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Peer Pressure: How Relative Debt Drives Emerging Market Sovereign Spreads

Carmen Avila-Yiptong, Georges Hatcherian, Mahamoud Islam

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Prepared by Carmen Avila-Yiptong, Georges Hatcherian, Mahamoud Islam

Authorized for distribution by Jesmin Rahman and Amadou Sy
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ABSTRACT: This paper shows that sovereign bond spreads are shaped not only by absolute debt levels but also by a country's relative debt position within its peer group. Using panel fixed effects for over 80 emerging and developing economies over 1993-2024, we find that relative debt—especially benchmarked by income and commodity status—has greater explanatory power for spreads than gross debt alone. A one–standard deviation increase in relative debt raises spreads by roughly 0.2–0.3 standard deviations, comparable in magnitude to global risk indicators. Similarly, a 10 percent increase in relative debt is associated with a 3.8 percent increase in sovereign spreads, all else equal. The effect of relative debt is state-dependent, being stronger in countries with better institutions, access to concessional lending, and during periods of low risk aversion and ample global liquidity. These results hold across alternative specifications, sample periods, methodologies, and controls, which underscores the comparative nature of investor assessments and the importance of benchmarking for fiscal policy, debt management, and international surveillance.

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Author's E-Mail Address:	cavila-yiptong@imf.org; ghatcherian@imf.org; mislam@imf.org

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Introduction

Sovereign bond spreads—the yield differential between sovereign bonds and benchmark securities, typically U.S. Treasuries of comparable maturity—are widely used as market-based measures of sovereign credit risk. Understanding their determinants has been central to academic research and policy analysis, as spreads encapsulate investor assessments of macroeconomic and fiscal fundamentals, institutional credibility, and broader market conditions.

Public debt has long featured prominently in empirical research of sovereign spreads, reflecting the conventional view that higher debt increases the risk of fiscal stress or default and, in turn, borrowing costs. However, less attention has been paid to how markets assess sovereign debt risks—specifically, whether investors price sovereign debt in absolute terms or relative benchmarking against peer countries.

Much of the literature relies on absolute measures of public debt—most commonly the debt-to-GDP ratio—to explain sovereign spreads. While informative, such measures may fall short in capturing how investors assess sovereign risk in an interconnected global market. In practice, investors evaluate debt burdens comparatively, benchmarking countries against peers with similar income levels, regions, or economic structures. This paper argues that sovereign risk pricing is inherently relative: even a country with a moderate debt-to-GDP ratio can face elevated spreads if its debt position is weak relative to that of its peers.

We propose a novel empirical approach that introduces relative public debt as a complementary or alternative explanatory variable alongside the traditional gross debt measure for emerging market and development economies' (EMDEs) sovereign spreads. Relative public debt is defined as a country's deviation from the median debt level of a structurally similar peer group, with countries classified by income per capita, regional location, and commodity export exposure. By construction, this approach differs from debt-limit, fiscal-space, or "safe debt" concepts, which are grounded in structural or model-based assessments of sustainability[1]. Instead, our approach intends to capture the comparative benchmarking dimension that plays a central role in investors' and rating agencies' sovereign risk assessments. Altogether, this paper seeks to provide empirical evidence to support the following statements:

1. *Higher gross (absolute) debt levels are associated with higher sovereign spreads for EMDEs.*
2. *Higher relative debt (compared to peers) is associated with higher sovereign spreads for EMDEs.*
3. *The impact of relative debt on EMDEs' sovereign spreads depends on domestic and global conditions.*

Using a panel dataset covering a broad set of EMDEs, our empirical findings support these statements and offer insights into the conditions under which relative debt matters more. We show that relative debt significantly improves the explanatory power of sovereign spreads models, particularly during "normal" or "tranquil" global financial conditions. These results underscore that sovereign risk is shaped not only by domestic fundamentals but also by how a country's fiscal position compares to that of its peers under various market conditions.

By reframing sovereign debt risk in relative terms, this paper aims to adopt the perspective of market participants and rating agencies, which assess credit risks in relative terms, contributing to a more nuanced understanding of how markets evaluate fiscal sustainability. The findings carry important implications for sovereign debt management, fiscal policy design, credit risk assessments, and international financial

[1] See Ostry, Ghosh, Kim, and Qureshi (2010), **"Fiscal Space,"** IMF Staff Position Note SPN/10/11, for further details.

surveillance. They also highlight the limitations of policy frameworks that rely solely on absolute fiscal metrics especially in a world where investor attention is increasingly attuned to cross-country comparisons and regional spillovers.

Literature Review

Earlier studies provide foundational evidence on the determinants of sovereign spreads in emerging markets. Baldacci, Gupta, and Mati (2008, 2011) and Csonto and Ivaschenko (2013) use panel data from the late 1990s and 2000s to show that global financial conditions (e.g., U.S. interest rates and global risk aversion) and domestic fundamentals, including public debt and fiscal balance, alongside broader risk indicators significantly drive spreads. Higher public debt and weaker fiscal positions are associated with wider spreads, while improvements in political stability and fiscal consolidation tend to lower borrowing costs. These studies offer a baseline for understanding EM sovereign spreads prior to the structural shifts in debt markets that followed the global financial crisis.

More recent research confirms the persistent influence of the global financial cycle, whereby U.S. monetary policy and shifts in global risk appetite transmit across borders and shape asset pricing. Batini and Durand (2021) shows that cross-country capital flows are strongly driven by a global financial factor, with emerging markets exhibiting heterogeneous sensitivities depending on their policy frameworks. Arteta, Kamin, and Ruch (2023) find that U.S. interest rate increases—particularly those driven by expectations of a more hawkish Federal Reserve—spill over into EMDE financial markets, widening sovereign risk spreads, raising long-term yields, and dampening capital flows. These studies highlight that external shocks can overwhelm local fundamentals, especially during periods of global financial tightening.

Despite the influence of global drivers, fiscal and macroeconomic fundamentals remain central anchors of sovereign risk pricing. Hadzi-Vaskov & Ricci (2022) show that net debt, which accounts for government financial assets, outperforms gross debt in explaining EM spreads, with a 10-percentage point increase in net debt-to-GDP associated with a roughly 100 basis point (bps) rise in spreads. Macroeconomic fundamentals such as debt burden, inflation, and growth also play a persistent role. Gudmundsson et al. (2022) note that high public debt and uncertain inflation prospects constrain EM policymakers' ability to manage incomplete recoveries, while robust GDP growth improves debt sustainability and signals repayment capacity. These findings suggest that macroeconomic stability enhances resilience to global shocks and enhances sovereign creditworthiness.

Since 2010, market structure and index-driven effects have gained prominence. As the EM debt investor base has become more institutionalized and benchmarked to indices such as the J.P. Morgan EMBI Global, spreads have grown sensitive to index inclusion, weighting, and rebalancing dynamics. Moretti et al. (2024) show that monthly changes in index composition generate flow shocks that shift bond supply, resulting in price reactions largely independent of country fundamentals. For example, a one percentage point reduction in supply can raise prices by 33 basis points. These findings indicate that markets increasingly evaluate sovereigns relative to peers within the same index, not just on standalone fundamentals.

A related literature emphasizes relative positioning and peer benchmarking in shaping sovereign spreads. Daehler et al. (2020) find that an EM country's credit default swap (CDS) spreads are positively correlated with those of regional peers, suggesting that investors assess sovereign risk comparatively. Ohnsorge and Pallan (2023) shows that defaults have tended to happen around the end of U.S. Federal Reserve tightening cycle and are more common when debt exceeds the median of its peer group. De et al. (2020) document that relative

risk ratings—rather than absolute ratings—became increasingly influential after the global financial crisis, with the post-crisis effect largely driven by portfolio flows. These studies underscore that reputational dynamics and peer benchmarking are growing determinants of sovereign risk pricing in integrated capital markets.

Despite these insights, direct empirical research on relative debt positioning remains limited. Most studies focus on absolute fiscal indicators, global financial cycles, or index effects, rather than relational debt metrics capturing deviations from regional or income-group medians. This gap motivates further empirical work to incorporate relative debt measures alongside absolute metrics, thereby better capturing the benchmarking and reputational dynamics that increasingly drive sovereign spreads in today's interconnected markets.

