subject of significant debate. Some studies suggest that high levels of public debt can hinder growth due to crowding-out effects (Reinhart & Rogoff, 2010). Alternatively, proponents argue that the relationship could entail greater complexity, with elements such as the composition and administration of debt influencing the dynamics (Panizza, Sturzenegger, & Zettelmeyer, 2009). FD_{it} is Financial Development index which has potential to facilitate efficient capital allocation, thus fuelling economic growth, as suggested by (Levine, 1997). INF_{it} is inflation and can stimulate or disrupt growth, as proposed by (Fischer, 1993). TOP_{it} is trade openness which allows countries to expand their markets beyond domestic boundaries. The export of goods and services can stimulate economic growth by increasing production and employment (Romer, 1986). GE_{it} represents government expenditures that have the potential to either boost growth through public investments or hinder it through inefficiency, echoing Barro's work (Barro, 1990). GOV_{it} is the set of various governance indicators such as GEF_{it} (government effectiveness), PS_{it} (political stability), RL_{it} (rule of law) and VA_{it} (voice and accountability). These indicators gauge the influence of governance on growth, aligning with numerous scholarly contributions (Alesina & Perotti, 1997; La Porta et al., 1997; North, 1971; Rodrik, 2000). The current study encompassed a varied spectrum of nations, spanning both HICs & HIPC, over the period from 2002 to 2021. Nevertheless, owing to data constraints, certain countries had to be omitted from the empirical analysis. Furthermore, to mitigate missing observations, particularly for variables with incomplete data points, interpolation techniques were utilized, thereby preserving the dataset's temporal continuity and integrity.

The study's dataset encompasses the years 2002 to 2021, sourced from international databases such as the World Development Indicators (WDI), Worldwide Governance Indicators (WGI), Global Debt Database (GDD), and the Financial Development Index Database (FDID). A brief overview of variables and their respective data sources is provided in Table 1.

Table 1: Description of Variables and Data Sources.

Variable	Description	Data Source
FD_{it}	Financial Development - It is an index that gauges the development of a country's financial markets and institutions. This index measures the extent of financial intermediation and the accessibility of financial services within the country.	FDID, IMF (2023)
Y_{0it}	Initial GDP - It represents the five-year average of a country's real GDP at constant 2015 prices. It is recalculated every five years throughout the study period, serving as a measure of a country's economic size at different time intervals.	WDI, World Bank (2023a)
K_{it}	Capital formation as a percentage of GDP, representing the share of Gross Fixed Capital Formation in the country's economic output.	WDI, World Bank (2023a)
HC_{it}	Human Capital - The logarithm of the number of secondary school pupils in the country, serving as a proxy for human capital development and education.	WDI, World Bank (2023a)
INF_{it}	Inflation - Measuring the percentage change in the general price level over time through CPI.	WDI, World Bank (2023a)
TOP_{it}	Trade openness - It is the ratio of total trade (imports and exports) to GDP, reflecting a nation's global trade engagement.	WDI, World Bank (2023a)
$DEBT_{it}$	Debt as a percentage of GDP - The ratio of a country's total debt (including both public and private debt) to its Gross Domestic Product (GDP), indicating the country's debt burden relative to its economic size.	GDD, IMF (2023)
GE_{it}	Government Expenditures - Government expenditures as a percentage of GDP, representing the proportion of a country's GDP spent by the government on various programs and services.	WDI, World Bank (2023)
GEF_{it}	Government Effectiveness - A governance indicator assessing the effectiveness and quality of a country's government institutions and their ability to implement policies and provide public services.	WGI, World Bank (2023b)
PS_{it}	Political Stability - A governance indicator measuring the level of political stability and absence of violence or political turmoil within a country.	WGI, World Bank (2023b)
RL_{it}	Rule of Law - A governance indicator evaluating the extent to which the rule of law is upheld in a country, including the enforcement of contracts and protection of property rights.	WGI, World Bank (2023b)
VA_{it}	Voice and Accountability - A governance indicator assessing the extent to which citizens have the ability to participate in the political process and hold their government accountable.	WGI, World Bank (2023b)

To comprehensively explore the influence of diverse factors such as debt, government expenditure, initial GDP, capital investment, human capital, trade openness, inflation, financial development, and governance proxies on per capita economic growth, this study employed a Two-Stage Least Squares (2SLS) econometric

estimation approach. This methodology was selected to mitigate potential endogeneity concerns, which have been acknowledged and documented in prior research (Romer & Romer, 2019). To address endogeneity issues inherent in growth models, the study utilized the 2SLS technique to instrument for endogenous variables and estimate causal relationships between key independent variables and GDP per capita growth.

To enhance the robustness of the results, a rolling window approach was implemented within the 2SLS framework, following the methodology of earlier studies such as Ghourchian and Yilmazkuday (2020), Rousseau and Wachtel (2002) and Yilmazkuday (2011). In this method, the data were sorted based on variables like debt. For instance, if debt was the variable of interest, all observations were arranged in ascending order of debt values. Regressions were then conducted with a chosen window size on the sorted dataset, shifting the window by one observation towards higher debt values for each subsequent regression. This approach facilitated the evaluation of the stability and consistency of findings, especially concerning relationships between variables across heavily indebted countries.

Through the integration of robust econometric methodologies, this study conducted a comprehensive analysis of the influence of debt, government expenditure, and other economic determinants on GDP per capita growth, effectively addressing potential endogeneity and stability issues. Moreover, diagnostic tests including the Under-identification Test, Weak Identification Test, and Sargan Statistic for instruments were employed to verify the robustness of the 2SLS results. Consequently, the research findings gained validity and reliability, offering valuable insights into the analysed economic dynamics.

