Determinants of Sovereign Bond Issuance in Emerging Markets*

Ka Lok Wong (Steve)†
UN Economic Commission for Africa

Mark Manger
University of Toronto

Ugo Panizza
Geneva Graduate Institute & CEPR

October 2025; *Draft — comments welcome*

Abstract

Emerging market economies (EMEs) regularly tap domestic and international capital markets through scheduled sovereign bond auctions. In this paper, we leverage a novel dataset covering over 75,000 sovereign issuance events and 20,000 securities from 20 EMEs between the early 2000s and 2023 to analyze the determinants of bond issuance choices, focusing on volume, maturity, and currency denomination. We find that local currency (LC) debt issuance is largely associated with refinancing needs, while foreign currency (FX) issuance reflects more strategic and cyclical considerations. In particular, FX issuance correlates with global macroeconomic conditions, interest rate differentials, and investor sentiment. Our findings suggest that EME governments differentiate their debt management strategies based on the currency of issuance, with LC issuance shaped by domestic budget mechanics and FX issuance by external constraints and opportunities.

Keywords: Sovereign Borrowing, Public Debt Management, Emerging Markets
JEL classification: F34, H63, E44

*This research received financial support from the Swiss Network for International Studies (SNIS) during Wong's PhD at the Geneva Graduate Institute (2022 funding round for the project *Sovereign Debt in the Aftermath of the Pandemic: Improving Data to Prevent Debt Crises*). No funding has been received from SNIS—or any external source—since the author joined the United Nations, in line with the internal regulations. The views expressed are those of the authors and do not necessarily reflect those of their institutions.

†Corresponding author. Email: ka.wong@un.org.

1 Introduction

This paper examines the determinants of sovereign bond issuance decisions in Emerging Market Economies (EMEs). We focus on how refinancing obligations and external conditions shape the structure and timing of issuance.

Existing research on bond issuance decisions is limited by data constraints. We assemble a novel dataset that combines commercial sources and national records to provide auction-level information on over 20,000 debt securities issued across 20 EMEs between 2000 and 2023, covering more than 75,000 issuance events.[1] Compared to commonly used sources such as Bloomberg and Refinitiv—which aggregate bonds by their initial offering—our data identify both initial auctions and subsequent reopenings, enabling precise measurement of borrowing timing and offering comprehensive coverage of local currency (LC) issuance alongside foreign currency (FX) instruments.

We explore the extent to which sovereign issuance is driven by mechanical refinancing needs versus more strategic responses to external market conditions. Our analysis uncovers a clear distinction in the issuance behavior of LC and FX bonds. For LC bonds, issuance volumes are closely linked to financing needs, particularly principal repayments. In contrast, FX bond issuance displays a more strategic and cyclical character.

We document how EME governments adjust their FX financing strategies in response to global macroeconomic conditions. We show that the volume of FX issuance is not significantly affected by commodity prices but that the maturity structure of FX bonds responds to such shocks: shortening when terms of trade deteriorate, and lengthening when they improve. In contrast, commodity price fluctuations have no measurable effect on LC bond issuance or maturity. Additionally, issuance volumes in FX are affected by global risk sentiment, foreign investor participation in domestic markets, and US interest rate expectation, highlighting the strategic role of FX markets in sovereign funding and risk management.

The remainder of the paper is organized as follows. Section 2 reviews the related literature. Section 3 describes our dataset and variable construction. Section

[1]The countries included are: Argentina, Brazil, Bulgaria, Chile, China, Colombia, Egypt, Hungary, India, Malaysia, Mexico, Peru, Poland, Romania, South Africa, Thailand, Türkiye, Ukraine, Uruguay, and Viet Nam. The selection of these 20 EMEs closely follows the coverage in Arslanalp and Tsuda (2014), which provides consistent data on foreign ownership of local currency government debt. Ideally, we would also include Indonesia, Nigeria, and the Czech Republic, but data on foreign ownership are currently unavailable.

4 presents results from a flow model on issuance volumes and maturity structure. Section 5 shows how global financial conditions affect bond issuance asymmetrically by currency. Section 6 concludes.