Theoretical Intuition and Conceptual Framework

Traditional models of sovereign risk pricing typically assume that investors evaluate countries based on their absolute fundamentals such as debt levels, fiscal balance, or growth prospects. However, in increasingly integrated and information-rich financial markets, investor behavior is inherently relative. Capital is allocated across countries not in isolation, but through comparative assessment, where perceived risk and reward are judged against peer benchmarks.

This comparative framework is supported by three reinforcing mechanisms:

- **Peer Benchmarking and Information Constraints.** Market participants often face uncertainty about a country's actual repayment capacity. To simplify complex assessments, they rely on heuristics—evaluating a sovereign's debt position relative to structurally similar countries (e.g., by income group, region, or export profile). For instance, peer group comparisons are commonly used as part of sovereign credit risk assessments by rating agencies.[2] This reliance on comparative benchmarks implies that sovereign spreads are influenced not only by absolute debt levels, but also by deviations from the "norm" within a reference group
- **Global Portfolio Allocation.** Sovereign bonds compete for global capital. In periods of abundant liquidity, investors seek relative value opportunities, favoring countries whose fundamentals outperform their peers. Conversely, during episodes of heightened global risk aversion, differentiation declines and spreads become more correlated with broad market sentiment rather than country-specific signals. This dynamic aligns with the search-for-yield and flight-to-quality frameworks (Broner et al., 2013; Longstaff et al., 2011).
- **Policy Signaling and Market Discipline.** Governments are generally aware that investors evaluate fiscal positions in relative as well as absolute terms. As a result, a country's debt position vis-à-vis its peers can influence market perceptions and borrowing costs. Maintaining a debt ratio below that of comparable countries may be interpreted as a signal of fiscal prudence, while persistently exceeding peer benchmarks can raise concerns about rollover risk, even when absolute debt levels remain moderate. This implies that debt sustainability is not solely an absolute concept, but also a positional one, shaped by investors' expectations and cross-country pricing behavior. Such dynamics tend to become particularly salient during periods of market stress affecting groups of sovereigns, when authorities seek to differentiate themselves from peers in investors' assessments.

[2] See sovereign rating methodologies published by S&P Global Ratings, Moody's Ratings, and Fitch Ratings for the role of peer comparisons in sovereign credit risk assessments.

Under this framework, sovereign spreads can be expressed as a function of both absolute debt (D) and relative debt ($\ln(D) - \ln(D^*)$), where D^* represents a benchmark debt-to-GDP ratio derived from peer characteristics or estimated debt frontiers. When the relative term dominates, it implies that investors anchor expectations not on fixed thresholds but on deviations from peers—a dynamic, context-dependent approach to risk pricing.

This theoretical intuition underpins the central hypothesis of this paper: sovereign spreads reflect not only a country's absolute debt burden but also its relative position within a reference group. Contextual factors, such as institutional quality, external buffers, and global liquidity, shape when and how this relative assessment becomes most salient.

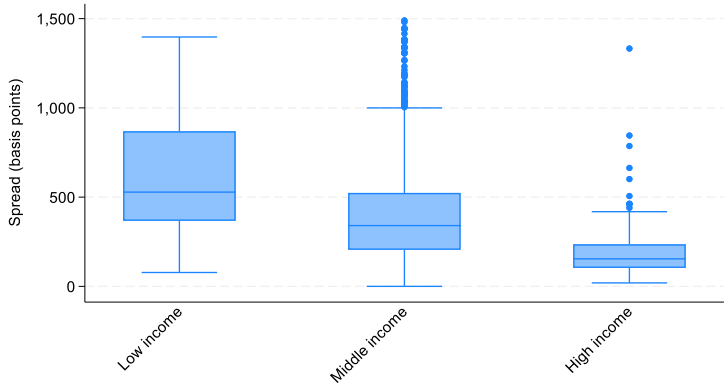
Our analysis focuses on countries covered by J.P. Morgan's EMBIG, which includes high-, middle-, and low-income economies whose sovereign risk is predominantly priced through external market spreads. This allows us to work with standardized, market-based instruments for which relative debt positioning and cross-country comparisons are central to investor pricing decisions.

Stylized Facts

Stylized Fact #1. Relative Positioning by Income Level Shapes Sovereign Risk

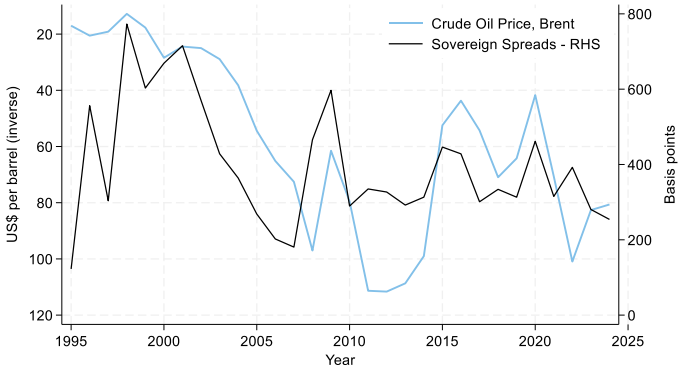
Sovereign spreads vary markedly by income group, with lower-income countries facing higher and more volatile borrowing costs. As shown in Figure 1, the median spread for low-income countries exceeds that of middle- and high-income peers. Moreover, the wider interquartile range and greater number of outliers reflect substantial dispersion which is driven by differences in creditworthiness, policy credibility, and vulnerability to external shocks. In contrast, high-income countries benefit from lower and more stable spreads, supported by stronger institutions, deeper capital markets, and greater investor confidence. These patterns suggest that relative positioning within the global income ladder remains a key anchor of sovereign risk pricing, with low-income countries structurally penalized in international capital markets.

Figure 1. Sovereign Spreads by Income Classification



Sources: J.P. Morgan EMBIG, World Bank, and authors' calculations.

Figure 2. Crude Oil Price and Median Spreads of Commodity Exporters



Sources: J.P. Morgan EMBIG, Haver Analytics, and authors' calculations.

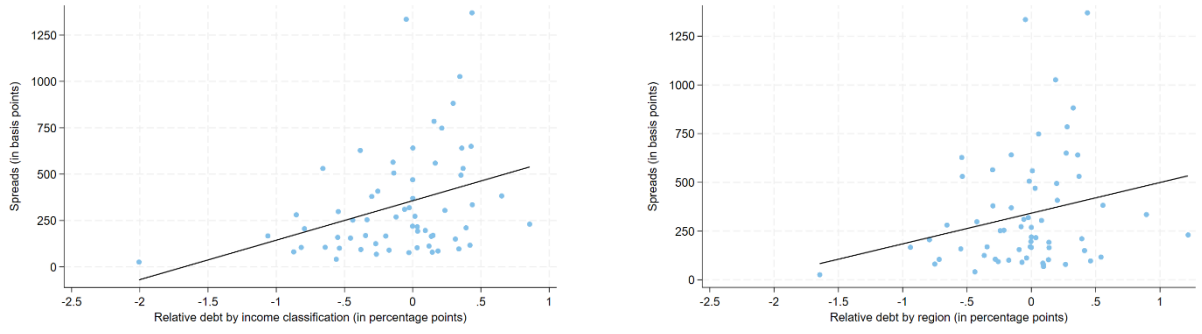
Stylized Fact #2. Economic Structure Also Anchors Risk Perception — The Case of Resource-Rich Exporters

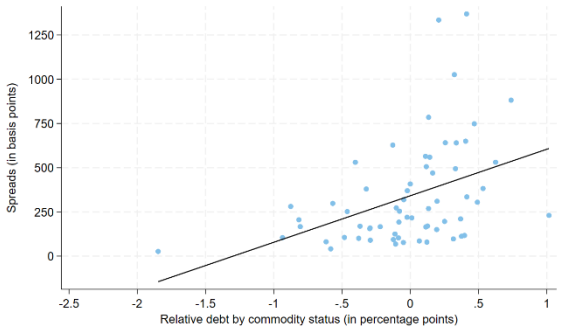
Among commodity exporters, sovereign spreads tend to move in tandem with oil prices, highlighting how global commodity cycles shape investor risk perception. Figure 2 illustrates that episodes of rising oil prices, such as the early 2000s or the post-Covid recovery, have generally coincided with lower spreads for resource-rich countries, reflecting stronger fiscal revenues and external balances. Conversely, oil price drops have triggered sharp increases in spreads, signaling heightened credit concerns. This pattern suggests that investors assess sovereign risk not in isolation but through the lens of economic structure. Export structure matters and can be the basis for benchmarking.