4. Empirical Findings

4.1 Debt - Model Specification 1

Table 2 provides a thorough examination of the influence of debt on economic

growth in HICs & HIPCs. The study analyses multiple variables, offering valuable insights into this significant link. A comparative analysis elucidates disparities in results between HICs and HIPCs, providing insight into the impact of debt on economies at various income levels. The analysis commences by scrutinising the first Y_{0it} . For HICs, it is clear that a greater baseline GDP has a significant adverse effect on economic growth. This suggests that in wealthy countries, higher beginning GDP levels are associated with a slowdown in the increase of GDP per capita. The observed result can be logically associated with the notion of diminishing returns to capital, which is especially pertinent in developed economies. In contrast, among HIPCs, the impact of Y_{0it} is likewise negative, but it does not reach a level of statistical significance. This implies that Y_{0it} may not have significant forecasting capability regarding economic growth in these specific countries.

Now, we delve into the core variable of interest $DEBT_{it}$. A persistent and robust negative correlation between debt levels and economic growth is observed in both HICs & HIPCs. This outcome is consistent with the debt overhang theory (Krugman, 1988), The premise posits that excessive debt may hinder economic growth. In both categories, elevated debt levels correlate with diminished GDP per capita growth. Subsequently, attention turns to the variable FD_{it} and its influence on economic growth. In both HICs and HIPCs, a notable negative association between FD and GDP per capita growth is evident. This implies that heightened financial development is associated with reduced economic growth. These observations align with previous research (Levine, 1997), which posits that heightened financialization can induce financial instability, thereby impeding economic growth. Levine (1997) contends that an overly developed financial sector may divert resources from productive investments in the real economy. The concept of excessive financialization, marked by speculative endeavours and a focus on short-term profits, may foster financial bubbles, asset price inflation, and consequentially, financial crises. These crises can disrupt economic stability, undermine investor trust, and thwart long-term economic growth potential.

In HICs, K_{it} capital investment lacks statistically significant impact on economic growth, implying that factors beyond capital accumulation drive growth in HICs. Conversely, in HIPCs, a positive and statistically significant relationship between capital investment and GDP per capita growth is observed. This suggests that higher

levels of capital investment in HIPCs correspond to elevated economic growth, consistent with theories highlighting the significance of physical capital accumulation in developing economies (Solow, 1956). HC_{it} assumes a central position in our analysis. In High-Income Countries (HICs), human capital manifests a positive and statistically significant impact on economic growth. This suggests that elevated levels of human capital are conducive to increased GDP per capita growth in HICs. These outcomes align with the extensive literature accentuating the importance of education and human capital in economic advancement (Barro, 2001).

TOP_{it} demonstrates a persistent positive influence on economic growth in both HICs & HIPCs. This indicates that nations with greater openness to international trade tend to achieve elevated GDP per capita growth. This observation is in accordance with the theoretical proposition that trade openness can augment economic development by fostering the exchange of goods and technologies (Rodrik, 2000). INF_{it} stands as a pivotal economic determinant. In both HICs and HIPCs, a negative and statistically significant correlation is evident between inflation and economic growth. This conforms to conventional wisdom, suggesting that elevated inflation rates can impede economic growth (Fischer, 1993). The detrimental effects of inflation on growth can be ascribed to its negative impact on investment and economic stability (Bruno & Easterly, 1998).

To enhance our analysis, we introduce governance-related factors – GEF_{it} , PS_{it} , LR_{it} , and VA_{it} – which illuminate the institutional contexts of the countries under scrutiny. In HICs, GEF_{it} exhibits a positive and statistically significant impact on economic growth, highlighting the pivotal role of well-functioning institutions in promoting GDP per capita growth, as suggested by institutional theory presented by (North, 1971). Conversely, in HIPCs, GEF_{it} displays a positive association with growth but lacks statistical significance, suggesting that its influence on economic growth may not be as crucial as observed in HICs. Nevertheless, the positive coefficient indicates that improvements in GEF_{it} could still yield growth benefits for HIPCs. Upon examining PS_{it} and RL_{it} , we find that these factors do not demonstrate statistically significant effects on economic growth in either HICs or HIPCs. This implies that, contrary to certain theoretical expectations, these variables may not serve as primary drivers of GDP per capita growth in either group. However, in the context of HIPCs, the VA_{it} variable exhibits a positive and statistically significant impact on economic growth. This suggests that within HIPCs, higher levels of voice and accountability correlate with increased GDP per capita

growth, consistent with empirical observations and theoretical foundations emphasizing the pivotal role of good governance and participatory institutions in advancing economic development, as underscored by [Rodrik \(2000\)](#). The results are presented in Table 2.

Table 2: Effect of Debt on Economic Growth (dependent variable: GDP per capita growth).