Stylized Fact #3: Positive Correlation between Relative Debt and Sovereign Spreads

Figure 3 illustrates a positive association between measures of relative debt—constructed using alternative peer group definitions—and sovereign spreads. Countries with higher debt levels relative to their peers tend to face higher borrowing costs. A positive deviation from the peer-group median is likely to be perceived by market participants as indicating above-average debt vulnerabilities and is therefore associated with higher sovereign spreads.

Figure 3. Correlation Between Sovereign Spreads and Various Relative Debt Measures





Stylized Fact #4: Relative Debt Outperforms Absolute Debt in Explaining Sovereign Spreads

Text Table 1 reports univariate panel regressions with country fixed effects and cluster standard errors, where sovereign spreads are regressed on gross public debt and three alternative measures of *relative debt*—defined as the deviation from the median debt level of peer groups based on income, region, and commodity-exporter status. Across all specifications, both gross and relative debt are positively associated with sovereign spreads, confirming that higher indebtedness increases borrowing costs. However, relative debt indicators are associated with higher model fit (R^2), indicating that they capture additional explanatory power beyond absolute debt levels.

The stronger statistical performance of relative debt suggests that markets penalize countries more when their debt levels exceed those of structurally similar peers, reinforcing the notion that investor assessments are inherently comparative rather than purely absolute. These findings highlight the importance of benchmarking in sovereign credit risk evaluation and the limitations of relying solely on gross debt metrics.

Text Table 1. Sovereign Spreads, Debt, and Relative Debt

	(1)	(2)	(3)	(4)
Debt	0.232***			
	(0.087)			
Relative debt: Income classification		0.468***		
		(0.101)		
Relative debt: Region			0.280***	
			(0.100)	
Relative debt: Commodity status				0.355***
				(0.099)
Constant	4.791***	5.678***	5.672***	5.680***
	(0.329)	(0.001)	(0.000)	(0.002)
Observations	1,197	1,197	1,197	1,197
R-squared	0.020	0.065	0.024	0.035
Number of countries	83	83	83	83

Note:
(i) Cluster standard errors are marked in parentheses (*** p<0.01, ** p<0.05, * p<0.1).
(ii) Debt and relative debt are lagged by one year.
(iii) Debt is included in its natural logarithmic form. Relative debt by income classification is calculated as the difference between ln(debt) and ln(median debt of the specified peer group).

Data and Methodology

Data

Relative debt is computed as the deviation of a country's public debt-to-GDP ratio to the median of its peer group:

$$Relative\ debt_{i,t} = \ln\left(Total\ Public\ Debt\ to\ GDP_{i,t-1}\right) - \ln\left(Median\ Total\ Public\ Debt\ to\ GDP_{j,t-1}\right) \quad (1)$$
$$where\ i\ indicates\ the\ country, j\ indicates\ the\ peer\ group, and\ t\ indicates\ the\ year$$

We calculate relative debt in reference to three different peer groups: (i) income classification, (ii) region, and (iii) commodity exporter status. We rely on the World Bank's income classification to categorize the sample by income group (low, medium, and high income). Using Moody's regional country classification, we categorize countries into regional peer groups (Text Table 2). Finally, we create a peer group for commodity (resource-rich) exporters (simply referred as commodity exporters in this document) using the World Bank's list of commodity exporters from its 2024 *Global Economic Prospects Report*.[3] We anticipate that relative debt is associated with higher spreads as greater indebtedness relative to peers is expected to increase the perceived sovereign risk of a country.

Text Table 2. Sample Countries Classified by Regional Groups

Africa	Asia	Europe	Latin America and Caribbean	Middle East
Algeria	Armenia	Belarus	Argentina	Bahrain
Angola	Azerbaijan	Bulgaria	Barbados	Iraq
Cameroon	China	Croatia	Belize	Jordan
Côte d'Ivoire	Indonesia	Georgia	Bolivia	Kuwait
Egypt	India	Greece	Brazil	Lebanon
Ethiopia	Kazakhstan	Hungary	Chile	Oman
Gabon	Malaysia	Latvia	Colombia	Qatar
Ghana	Maldives	Lithuania	Costa Rica	Saudi Arabia
Kenya	Mongolia	Poland	Dominican Republic	United Arab Emirates
Morocco	Pakistan	Romania	Ecuador	
Mozambique	Papua New Guinea	Russia	El Salvador	
Namibia	Philippines	Serbia	Guatemala	
Nigeria	Korea	Slovak Republic	Honduras	
Rwanda	Sri Lanka	Türkiye	Jamaica	
Senegal	Tajikistan	Ukraine	Mexico	
South Africa	Thailand		Panama	
Tanzania	Uzbekistan		Paraguay	
Tunisia	Vietnam		Peru	
Zambia			Suriname	
			Trinidad and Tobago	
			Uruguay	
			Venezuela	

[3] We supplement the World Bank's list of commodity exporters by adding Venezuela, an exporter of crude oil. The list of commodity-exporting countries can be found in Annex I.

For our empirical analysis, we use sovereign spreads data from J.P. Morgan's Emerging Market Bond Index Global (EMBIG), covering all 83 emerging market countries from 1993 to 2024 –the full span of the EMBIG's historical coverage. We use annual average spread levels and restrict the sample to observations up to 1,500 basis points (bps), thus excluding observations beyond the 95th percentile of the distribution of sovereign spreads.[4] This range captures the categories usually monitored by market participants (i.e., up to 700 bps for non-stressed countries, 700 to 1,000 bps for stressed countries, and above 1,000 bps for distressed countries).

Our baseline model draws on the specification used by Hadzi-Vaskov and Ricci (2022), comparing the explanatory power of gross and net debt. We use the IMF World Economic Outlook's (WEO) total public debt-to-GDP ratio to measure absolute debt, which serves as a proxy for fiscal vulnerability and investor risk perception.

To control for domestic fundamentals, we include real GDP growth and average inflation. Higher growth is expected to reduce spreads by signaling stronger repayment capacity, while inflation, an indicator of macroeconomic instability, is expected to widen spreads.

Global financial conditions are captured using: (i) the Chicago Board Options Exchange Volatility Index (VIX), a proxy for global risk sentiment, with higher values associated with increased demand for safe assets and wider EM spreads; and (ii) the U.S. 10-year Treasury yield, a proxy for global financing conditions, expected to have a positive effect on spreads as rising U.S. rates usually tighten financial conditions for emerging markets. However, empirical studies have shown that in certain conditions, such as when liquidity is abundant, this positive relationship between the U.S. Treasury yields and spreads may not emerge. For instance, a low Fed Funds rate could incentivize increased emerging market debt issuances which, due to a lack of coordination, may lead to an excess supply of such bonds and thus higher spreads (Eichengreen and Mody, 1998; Comelli, 2012).

Text Table 3. Baseline Model – Explanatory Variables

Explanatory Variable	Expected Sign	Data Source
Absolute debt	+	WEO
Relative debt	+	WEO and authors' calculations
Real GDP growth	-	WEO
Inflation, period average	+	WEO
VIX	+	Chicago Board Options Exchange
US 10-Year Note Yield	+/-	Federal Reserve Board

Methodology and Empirical Strategy

To examine the impact of absolute and relative debt on sovereign spreads, we estimate panel regressions with fixed effects using Hadzi-Vaskov and Ricci's (2022) specification. The Hausman specification test confirms the use of fixed effects in our panel regressions. Further, we apply clustered standard errors to address heteroskedasticity and autocorrelation.

[4] We restrict the baseline sample to spreads below 1,500 bps to focus on market-based pricing regimes, as spreads above this threshold typically reflect distressed or restructuring situations where standard pricing mechanisms break down. Moreover, in our sample,1500 bps represents approximately the 95th percentile of the sovereign spread distribution. By removing observations beyond 1500 bps, we reduce the influence of extreme outliers in the dataset which may disproportionately impact the coefficient estimates. Moreover, this allows the analysis to reflect "normal" market conditions rather than extreme cases of debt distress or other exceptional crises.

$$Spreads_{i,t} = \alpha + \beta_1 Debt\ Measure_{i,t-1} + \beta_3 Domestic\ Factors_{i,t-1} + \beta_4 Global\ Factors_t + \varepsilon_{i,t} (2)$$

Our baseline model is outlined by Equation 2. Here, *Spreads* refers to log-transformed EMBIG spreads. *Debt Measure* captures either absolute debt (gross public debt-to-GDP) or relative debt (deviation from peer group median), both lagged by one year to address endogeneity. *Domestic Factors* include lagged real GDP growth and inflation to address endogeneity concerns; *Global Factors* include the VIX and the U.S. 10-year Treasury yield, in log terms and contemporaneous to reflect global financial conditions. Finally, $\varepsilon_{i,t}$ represents the error term.

We first run Equation 2 to confirm Statements 1 and 2 regarding the impact of absolute and relative debt on sovereign spreads. We then run an additional specification of Equation 2 with both debt measures to determine which indicator matters more when they are simultaneously included. Next, we present results for alternative specifications of relative debt to confirm our baseline model. We then perform a robustness analysis on our baseline model and investigate several model extensions, including additional control variables and sample-splitting.

Baseline Results

Relevance of Relative Debt

Text Table 4 presents the baseline regressions used to assess the relationship between debt and sovereign spreads. Here, relative debt is defined as the deviation of a country's gross public debt from the median of its peer group, based on income classification, geographic region, and commodity exporter status. The baseline regressions confirm that higher gross debt is associated with higher spreads (Statement 1) and that higher relative debt is associated with higher spreads (Statement 2). In addition, when both absolute and relative debt are included in the same specification, relative debt remains statistically significant while absolute debt loses significance, indicating that relative debt contains more information for spread pricing once comparative benchmarks are taken into account.

In our standard specification (Model 5), all control variables perform as expected:

- Public (i.e., absolute) debt is positively and significantly linked with spreads, given higher perceived repayment risk.
- Real GDP growth reduces spreads, reflecting stronger debt-carrying capacity.
- Inflation increases spreads, signaling macroeconomic instability and external debt vulnerabilities.
- The VIX is positively and significantly related to spreads, underscoring the role of global risk aversion.
- The US 10-year Treasury yield is insignificant and negative, suggesting that once global sentiment is captured by the VIX, rising U.S. yields may reflect improved global prospects and thus lower spreads.[5]

In Models 6–8, relative debt is positive and statistically significant across all comparator groupings. This suggests that investors evaluate countries' debt in comparative terms, not merely in absolute values. Here, the control variables stay consistent with baseline expectations. In Models 9–11, where absolute and relative debt are included simultaneously, gross debt loses statistical significance, and its coefficient becomes unstable in

[5] This interpretation aligns with Csonto and Ivaschenko (2008), who find that the effect of U.S. Treasury yields on spreads becomes insignificant once the VIX is included—suggesting that yields may reflect broader liquidity conditions or sentiment, with their impact varying across risk aversion regimes.

sign. In contrast, relative debt remains robustly positive and significant, especially in the income-based (Model 9) and commodity-based (Model 11) groupings. Only the region-based specification shows insignificance for both measures. These findings showcase that relative debt offers greater explanatory power than gross debt when jointly considered. Investors appear to assess debt in context rather than on standalone levels.

For the remainder of the analysis, we adopt model 6 (i.e., relative debt by income classification) as our core specification. It offers the highest explanatory power and avoids potential endogeneity from including both debt measures simultaneously. In this model we find that a ten percent increase in relative debt is predicted to increase spreads by 3.8 percent, all else equal.

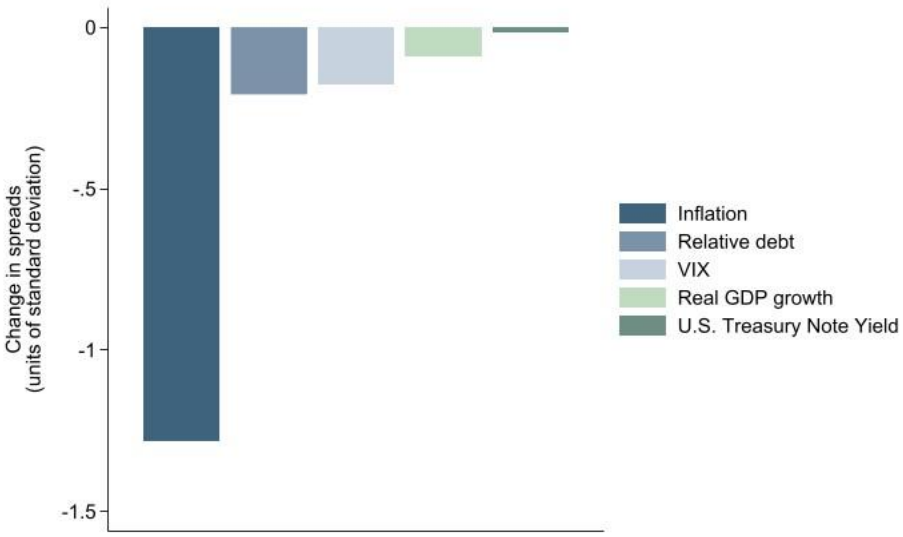
Given that the explanatory variables are expressed in different units, coefficient magnitudes in Table 4 are not directly comparable. To provide an intuitive comparison of their relative quantitative importance, Figure 4 reports standardized impacts based on the baseline specification, measuring the change in spreads associated with a one–standard-deviation improvement in each variable. A one–standard deviation increase in relative debt raises sovereign spreads by roughly 0.2–0.3 standard deviations, a magnitude comparable to that of global risk indicators.

Text Table 4. Baseline Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Real GDP growth	-0.023***	-0.023***	-0.022***	-0.023***	-0.020***	-0.021***	-0.023***	-0.023***	-0.024***	-0.021***	-0.023***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Inflation		0.001***	0.001***	0.001***	0.016***	0.014***	0.016***	0.015***	0.014***	0.016***	0.015***
		(0.000)	(0.000)	(0.000)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
VIX			0.623***	0.628***	0.639***	0.617***	0.621***	0.631***	0.599***	0.630***	0.630***
			(0.038)	(0.043)	(0.044)	(0.045)	(0.043)	(0.044)	(0.045)	(0.043)	(0.044)
US 10-year rate				0.034	-0.025	-0.031	-0.032	-0.028	-0.041	-0.028	-0.029
				(0.073)	(0.066)	(0.064)	(0.066)	(0.065)	(0.064)	(0.065)	(0.065)
Debt					0.170**				-0.200	0.101	-0.015
					(0.083)				(0.134)	(0.109)	(0.115)
Relative debt: Income classification						0.379***			0.546***		
						(0.098)			(0.155)		
Relative debt: Region							0.184*			0.107	
							(0.100)			(0.128)	
Relative debt: Commodity status								0.316***			0.328**
								(0.100)			(0.138)
Constant	5.769***	5.759***	3.934***	3.887***	3.159***	3.891***	3.873***	3.851***	4.720***	3.452***	3.913***
	(0.021)	(0.021)	(0.111)	(0.174)	(0.387)	(0.174)	(0.170)	(0.173)	(0.539)	(0.453)	(0.485)
Observations	1,239	1,231	1,231	1,231	1,189	1,189	1,189	1,189	1,189	1,189	1,189
R-squared	0.027	0.036	0.151	0.152	0.220	0.250	0.220	0.236	0.256	0.221	0.236
Number of countries	83	83	83	83	83	83	83	83	83	83	83

Note:
(i) Cluster standard errors are marked in parentheses (*** p<0.01, ** p<0.05, * p<0.1).
(ii) All explanatory variables are lagged by one year except for the VIX and US 10-year rate.
(iii) All variables are included in natural logarithmic form except for real GDP growth and inflation. The relative debt indicators are calculated using the natural logarithm of debt but are included in the regressions without additional transformations.
(iv) The relative debt measures are calculated using the median of the specified comparator group.