Variables	High Income Country (heavily indebted)				Heavily Indebted Poor Countries			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FD_{it}	-44.31*** (11.24)	-40.08*** (11.19)	-48.73*** (12.32)	-43.06*** (11.06)	-35.73* (20.64)	-34.19* (20.32)	-31.54 (21.23)	-32.83 (20.09)
Y_{0it}	-2.537* (1.539)	-3.421** (1.510)	-3.412** (1.552)	-2.593* (1.551)	0.477 (1.668)	0.804 (1.630)	0.499 (1.685)	0.484 (1.604)
K_{it}	0.0696 (0.0503)	0.0860* (0.0497)	0.0918* (0.0517)	0.0638 (0.0512)	0.0381 (0.0338)	0.0403 (0.0332)	0.0366 (0.0339)	0.0200 (0.0329)
HC_{it}	3.081 (1.952)	2.229 (1.934)	2.969 (1.992)	2.096 (1.973)	-1.108 (0.753)	-0.967 (0.761)	-1.316* (0.741)	-1.149 (0.725)
TOP_{it}	6.232*** (1.482)	6.443*** (1.511)	6.287*** (1.516)	6.461*** (1.524)	5.514*** (1.904)	5.927*** (1.899)	5.848*** (1.926)	5.748*** (1.850)
INF_{it}	-0.234*** (0.0715)	-0.200*** (0.0703)	-0.210*** (0.0726)	-0.206*** (0.0712)	-0.106** (0.0494)	-0.0933* (0.0493)	-0.104** (0.0490)	-0.114** (0.0480)
$DEBT_{it}$	-0.0233** (0.0109)	-0.0258** (0.0105)	-0.0230** (0.0112)	-0.0277*** (0.0106)	-0.0196*** (0.00599)	-0.0159*** (0.00613)	-0.0200*** (0.00596)	-0.0218*** (0.00584)
GEF_{it}	3.829*** (1.383)				2.059** (1.038)			
PS_{it}		2.209** (1.086)				1.081** (0.481)		
RL_{it}			4.126** (1.708)				2.381** (1.038)	
VA_{it}				3.535* (1.927)				4.514*** (0.836)
Observations	374	374	374	374	503	503	503	503
Number of id	20	20	20	20	28	28	28	28
F-Statistic	8.44	8.73	7.94	8.22	5.13	5.12	5.65	8.58
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Under identification test (χ^2)	64.006	61.666	57.649	65.402	112.224	115.776	107.94	112.005
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Weak identification test (Cragg-Donald):	76.367	72.987	67.307	78.411	144.465	150.512	137.329	144.097
Stock-Yogo weak ID test critical values: 10% maximal IV size	16.38	16.38	16.38	16.38	16.38	16.38	16.38	16.38
15%	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96
20%	6.66	6.66	6.66	6.66	6.66	6.66	6.66	6.66
25%	5.53	5.53	5.53	5.53	5.53	5.53	5.53	5.53
Sargan statistic	Exactly Identified	Exactly Identified	Exactly Identified	Exactly Identified	Exactly Identified	Exactly Identified	Exactly Identified	Exactly Identified

Standard errors in parentheses

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

4.2 Government Expenditures – Model Specification 2

Table 3 offers an extensive examination of the influence of GE_{it} on economic

growth, drawing comparisons between HICs and HIPCs. This investigation is critical as government spending significantly shapes a nation's economic trajectory. Within this context, we delve into the outcomes of each variable to offer a thorough comprehension of the results. Furthermore, we juxtapose the findings between HICs and HIPCs to underscore potential discrepancies in the relationships. This scrutiny reveals a statistically significant negative association between GE_{it} and Y_{it} in HICs. This suggests that heightened government spending relative to the economy's size tends to diminish economic growth. Such a result aligns with the well-established Crowding Out Hypothesis, as delineated by Barro (1990). In accordance with this hypothesis, substantial government intervention in the economy may curtail private sector investment, thereby diminishing economic growth. Furthermore, the adverse effect of GE_{it} on growth is notably pronounced in HIPCs, with this association being statistically significant. Such an *outcome* may be attributed to inefficiencies in public spending and a deficit in fiscal discipline, which consequently diminish economic growth (Connolly & Li, 2016; Gwartney, Lawson, & Holcombe, 1998).

Y_{0it} demonstrates a deleterious impact on growth in both HICs and HIPCs. This suggests that in HICs, elevated initial GDP levels correlate with reduced GDP per capita growth. This observation could be ascribed to the concept of diminishing returns to capital in advanced economies, as elucidated in the seminal work of scholars. As economies ascend to higher income levels, the capacity for significant growth diminishes, leading to a more restrained pace of economic expansion. HC_{it} exerts a favourable influence on growth in both HICs and HIPCs. This underscores the pivotal role of a well-educated workforce in fostering economic development, as underscored by Becker (2009a). Nations that allocate resources to education and skill *enhancement* typically possess a more productive and adaptable workforce, a factor that can exert a positive impact on overall economic growth.

FD_{it} demonstrates an inverse correlation with GDP per capita growth in both HICs and HIPCs. This discovery aligns with the contention that excessive financialization may precipitate financial instability and impede broader economic growth (Levine, 1997). An excessively developed financial sector may redirect resources and talent from productive sectors, possibly leading to economic imbalances. INF_{it} shows a negative association with growth in both groups, indicating the adverse effects of price instability on economic performance. High inflation rates

can disrupt economic planning, reduce purchasing power, and foster uncertainty, all hindering long-term economic growth (Fischer, 1993).

GEF_{it} is positively related to economic growth in HICs. This reinforces the notion that well-functioning institutions positively influence economic development (North, 1971). In nations with effective governance, policies and regulations are efficiently implemented, fostering an environment conducive to economic growth. However, in HIPCs, while GEF_{it} also exerts a positive effect, it lacks statistical significance, suggesting a less pronounced role. This indicates that government effectiveness may not exert as substantial an influence on economic growth in these countries as observed in HICs. PS_{it} and RL_{it} do not significantly impact growth in either group, implying that these factors may not serve as primary drivers of GDP per capita growth in either HICs or HIPCs. In HIPCs, VA_{it} demonstrates a positive and statistically significant influence on economic growth, implying that higher levels of voice and accountability correlate with increased GDP per capita growth. These outcomes resonate with research underscoring the significance of good governance and participatory institutions in advancing development (Rodrik, 2000).

Table 3: Effect of government expenditures on economic growth (dependent variable: GDP per capita growth).

Variables	High Income Country (heavily indebted)				Heavily Indebted Poor Countries			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FD_{it}	-44.39*** (11.46)	-41.20*** (11.80)	-46.81*** (11.56)	-44.22*** (11.59)	-9.080 (23.58)	-7.220 (23.21)	-7.328 (24.25)	-7.987 (23.21)
Y_{0it}	-3.215** (1.570)	-4.251*** (1.537)	-5.050*** (1.549)	-3.323** (1.597)	-2.023 (1.803)	-1.810 (1.783)	-1.899 (1.832)	-1.825 (1.768)
K_{it}	0.0265 (0.0591)	0.0518 (0.0586)	-0.0200 (0.0590)	0.0245 (0.0612)	0.0450 (0.0329)	0.0431 (0.0325)	0.0462 (0.0331)	0.0334 (0.0324)
HC_{it}	3.703* (2.004)	2.740 (1.992)	4.529** (1.982)	2.688 (2.025)	-0.237 (0.728)	-0.150 (0.724)	-0.376 (0.719)	-0.210 (0.708)
TOP_{it}	3.947*** (1.423)	4.020*** (1.451)	4.018*** (1.397)	3.872*** (1.463)	7.615*** (2.009)	8.064*** (1.989)	7.726*** (2.029)	7.441*** (1.976)
INF_{it}	-0.222*** (0.0710)	-0.182*** (0.0696)	-0.233*** (0.0699)	-0.188*** (0.0707)	-0.120** (0.0485)	-0.110** (0.0484)	-0.119** (0.0484)	-0.125*** (0.0477)
GE_{it}	-0.344** (0.135)	-0.348*** (0.134)	-0.628*** (0.140)	-0.367*** (0.136)	-0.269*** (0.0983)	-0.276*** (0.0975)	-0.267*** (0.0978)	-0.253*** (0.0967)
GEF_{it}	3.852*** (1.284)				1.368 (1.051)			
PS_{it}		2.391** (1.085)				1.004** (0.476)		
LR_{it}			7.448*** (1.677)				1.237 (1.090)	
VA_{it}				3.799** (1.922)				3.630*** (0.873)
Observations	371	371	371	371	488	488	488	488
Number of id	20	20	20	20	28	28	28	28
F-Statistic	8.96	9.14	9.78	8.58	5.63	6	5.64	7.74

P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Under identification test (χ^2)	64.986	60.283	64.475	63.973	88.092	90.97	85.099	87.844
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Weak identification test (Cragg-Donald):	77.933	71.124	77.183	76.449	107.063	111.423	102.6	106.691
Stock-Yogo weak ID test critical values: 10% maximal IV size	16.38	16.38	16.38	16.38	16.38	16.38	16.38	16.38
15%	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96
20%	6.66	6.66	6.66	6.66	6.66	6.66	6.66	6.66
25%	5.53	5.53	5.53	5.53	5.53	5.53	5.53	5.53
Sargan statistic	Exactly Identified	Exactly Identified	Exactly Identified	Exactly Identified	Exactly Identified	Exactly Identified	Exactly Identified	Exactly Identified

Standard errors in parentheses

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

4.3 Debt and Government Spending

The examination of debt and government spending in both HICs & HIPCs yields insightful observations regarding their implications for economic growth. Debt consistently exerts a negative impact on economic growth in both HICs and HIPCs, implying that elevated levels of public debt may impede growth due to debt service obligations crowding out public investments (Reinhart & Rogoff, 2010). The impact of GE is more pronounced, manifesting as a negative influence on economic growth in HIPCs, while lacking statistical significance in HICs. This suggests that heightened government spending may impede GDP per capita growth in heavily indebted nations. This phenomenon could be attributed to the crowding-out effect, where government spending absorbs resources that could have been allocated more productively in the private sector.

Government expenditures are frequently funded through borrowing, which contributes to escalating debt levels. The simultaneity between these variables can introduce complexities. For instance, a government may augment spending to spur economic growth during a recession, resulting in elevated debt levels in the short term (Adelino, Cunha, & Ferreira, 2017). If these expenditures precipitate economic expansion and heightened tax revenues, the debt burden may become more feasible. Conversely, if government spending fails to yield anticipated economic advantages, it can exacerbate the debt predicament (Miller & Russek, 1997) particularly in HIPCs. These results underscore the significance of judicious fiscal management, particularly in nations burdened with

substantial debt. While government spending remains imperative for public welfare and economic progress, it should be coupled with policies guaranteeing efficient resource allocation and utilization (Baffes & Shah, 1998). It is imperative to implement mechanisms for monitoring and managing the debt-to-GDP ratio to prevent adverse effects on economic growth (Checherita-Westphal & Rother, 2012).

Policy recommendations underscore the importance of balancing public debt management with government expenditures. Caution is advised against accumulating excessive debt, which can impede economic growth. Evaluating the efficiency of government spending is vital to ensure its positive contribution to economic development. Strategies to enhance revenue collection and manage fiscal deficits should also be explored to mitigate the adverse effects of high debt levels.

4.4 Non-Linearity of Government Spending and Debt

This section examines the nuances of government debt and government spending effects on economic growth, considering country-specific characteristics. Utilizing a 2SLS rolling window approach, the analysis delves into these non-linear effects, drawing insights from previous studies (Ghourchian & Yilmazkuday, 2020; Rousseau & Wachtel, 2002; Yilmazkuday, 2011). The data are structured based on a threshold variable reflecting country characteristics, with per capita income growth as the dependent variable, as depicted in Table 2 (columns 1 and 5) and Table 3 (columns 1 and 5). This section predominantly concentrates on investigating the non-linear impacts of government debt and government spending on economic growth for both econometric model specifications in HICs (Figures 3 and 4) & HIPCs (Figures 1 and 2).