Figure 4. Drivers of Sovereign Spreads Ranked (standardized impact) [6]



Sources: Authors' calculations.

When Does Relative Debt Matter?

After establishing that relative debt matters for sovereign spreads, we turn to investigating the conditions under which relative debt matters more for determining the sovereign cost of borrowing (Statement 3). While the baseline results confirm that relative debt is a significant determinant of sovereign spreads, its influence is not uniform across time or countries. Investor reliance on relative benchmarks varies depending on broader economic and institutional contexts — shaped by two overarching channels:

- **Domestic fundamentals**, which affect a sovereign's credibility and resilience relative to peers.
- **Global financial conditions**, which influence investors' ability and willingness to differentiate among borrowers.

To operationalize these channels, we focus on six dimensions that are central to sovereign risk assessment in both the academic literature and market practice. These dimensions capture key aspects of credibility, liquidity, market access, and global financial conditions. For each, we define thresholds to split the sample and conduct split-sample regressions.

- **Institutional Strength (Domestic Credibility):** Based on Worldwide Governance Indicators (WGI). Countries with WGI ≥ 0 are classified as institutionally strong; those with WGI < 0 as weak.
- **Reserve Adequacy (External Buffers):** Measured in months of imports, a standard proxy for external liquidity risk in sovereign risk analysis. A threshold of 3 months distinguishes countries with adequate vs. vulnerable reserve positions.

[6] Figure 4 illustrates the predicted reduction in spreads resulting from a one standard deviation improvement in the specified explanatory variable. This is calculated by standardizing each variables' data to effectively rank each driver.

- **Access to Concessional Finance (Structural Market Access):** Based on World Bank lending eligibility (Blend or IDA status). We separate countries with access to concessional financing from those primarily borrowing on market terms.
- **History of Arrears (Repayment Behavior):** Based on the World Bank International Debt Statistics figures for public and publicly guaranteed (PPG) debt. The sample is split between countries with arrears in the past five years and those without. This horizon captures recent repayment behavior and aligns with the medium-term period over which default episodes continue to affect market access and investor perceptions.
- **Global Risk Aversion (Investor Sentiment):** Proxied by the VIX index. A threshold of 20 differentiates "risk-on" vs. "risk-off" conditions.
- **Global Liquidity Conditions (Monetary Backdrop):** Measured by the global M2-to-GDP gap (deviation from trend via Hodrick-Prescott filter). A positive gap signals excess liquidity; a negative gap indicates tightening.

These dimensions allow us to study how the role of relative debt varies depending on whether sovereign spreads are primarily driven by country-specific fundamentals or by broader global and structural factors.

The results **in Text Table 5** present the circumstances under which relative debt matters more.

- **Institutional Strength:** Relative debt has greater explanatory power in countries with stronger institutions (Model 2), where investors more confidently differentiate based on fundamentals. In weaker institutional settings (Model 3), spreads are more influenced by institutional risk itself, reducing sensitivity to debt and growth.
- **Reserve Adequacy:** Relative debt matters more when reserves are low (Model 5), as limited buffers heighten liquidity concerns. In countries with adequate reserves (Model 4), the impact of relative debt on spreads is smaller.
- **Access to Concessional Finance**: Relative debt is more influential in countries eligible for concessional finance (Model 7), likely due to weaker economic fundamentals and a higher share of non-marketable liabilities. In non-eligible countries (Model 6), relative debt remains significant but the estimated coefficient has a smaller impact on spreads.
- **History of Arrears**: Relative debt matters more for spreads in countries with no recent history of PPG debt arrears. Model (9) indicates a positive and highly statistically significant coefficient on relative debt indicating that investors consider countries' relative debt positioning when repayment behavior has been consistent and predictable.
- **Global Risk Aversion:** Relative debt is more significant during tranquil periods (low VIX, Model 10), when investors have time and incentives to discriminate. During volatile periods (high VIX, Model 11), spreads respond more to cyclical variables, and debt fundamentals are temporarily de-emphasized.
- **Global Liquidity Conditions:** Relative debt plays a larger role during periods of excess global liquidity (Model 12), consistent with search-for-yield behavior and heightened peer comparisons. When liquidity tightens (Model 13), risk aversion dominates and spreads become less responsive to debt variation. Notably, the coefficient on the global M2 gap is positive and significant in both regimes, suggesting that excess liquidity is associated with wider spreads. While counterintuitive, this likely reflects that liquidity expansions during our sample period often coincided with crisis responses (e.g., post-GFC QE, COVID stimulus), which elevated risk perceptions in EMDEs. In such episodes, abundant liquidity may have signaled broader uncertainty rather than improved market access.

Text Table 5. Model Extensions – Sample Splitting

	(1) Baseline	(2) WGI≥0	(3) WGI<0	(4) Reserves to Imports≥3	(5) Reserves to Imports<3	(6) World Bank Concessional Lending=1	(7) World Bank Concessional Lending=0	(8) Arrears=1	(9) Arrears=0	(10) VIX≥20	(11) VIX<20	(12) M2 Gap≥0	(13) M2 Gap<0
Relative debt	0.379***	0.629***	0.344**	0.282**	0.776***	0.708***	0.330***	0.245	0.400***	0.192*	0.556***	0.427***	0.267**
	(0.098)	(0.225)	(0.155)	(0.110)	(0.180)	(0.174)	(0.107)	(0.174)	(0.110)	(0.115)	(0.122)	(0.109)	(0.119)
Real GDP growth	-0.021***	-0.014**	-0.010**	-0.024***	-0.024**	-0.011	-0.022***	-0.022**	-0.021***	-0.044***	0.000	-0.003	-0.041***
	(0.005)	(0.006)	(0.004)	(0.006)	(0.009)	(0.009)	(0.005)	(0.010)	(0.005)	(0.013)	(0.004)	(0.005)	(0.015)
Inflation	0.014***	0.013	0.008*	0.015***	0.008**	0.014*	0.014***	0.013***	0.017***	0.016***	0.016***	0.016***	0.014***
	(0.003)	(0.010)	(0.004)	(0.004)	(0.003)	(0.007)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)
VIX	0.617***	0.561***	0.485***	0.631***	0.547***	0.608***	0.615***	0.571***	0.646***	1.327***	0.112	0.096	0.825***
	(0.045)	(0.076)	(0.061)	(0.054)	(0.105)	(0.094)	(0.050)	(0.063)	(0.071)	(0.206)	(0.077)	(0.087)	(0.076)
US 10-year rate	-0.031	-0.020	-0.147**	-0.076	-0.144	-0.003	-0.038	-0.075	0.005	0.192***	-0.385***	0.252***	-0.478***
	(0.064)	(0.085)	(0.068)	(0.069)	(0.102)	(0.069)	(0.077)	(0.077)	(0.084)	(0.063)	(0.086)	(0.083)	(0.111)
WGI		-0.774	-0.849***										
		(0.610)	(0.203)										
Reserves to imports				-0.041**	-0.128								
				(0.018)	(0.144)								
M2 gap												0.025**	0.069***
												(0.010)	(0.010)
Constant	3.891***	3.940***	4.183***	4.129***	4.563***	4.400***	3.791***	4.401***	3.481***	1.369**	5.560***	5.153***	4.107***
	(0.174)	(0.406)	(0.257)	(0.254)	(0.392)	(0.253)	(0.199)	(0.224)	(0.263)	(0.642)	(0.224)	(0.233)	(0.206)
Observations	1,189	348	637	925	210	210	979	554	635	409	780	584	605
R-squared	0.250	0.315	0.317	0.262	0.409	0.468	0.226	0.211	0.282	0.214	0.243	0.208	0.315
Number of countries	83	34	57	72	36	27	66	50	54	79	81	82	82

Note:
(i) Cluster standard errors are marked in parentheses (*** p<0.01, ** p<0.05, * p<0.1).
(ii) All explanatory variables are lagged by one year except for the VIX and US 10-year rate.
(iii) All variables are included in natural logarithmic form except for real GDP growth and inflation. The relative debt indicators are calculated using the natural logarithm of debt but are included in the regressions without additional transformations.
(iv) Models 6 and 7 refer to samples under which countries have access to concessional lending (i.e., equal to 1). Here, concessional lending access is proxied by the World Bank lending classifications “blend” and “International Development Association.”
(vi) Models 8 and 9 refer to samples under which global M2 is above or below its trend.