In the debt model for HIPCs (Figure 1), the examination unveils negative coefficients associated with the debt variable, consistent with theoretical expectations. The scholarly discourse suggests that excessive debt can impede economic growth (Reinhart & Rogoff, 2010). This phenomenon is frequently attributed to the crowding-out effect, wherein government borrowing redirects resources from private investment (Barro, 1990). The variance in coefficient magnitude indicates heterogeneity among HIPCs. This aligns with existing literature on debt-growth relationships, underscoring the significant role of country-specific factors and debt management policies (Easterly, 2001). Conversely, in HICs (Figure

3), the existence of negative coefficients suggests that elevated debt levels can impede growth in advanced economies (Panizza & Presbitero, 2014). Nevertheless, the comparatively diminished magnitude of these coefficients in contrast to HICs underscores that the influence of debt on economic growth is less pronounced in HICs. This corresponds with the notion that the relationship between debt and growth tends to be less adverse in countries with more developed financial markets and resilient institutions (Reinhart & Rogoff, 2010).

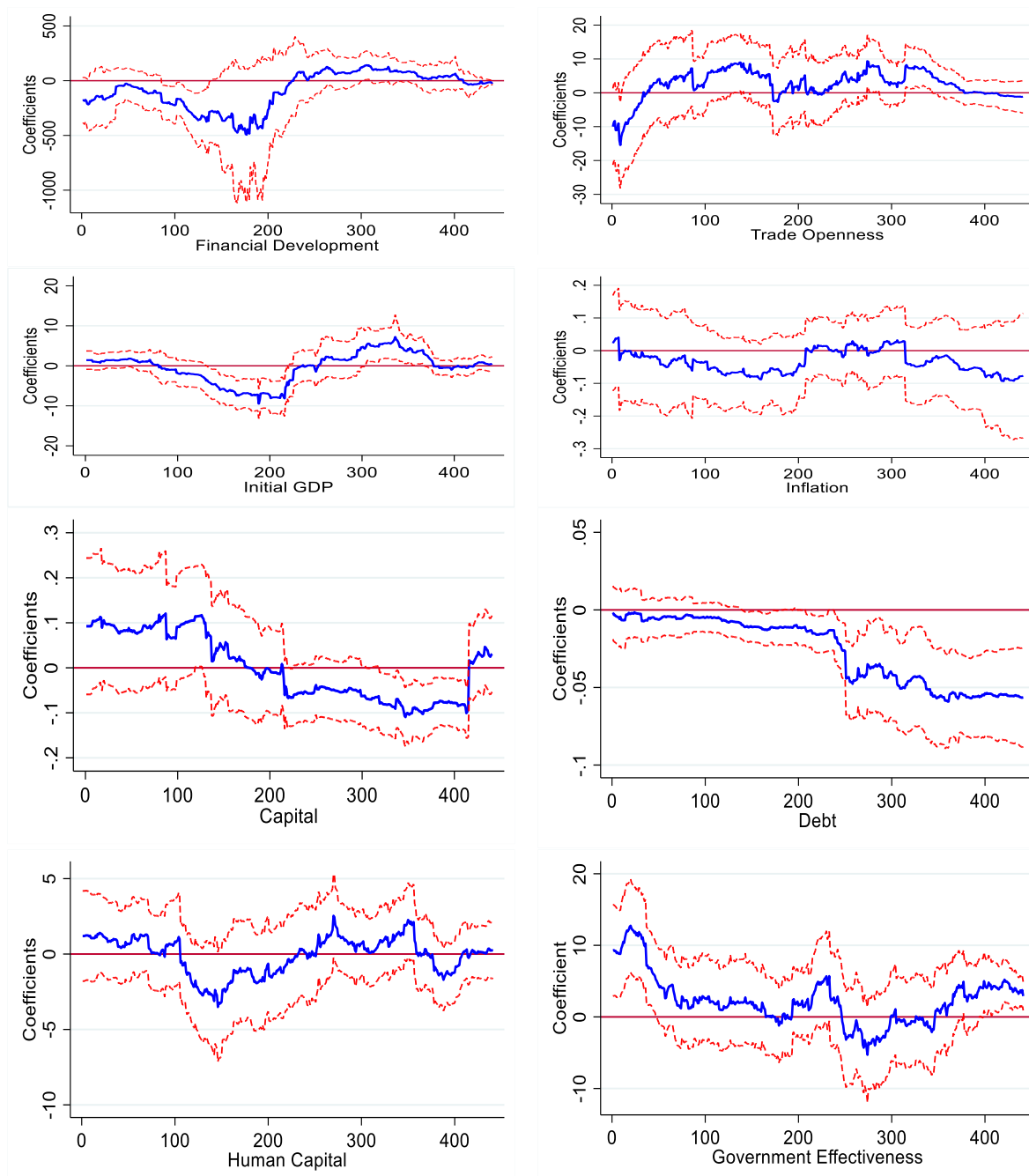


Figure 1: Rolling Window 2SLS Estimates of Debt Model – HIPC.