Alternative Measures and Robustness Checks

Alternative Specifications of Relative Debt

Defining appropriate peer benchmarks is inherently challenging. Data-driven clustering based on multiple macroeconomic characteristics can quickly lead to a proliferation of peer groups, complicating interpretation and reducing statistical power. Moreover, many candidate grouping variables—such as fiscal buffers, reserves, or external positions—are themselves closely related to sovereign risk, raising endogeneity concerns if used directly to define peer groups. To address these issues, we adopt a continuous benchmark based on a debt frontier, which allows relative debt to be assessed against structurally comparable countries while avoiding arbitrary discrete groupings.

Text Table 6. Calculated Debt Frontier

	(1) Baseline	(2) Calculated Debt Frontier	(3) Calculated Debt Frontier (3-year window)	(4) Baseline + Quadratic Term
Relative debt	0.379***	0.207**	0.186***	0.402***
	(0.098)	(0.092)	(0.068)	(0.110)
Real GDP growth	-0.021***	-0.019***	-0.017***	-0.021***
	(0.005)	(0.005)	(0.004)	(0.005)
Inflation	0.014***	0.017***	0.018***	0.014***
	(0.003)	(0.003)	(0.003)	(0.003)
VIX	0.617***	0.626***	0.550***	0.611***
	(0.045)	(0.048)	(0.048)	(0.044)
US 10-year rate	-0.031	-0.033	-0.068	-0.037
	(0.064)	(0.068)	(0.065)	(0.064)
Relative debt^2				0.061
				(0.073)
Constant	3.891***	3.823***	4.064***	3.899***
	(0.174)	(0.185)	(0.182)	(0.174)
Observations	1,189	1,105	1,082	1,189
R-squared	0.250	0.218	0.232	0.252
Number of countries	83	83	83	83

Note:
(i) Cluster standard errors are marked in parentheses (*** p<0.01, ** p<0.05, * p<0.1).
(ii) All explanatory variables are lagged by one year except for the VIX and US 10-year rate.
(iii) All variables are included in natural logarithmic form except for real GDP growth and inflation.
(iv) In model (2) relative debt is calculated as the difference between a country's total debt-to- GDP ratio and the calculated debt frontier.

To further investigate the relevance of relative debt and to confirm the selection of our baseline model, we use an alternative formulation of relative debt (Text Table 6, Model 2). In this model, relative debt is defined as the deviation from a constructed debt frontier (i.e., debt predicted by the structural characteristics that are the most relevant based on Text Table 4). These characteristics are income (proxied by GDP per capita) and commodity exporting status (proxied by Brent oil price, commodity exporter status, and the interaction between the oil price and the commodity status) using the overall sample (Equation 2) and using a rolling three-year sample to proxy

investors' forecasting approach of smoothing past years' trends (Equation 3).[7] [8] Results using this specification corroborate our baseline findings: higher relative debt, even when benchmarked against a structural frontier, is associated with higher spreads. This alternative measure of relative debt confirms that the results are robust to alternative specifications.

We also test for non-linearity by including a squared term for relative debt (Model 4). The coefficient remains statistically insignificant, and all other variables behave consistently with the baseline model, supporting the use of a linear specification based on income classification peers.

Robustness Checks

In Text Table 7, we show that our baseline model results are also robust to winsorization, different sample periods (pre- and post-GFC), three-year averages, and the inclusion of additional controls. Model (2) excludes outliers—defined as sovereign spreads exceeding two standard deviations above the mean. Model (3) applies a 5 percent winsorization, replacing values below the 5th and above the 95th percentiles with their respective percentile values. Models (4) and (5) use the baseline model and include all historical observations to analyze how the inclusion of spreads beyond 1500 bps could impact the results. Model (4) uses the baseline with all historical observations of spreads. Model (5) uses $\ln(1 + spreads)$ as the dependent variable to reduce the influence of extreme values. In all cases, the coefficient on relative debt remains positive and statistically significant.

[7] We used the Brent price as a price indicator of resource-rich commodity exporters following Arezki and Brückner (2012) and Bems and de Carvalho Filho (2011).

[8] In both Equation 2 and 3, relative debt is defined as the deviation of actual debt from a fitted benchmark. However, Equation 3 serves as a time-varying structural debt frontier (i.e., fiscal sustainability is evaluated on a relative basis in reference to peers and evolving structural characteristics).

Text Table 7. Robustness Analysis

	(1) Baseline	(2) Removing Outliers	(3) Winsorization	(4) Baseline with All Historical Observations of Spreads	(5) Dependent Variable: ln(1+spreads) with All Historical Observations of Spreads	(6) Sample Selection: Pre-GFC	(7) Sample Selection: Post-GFC	(8) 3-Year Averages	(9) Driscoll-Kraay Standard Errors	(10) Time Trends
Relative debt: Income classification	0.379***	0.337***	0.465***	0.481***	0.463***	0.261*	0.608***	0.200*	0.379***	0.364***
	(0.098)	(0.093)	(0.107)	(0.092)	(0.094)	(0.132)	(0.140)	(0.111)	(0.099)	(0.096)
Real GDP growth	-0.021***	-0.016***	-0.026***	-0.031***	-0.027***	-0.039***	-0.000	-0.038***	-0.021*	-0.021***
	(0.005)	(0.004)	(0.006)	(0.008)	(0.008)	(0.012)	(0.003)	(0.014)	(0.011)	(0.005)
Inflation	0.014***	0.015***	0.027***	0.000***	0.000***	0.015***	0.007***	0.003***	0.014***	0.014***
	(0.003)	(0.003)	(0.005)	(0.000)	(0.000)	(0.003)	(0.003)	(0.001)	(0.003)	(0.003)
VIX	0.617***	0.629***	0.639***	0.718***	0.764***	1.124***	0.283***	0.712***	0.617***	0.561***
	(0.045)	(0.047)	(0.041)	(0.050)	(0.059)	(0.081)	(0.052)	(0.079)	(0.144)	(0.043)
US 10-year rate	-0.031	-0.036	-0.080	0.107*	0.046	0.620***	-0.141***	-0.009	-0.031	-0.123***
	(0.064)	(0.061)	(0.078)	(0.060)	(0.080)	(0.158)	(0.045)	(0.075)	(0.114)	(0.041)
Sovereign spreads (lagged)										
Time trend										-0.013**
										(0.006)
Constant	3.891***	3.892***	3.826***	3.720***	3.624***	1.302***	4.980***	3.731***	3.891***	29.536**
	(0.174)	(0.174)	(0.156)	(0.182)	(0.189)	(0.421)	(0.173)	(0.278)	(0.477)	(12.050)
Observations	1,189	1,147	1,189	1,356	1,360	373	816	415	1,189	1,189
R-squared	0.250	0.290	0.277	0.221	0.188	0.460	0.206	0.210	0.250	0.267
Number of countries	83	83	83	83	83	47	79	83	83	83

Note:
(i) Cluster standard errors are marked in parentheses (*** p<0.01, ** p<0.05, * p<0.1) except in Model 7.
(ii) All explanatory variables are lagged by one year except for the VIX and US 10-year rate.
(iii) All variables are included in natural logarithmic form except for real GDP growth and inflation. The relative debt indicator is calculated using the natural logarithm of debt but is included in the regressions without additional transformations.
(iv) Model (2) removes observations of spreads that fall beyond two standard deviations from the mean spreads level.
(v) Model (6) only includes observations for years between 1993 and 2010. Model (7) only includes observations for years from 2011 onwards.

Model (6) and (7) presents the result for different sample periods (pre-GFC and post -GFC). Splitting the sample into pre- and post-global financial crisis periods allows us to account for structural changes in EM debt markets and investor behavior. We find that relative debt has become more significant and has a stronger impact on spreads, presumably because of more sovereign risk aversion in the context of higher global debt levels.

Model (8) examines the relationship over a smoother time horizon by averaging all variables over non-overlapping three-year blocks. Lagged regressors are constructed so that the periods for explanatory variables do not overlap with those for the dependent variable. This approach helps mitigate concerns of short-term endogeneity, as it reduces the risk that contemporaneous shocks or feedback between spreads and debt are driving the results. In this specification, relative debt remains statistically significant, but its coefficient is smaller, suggesting that market reactions to changes in relative debt are more immediate rather than persistent over longer horizons..

Model (9) presents the baseline model using the Driscoll-Kraay standard errors method, which ensures robustness to serial correlation, cross-sectional dependence, and heteroskedasticity. In this specification, relative debt remains statistically significant at the one percent level.

Finally, Model (10) aims to control for time trends across the sample period by adding a linear time trend to the baseline specification. Overall, the model results remain the same therefore suggesting that the baseline model results are not driven by long-run trends. The negative coefficient on the time trends variable indicates that, all else equal, on average, spreads are declining over time.

In Text Table 8, the baseline model is supplemented with interaction terms to confirm the findings regarding the conditions under which relative debt matters more.[9] Relative debt remains a significant determinant of spreads in all cases. The findings from the sample-splitting exercise hold. The impact of relative debt on spreads is greater when countries (i) have a strong WGI score, (ii) have lower reserves, or (iii) have access to concessional lending. However, the interaction terms are generally not statistically significant, suggesting that these differences are not well captured by linear interactions. Instead, these results suggest that the relationship may be nonlinear, with differences across environments that are not fully captured by linear interaction terms. With regards to the impact of a country's debt repayment track record, Model (5) shows that a recent history of arrears is associated with higher spreads. However, the interaction term between arrears and relative debt is not statistically significant, suggesting limited evidence of a differential marginal effect. In contrast, the split-sample results suggest that relative debt matters primarily in countries without a recent history of arrears. This indicates that investor differentiation operates more strongly in environments with higher repayment credibility, while in more distressed contexts, spreads are driven by default risk considerations, limiting the role of comparative benchmarking. Text Table 8 also confirms that, in periods of higher global volatility, relative debt becomes less important for investors as they price sovereign risk. The coefficient on the interaction term between the VIX and relative debt is statistically significant at the one percent level. Finally, a larger global M2 gap is found to reduce the magnitude of the coefficient of relative debt. Although this differs from the findings in Text Table 5, the coefficient on the interaction term is not statistically significant. Overall,

[9] All the interaction terms are included as continuous variables except for the dummy variables on concessional lending access, arrears, and the VIX which takes a value of 0 or 1. The dummy on concessional lending access is set to one when a country is classified by the World Bank as a "blend" or IDA lending status. The dummy variable on arrears is set to 1 when a country has had PPG debt arrears in the last five years. The dummy variable on the VIX is set to one when the VIX is greater than or equal to 20.

the results in Text Table 8 showcase that the magnitude of relative debt's impact on spreads varies depending on different country characteristics and global conditions.

Text Table 8. Robustness Analysis of Model Extensions

	(1) Baseline	(2)	(3)	(4)	(5)	(6)	(7)
Relative debt	0.379***	0.478***	0.464***	0.355***	0.347***	0.466***	0.384***
	(0.098)	(0.142)	(0.133)	(0.106)	(0.107)	(0.102)	(0.098)
Real GDP growth	-0.021***	-0.012***	-0.025***	-0.021***	-0.021***	-0.021***	-0.018***
	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Inflation	0.014***	0.010***	0.014***	0.014***	0.015***	0.015***	0.014***
	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
VIX	0.617***	0.520***	0.617***	0.620***	0.613***	0.366***	0.515***
	(0.045)	(0.048)	(0.047)	(0.044)	(0.043)	(0.073)	(0.056)
US 10-year rate	-0.031	-0.098*	-0.077	-0.033	-0.040	-0.049	0.028
	(0.064)	(0.053)	(0.064)	(0.065)	(0.063)	(0.060)	(0.084)
WGI		-0.729***					
		(0.204)					
WGI X Relative debt		0.187					
		(0.232)					
Reserves to imports			-0.048***				
			(0.018)				
Reserves X Relative debt			-0.022				
			(0.016)				
Dummy variable: Concessional lending access				0.196			
				(0.140)			
Dummy variable: Concessional lending access X Relative debt				0.188			
				(0.167)			
Dummy variable: Arrears					0.148		
					(0.100)		
Dummy variables: Arrears X Relative debt					0.026		
					(0.165)		
Dummy variable: VIX≥20						0.175***	
						(0.050)	
VIX X Relative debt						-0.184***	
						(0.048)	
M2 gap							0.014**
							(0.006)
M2 gap X Relative debt							-0.001
							(0.006)
Constant	3.891***	4.097***	4.215***	3.854***	3.838***	3.869***	4.119***
	(0.174)	(0.166)	(0.210)	(0.171)	(0.167)	(0.163)	(0.163)
Observations	1,189	985	1,135	1,189	1,189	1,189	1,189
R-squared	0.250	0.317	0.277	0.255	0.256	0.259	0.255
Number of countries	83	75	78	83	83	83	83

Note:
(i) Cluster standard errors are marked in parentheses (*** p<0.01, ** p<0.05, * p<0.1).
(ii) All explanatory variables are lagged by one year except for the VIX and US 10-year rate.

(iii) All variables are included in natural logarithmic form except for real GDP growth and inflation. The relative debt indicators are calculated using the natural logarithm of debt but are included in the regressions without additional transformations.

We then test the robustness of our model to additional controls commonly used in the literature. We start with the addition of five domestic controls (Text Table 9): GDP per capita, governance quality (WGI), reserves-to-GDP, primary balance-to-GDP, and exports-to-GDP. Relative debt remains a strong and significant predictor of spreads, reinforcing the importance of benchmarking. Across specifications:

- **GDP per capita** shows a negative but insignificant coefficient, suggesting that income classification already captures key wealth-related risk factors.
- **Governance quality** emerges as a significant determinant, consistent with evidence that stronger institutions reduce sovereign risk premia.
- **Reserves-to-GDP** carries a negative sign, reflecting its role in supporting external payment capacity. However, its effect disappears once governance is included, indicating that reserve adequacy and institutional strength are complementary in shaping investor confidence.
- **Primary balance-to-GDP** has a negative relationship with spreads indicating that stronger fiscal positions reduce the perceived sovereign risk of a country. However, the coefficient is not statistically significant likely signaling that investors already integrate fiscal sustainability considerations in their review of debt measures.
- **Exports-to-GDP** has a negative but statistically insignificant relationship with spreads, indicating that external performance considerations may be considered through other macroeconomic metrics (e.g., reserves).