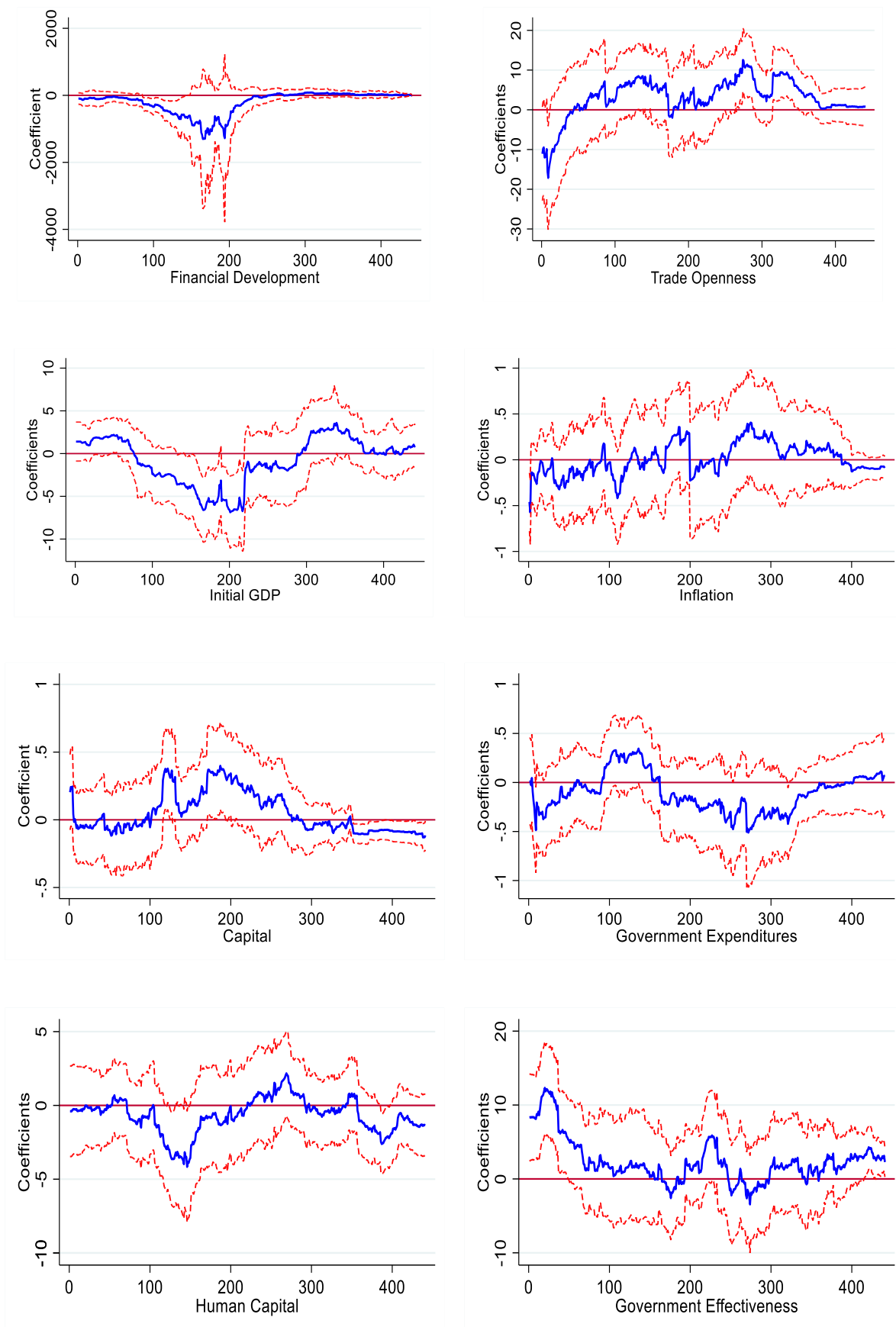


Figure 2: Rolling Window 2SLS Estimates of Government Expenditure Model – HIPC.