Text Table 9. Additional Variables – Domestic Factors

	(1) Baseline	(2)	(3)	(4)	(5)	(6)	(7)
Relative debt: Income classification	0.379***	0.359***	0.460***	0.337***	0.411***	0.382***	0.370***
	(0.098)	(0.100)	(0.124)	(0.103)	(0.127)	(0.100)	(0.103)
Real GDP growth	-0.021***	-0.020***	-0.012***	-0.019***	-0.011***	-0.018***	-0.016***
	(0.005)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)
Inflation	0.014***	0.014***	0.009*	0.015***	0.008*	0.014***	0.015***
	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)
VIX	0.617***	0.585***	0.514***	0.586***	0.497***	0.617***	0.606***
	(0.045)	(0.044)	(0.049)	(0.046)	(0.049)	(0.046)	(0.046)
US 10-year rate	-0.031	-0.088*	-0.099*	-0.098	-0.133***	-0.024	-0.043
	(0.064)	(0.047)	(0.052)	(0.063)	(0.047)	(0.067)	(0.066)
GDP per capita		-0.129			-0.046		
		(0.098)			(0.095)		
WGI			-0.735***		-0.729***		
			(0.199)		(0.199)		
Reserves to GDP				-0.014**	-0.008		
				(0.006)	(0.006)		
Primary balance to GDP						-0.009	
						(0.006)	
Exports to GDP							-0.008
							(0.005)
Constant	3.891***	5.138***	4.127***	4.311***	4.757***	3.868***	4.201***
	(0.174)	(0.883)	(0.173)	(0.212)	(0.898)	(0.181)	(0.238)
Observations	1,189	1,189	985	1,152	966	1,183	1,176
R-squared	0.250	0.257	0.310	0.261	0.308	0.250	0.260
Number of countries	83	83	75	83	75	83	83

Note:
(i) Cluster standard errors are marked in parentheses (*** p<0.01, ** p<0.05, * p<0.1).
(ii) All explanatory variables are lagged by one year except for the VIX and US 10-year rate.
(iii) All variables are included in natural logarithmic form except for real GDP growth and inflation. The relative debt indicator is calculated using the natural logarithm of debt but is included in the regressions without additional transformations.

Text Table 10 shifts focus on external factors, replacing domestic controls with global M2-to-GDP, world GDP growth, the Global Economic Policy Uncertainty (EPU) index, and Brent oil price. Specifically:

- **Relative debt** remains significant and the coefficient is relatively stable.
- **Global liquidity (M2)** shows no significant effect, likely because most of the effect is captured by the US 10-year rate.
- **World GDP growth** consistently exerts a negative and significant effect, as stronger global growth improves investor sentiment and reduces spreads.
- **Brent oil prices** are associated with narrower spreads, presumably signaling favorable terms-of-trade effects for emerging markets.
- **EPU** is not systematically priced, while VIX remains a significant driver, suggesting that markets respond more strongly to observable financial volatility than to broad policy uncertainty.

Text Table 10. Additional Variables – External Factors

	(1) Baseline	(2)	(3)	(4)	(5)	(6)
Relative debt: Income classification	0.379***	0.363***	0.375***	0.369***	0.402***	0.375***
	(0.098)	(0.096)	(0.096)	(0.098)	(0.099)	(0.097)
Real GDP growth	-0.021***	-0.022***	-0.029***	-0.021***	-0.018***	-0.026***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.007)
Inflation	0.014***	0.015***	0.013***	0.014***	0.014***	0.012***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
VIX	0.617***	0.613***	0.490***	0.640***	0.569***	0.484***
	(0.045)	(0.044)	(0.047)	(0.055)	(0.043)	(0.046)
US 10-year rate	-0.031	-0.101**	0.064	-0.079*	-0.058	-0.023
	(0.064)	(0.045)	(0.071)	(0.045)	(0.057)	(0.046)
M2		-0.461				-0.463
		(0.323)				(0.297)
World GDP growth			-0.046***			-0.033***
			(0.008)			(0.010)
Global EPU				-0.078		0.053
				(0.090)		(0.066)
Brent oil price					-0.173***	-0.106*
					(0.057)	(0.062)
Constant	3.891***	6.169***	4.357***	4.267***	4.764***	6.791***
	(0.174)	(1.515)	(0.177)	(0.392)	(0.273)	(1.395)
Observations	1,189	1,189	1,189	1,180	1,189	1,180
R-squared	0.250	0.258	0.267	0.253	0.272	0.281
Number of countries	83	83	83	83	83	83

Note:
(i) Cluster standard errors are marked in parentheses (*** p<0.01, ** p<0.05, * p<0.1).
(ii) All explanatory variables are lagged by one year except for the VIX, US 10-year rate, M2, global GDP growth, global EPU, and Brent oil price

(iii) Spreads, VIX, the US 10-year rate, M2, global EPU, and Brent oil price are included in the model in natural logarithmic form.

Across domestic and external specifications, relative debt vis-à-vis income peers consistently emerges as a reliable predictor of spreads. Its significance holds regardless of whether fundamentals or global conditions dominate the model, indicating that cross-country debt comparisons serve as the primary anchor for risk pricing. Other drivers (e.g., governance, reserves, world economic growth, and commodity cycles) also inform spreads movement depending on the specification.

Conclusion

Investors are not passive observers but active participants in sovereign risk pricing, evaluating debt sustainability through a comparative lens rather than in isolation. This paper demonstrates that sovereign debt assessments are shaped not only by absolute debt levels but also by a country's relative positioning within its peer group. Building on the baseline specification of Hadzi-Vaskov and Ricci (2022), we show that, while gross debt remains statistically significant, relative debt—benchmarked by income classification, region, or commodity-exporter status—offers greater explanatory power. Among these, income-based benchmarking consistently emerges as the most robust and intuitive specification.

Robustness checks reinforce the reliability of our findings. The income-based approach yields the highest within R^2, even when compared to models incorporating multiple structural characteristics. We find no evidence of non-linearity in the relationship between relative debt and spreads. Moreover, the importance of relative debt has grown in the post-global financial crisis period, as rising global debt levels have made investors more selective. The coefficient on relative debt remains stable across specifications that control for macroeconomic and institutional variables.

Further analysis reveals that the influence of relative debt is context dependent. It matters most in countries with stronger institutions, where investors are more likely to differentiate based on fundamentals. Its impact is amplified when reserve buffers are weak, increasing concerns over liquidity and repayment capacity. Relative debt is also more relevant for countries with access to concessional finance, where economic strength is typically lower and a greater share of liabilities may be non-restructurable. Additionally, relative debt plays a larger role during periods of low or moderate global risk aversion, when investors adopt a more fundamentals-based approach, and during episodes of abundant global liquidity, consistent with search-for-yield behavior.

This research contributes to the literature in two key ways. First, it reframes sovereign risk pricing through a relative lens, aligning more closely with investor behavior in integrated capital markets. Second, it identifies the domestic and global conditions that amplify the relevance of relative debt assessments. Although this paper focuses on debt, the framework could be extended to other drivers of sovereign spreads, such as growth, inflation, or institutional quality, offering a broader foundation for understanding how markets evaluate sovereign risk in a comparative context. Finally, while this paper focuses on the role of relative debt in pricing cross-country sovereign risk, future work could explore potential differences between its short-term and long-term effects. In addition, future research could investigate how different types of debt arrears (arrears to official creditors versus arrears to the private sector) and a history of debt default drives investors' pricing of sovereign debt risk.

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Annex

Annex I. Peer Group – Commodity Exporters

Commodity (Resource-Rich) Exporters	Non-commodity Exporters	
Algeria	Argentina	Philippines
Angola	Barbados	Poland
Armenia	Belarus	Romania
Azerbaijan	Belize	Rwanda
Bahrain	Brazil	Senegal
Bolivia	Bulgaria	Serbia
Cameroon	China	Slovak Republic
Chile	Costa Rica	Korea
Colombia	Côte d'Ivoire	Sri Lanka
Ecuador	Croatia	Tanzania
Gabon	Dominican Republic	Thailand
Ghana	Egypt	Tunisia
Indonesia	El Salvador	Türkiye
Iraq	Ethiopia	Ukraine
Kazakhstan	Georgia	Uruguay
Kuwait	Greece	Uzbekistan
Mongolia	Guatemala	Vietnam
Mozambique	Hungary	
Namibia	Honduras	
Nigeria	India	
Oman	Jamaica	
Papua New Guinea	Jordan	
Peru	Kenya	
Qatar	Latvia	
Russian Federation	Lebanon	
Saudi Arabia	Lithuania	
South Africa	Malaysia	
Suriname	Maldives	
Tajikistan	Mexico	
Trinidad and Tobago	Morocco	
United Arab Emirates	Pakistan	
Venezuela	Panama	
Zambia	Paraguay	

PUBLICATIONS

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