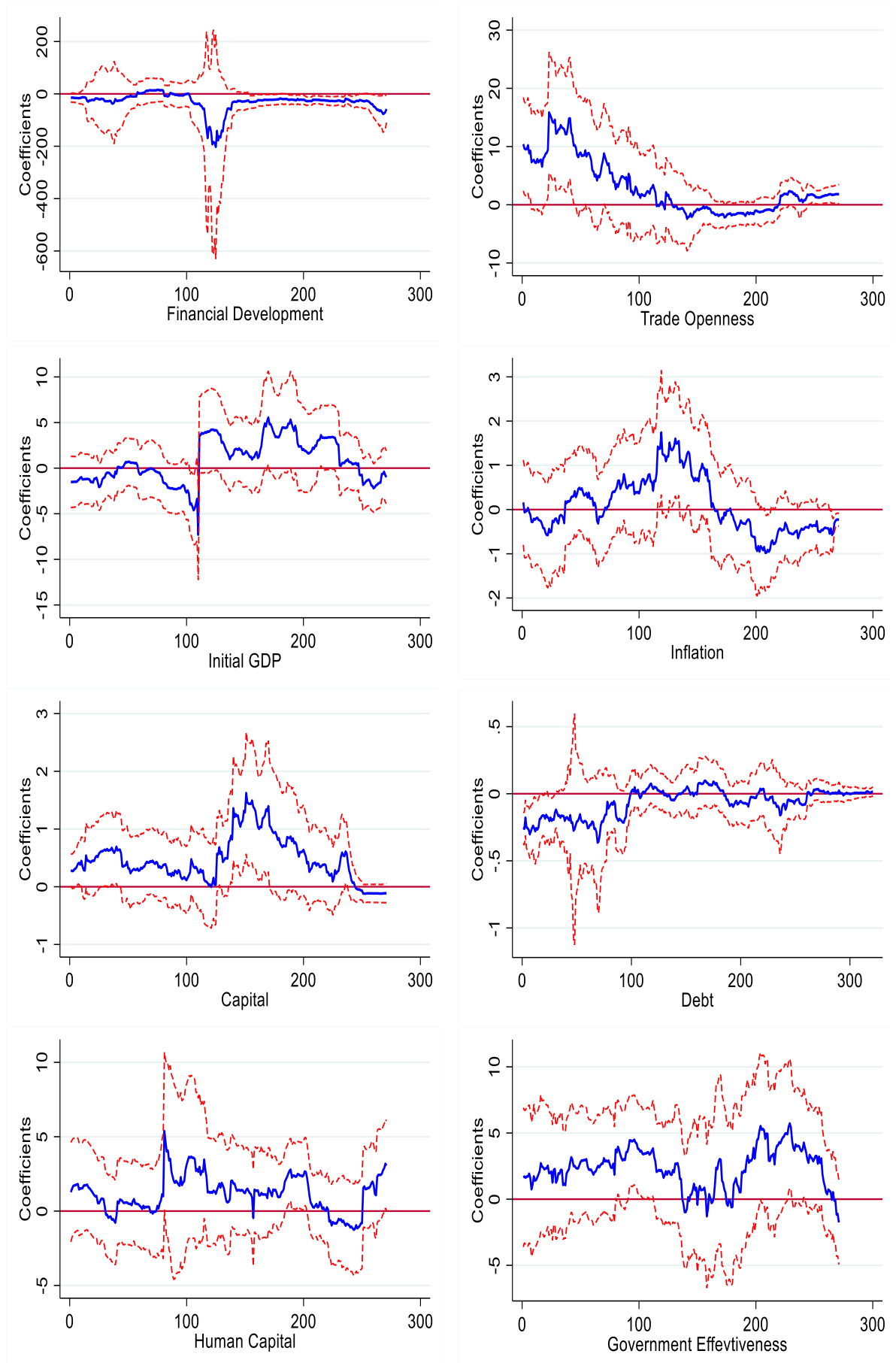


Figure 3: Rolling Window 2SLS Estimates of Debt Model – HICs.

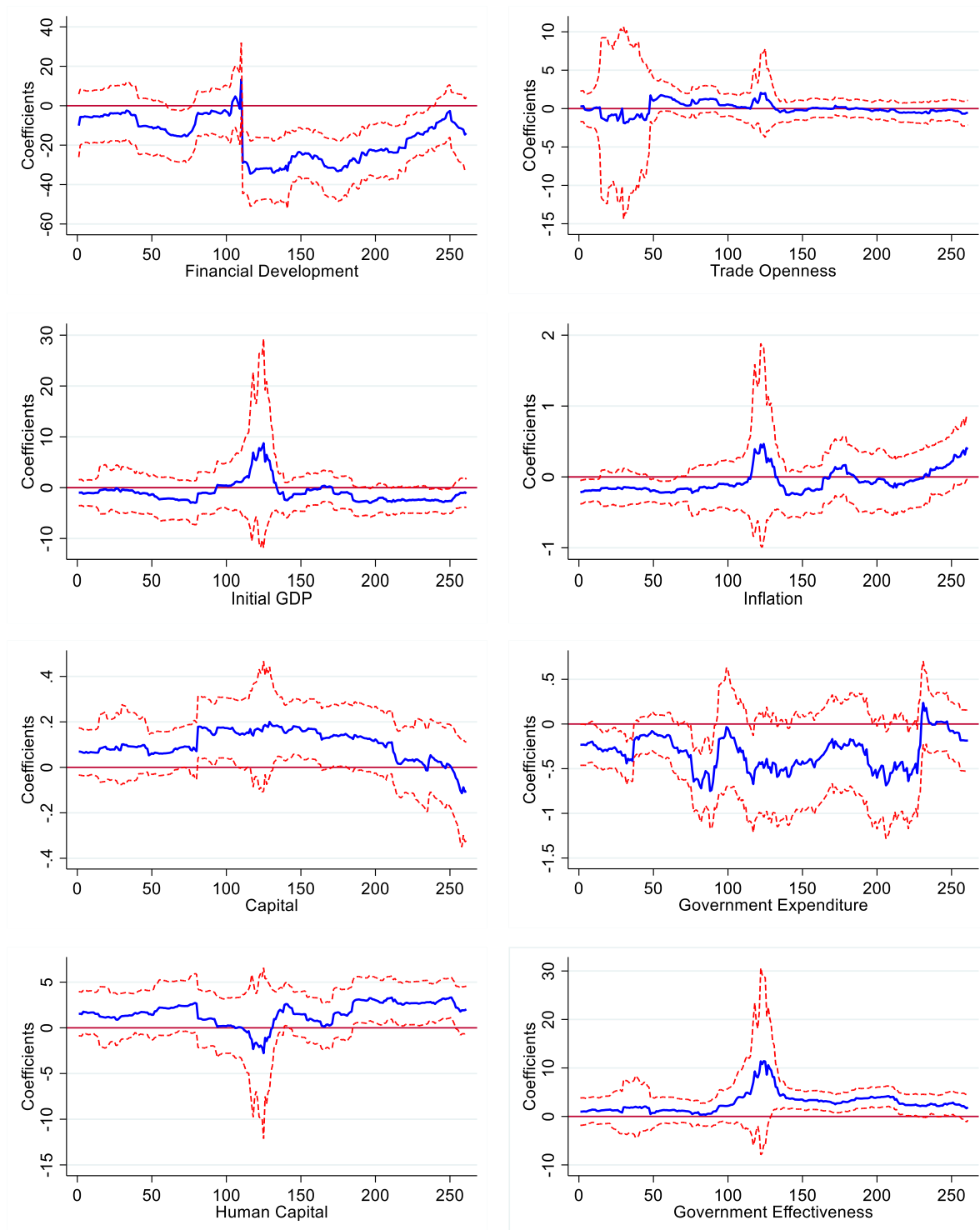


Figure 4: Rolling Window 2SLS Estimates of Government Expenditure Model – HICs.

In the government spending model for HICs, Figure 2 shows that the rolling window coefficients of GE_{it} are mostly negative and display a non-linear pattern. This aligns with existing literature that highlights the difficulties associated with ineffective public expenditure and fiscal control (Connolly & Li, 2016; Gwartney et al., 1998). The presence

of negative coefficients substantiates the perspective that an overabundance of governmental expenditures has the potential to redirect resources from constructive private investments (Barro, 1990). Nevertheless, the intermittent positive coefficients observed in particular HICs imply the conceivable advantages stemming from focused public expenditures. Conversely, the marked volatility and consistently adverse coefficients evident in HICs depict the nuanced outcomes presented in the academic literature concerning the influence of government spending on economic growth (refer to Figure 4). The negative coefficients are consonant with the "crowding-out" theory, suggesting that augmented government expenditures may supplant private investment. Nonetheless, the variability in the magnitudes of coefficients underscores the significance of idiosyncratic country-specific factors. The limited occurrences of positive coefficients imply that under specific circumstances, government expenditures may indeed foster economic growth, particularly when directed towards initiatives that promote innovation and enhance productivity (Alesina & Perotti, 1997; Easterly, 2005).

5. Conclusion and Policy Implications

This study empirically examines the impact of government debt and spending on the economic growth of both HICs and HIPCs from 2002 to 2021. To address endogeneity concerns, the research employs two distinct econometric specifications using the 2-Stage Least Squares (2SLS) approach, ensuring robust findings in exploring the individual effects of government spending and debt on economic growth.

Moreover, acknowledging potential non-linear relationships in the HICs and HIPCs panel, the study incorporates a 2SLS rolling window approach. This approach provides nuanced insights into the dynamics of government debt, spending, and economic growth in these distinct country groups. The empirical comparative analysis reveals a shared adverse impact of debt levels on economic growth in both HICs and HIPCs. However, noteworthy distinctions exist in the influence of other factors. HICs' growth is closely linked to trade openness, inflation, human capital, financial development, and government effectiveness. In contrast, HIPCs rely more on trade openness, inflation dynamics, and governance indicators, especially voice and accountability, as pivotal drivers for economic growth.

Moreover, our investigation unveils the detrimental repercussions of government expenditures on economic growth, a phenomenon manifested in both HICs and HIPCs. This adverse influence is attributable to the potential crowding out of private investment and fiscal inefficiencies. The study emphasizes the pivotal roles of financial development and human capital in propelling economic growth, while initial GDP and inflation present impediments. Governance quality emerges as a positive catalyst for growth in HICs but assumes a less conspicuous role in HIPCs. These findings underscore the imperative of efficacious fiscal policies. Furthermore, our analysis discerns distinctive impacts of government debt and expenditures on economic growth in HICs and HIPCs. Although elevated debt levels impede growth in both cohorts, the magnitude of this effect is more pronounced in HIPCs. Similarly, the adverse impact of government expenditures on growth is discernible in HICs but less conspicuous in HIPCs.

The exploration of government spending and government debt dynamics in HICs and HIPCs through the 2SLS rolling window approach has elucidated non-linear patterns. This investigation reaffirms the established literature's findings regarding the adverse correlation between debt levels and economic growth in both HIPCs and HICs. However, HIPCs exhibit a more pronounced negative impact, potentially attributable to weaker institutional and financial frameworks. Although both cohorts predominantly manifest a negative relationship between government spending and economic growth, HIPCs demonstrate greater volatility, underscoring the necessity for targeted and efficient public expenditure policies. In contrast, HICs maintain a more consistent albeit generally negative relationship, emphasizing the pivotal role of well-structured fiscal policies. These outcomes underscore the critical importance of implementing context-specific fiscal strategies and exercising prudent debt management to foster sustainable economic growth while mitigating challenges associated with debt accumulation and government spending.

In conclusion, these findings underscore the need for tailored fiscal policies and effective governance to influence economic growth in varied economic contexts. In light of these results, specific recommendations for managing government debt and spending in HICs & HIPCs are proposed. Firstly, policymakers should pursue a balanced approach to government spending, ensuring efficiency, targeting, and

alignment with economic goals. Secondly, priority should be given to investments enhancing productivity, including infrastructure, technology, and research and development. Thirdly, maintaining a strong focus on debt sustainability is crucial, with clear management strategies to keep debt levels within sustainable limits. Lastly, the observed negative impact of high debt levels on economic growth in HICs underscores the importance of fiscal responsibility.

Aligned with the empirical findings, this study proffers specific policy recommendations for the management of government debt and spending in HIPCs. Firstly, in HIPCs, where the influence of government spending on growth is more pronounced, imperative measures involve ensuring the judicious utilization of funds. Policymakers ought to concentrate on eradicating profligate expenditures, prioritizing projects with direct and positive impacts on the economy. Secondly, recognizing the substantial role of investment in any economy, government spending in HIPCs should prioritize investments in human capital, encompassing education, healthcare, and vocational training. Thirdly, exercising caution in incurring additional debt is crucial for HIPCs, as the findings underscore a more severe impact of debt on economic growth in these nations. Policymakers must diligently assess the necessity and terms of external borrowing to avert burdening future generations with unsustainable debt. Lastly, international support through debt relief initiatives assumes paramount importance for HIPCs, affording essential respite for nations grappling with elevated debt burdens, thereby enabling the redirection of resources towards growth-promoting investments.

JEL Classification Codes: E62; H63; O57

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