2 Literature

The economics literature on sovereign debt focuses on four broad questions: (i) why countries borrow; (ii) how countries borrow; (iii) why countries repay; and (iv) what the economic consequences of these choices are. Several surveys summarize this literature. For instance, Fatás et al. (2019) focuses on the first question, while Panizza, Sturzenegger, and Zettelmeyer (2009), Tomz and Wright (2013), Aguiar and Amador (2021), Gelpern and Panizza (2022), Mitchener and Trebesch (2023), and Bolton, Gulati, and Panizza (2023) address the remaining three. Given that our paper is most closely related to the literature on how countries borrow, we focus on that strand, while recognizing that we cannot do full justice to the vast body of work on this topic.

When governments need to finance a deficit, fund a specific expenditure, or roll over maturing debt, they face several borrowing decisions. These are shaped by cost considerations, risk management, prevailing market conditions, and institutional factors. The first choice has to do with the type of lender. Countries can borrow from commercial creditors and official creditors that can be either bilateral or multilateral. Multilateral lenders are usually the first port of call when countries decide to borrow in foreign curency because their loans tend to be cheaper (with the exception for countries with high creditworthiness like Chile) and more stable (Galindo and Panizza, 2018). However, supply of multilateral loans is often limited and set by lenders' allocation rules. Bilateral lending relationships are instead often dependent on geopolitical factors and bilateral borrowing is privileged by countries that are less inclined to make available information about the state of their economy and financial institutions (Arias, Mosely, and Rosendorff, 2020)

For commercial borrowing, the choice is between bank loans and bond issuance. In the 1980s, syndicated bank loans dominated, with bonds accounting for less than 5% of international debt issuance. By the early 2000s, bonds had become the primary mechanism for commercial sovereign external financing (Tanaka, 2006). Presbitero et al. (2016) show that larger economies and those with higher per capita income are more likely to issue bonds, while inflation has a weaker predictive power. However,

the shift from loans to bonds is not driven purely by cost minimization or macroeconomic fundamentals. Hale (2007) shows that broader factors such as market access conditions and regulatory frameworks play an important role in the choice between these two financing modes. Arias, Mosely, and Rosendorff (2020) find that less transparent governments tend to prefer bank loans over bond markets, while Cormier (2023) submits that right-leaning governments prefer official loans that come with liberalizing conditionality, while left-leaning governments may prefer bonds because they are "apolitical."

A key consideration when issuing bonds concerns their characteristics: maturity (short-term vs. long-term), currency (domestic vs. foreign), interest rate type (fixed vs. floating or indexed), and place of issuance (domestic vs. foreign market).[2]

Advanced economies typically issue long-term, fixed-rate bonds in local currency. In contrast, emerging markets display more heterogeneity, with higher shares of foreign-currency, short-term, and floating-rate debt.

Theoretical models underscore a trade-off: long-term, fixed-rate, local-currency debt reduces rollover risk and limits balance sheet effects during currency depreciations. However, it exposes governments to inflation incentives and reputational risks (Calvo, 1988, Missale and Blanchard, 1994 Ottonello and Perez, 2019) For these reasons, short-term and foreign-currency borrowing typically carries lower up-front interest costs.[3] Broner, Lorenzoni, and Schmukler (2013) show that emerging economies pay markedly higher risk premia on long-term bonds than on short-term ones, with the spread widening sharply during crises, often making long-term issuance prohibitively expensive and steering governments toward short maturities.

[2]There is some confusion surrounding the distinction between external and domestic debt (Panizza, 2008). The official definition of external debt reported in the *External Debt Statistics: Guide for Compilers and Users*, external debt is defined as debt owed to non-residents. However, in some cases, the distinction is made based on the currency of issuance (with foreign currency debt considered external debt), while in others, the classification depends on the place of issuance and the jurisdiction governing the debt contract (i.e., debt issued in foreign markets and under foreign law is considered external). To avoid confusion, we will refrain from using the terms "domestic" and "external" debt and will instead describe the debt by its specific characteristics.

[3]Debt dilution is another key consideration. Issuing new debt can erode the value of existing claims. To mitigate this problem, governments may rely on short-term issuance (Hatchondo and Martinez, 2009; Chatterjee and Eyigungor, 2012). Aguiar, Amador, Hopenhayn, et al. (2019) show that, under high default risk, short-term debt serves as a commitment device that limits future borrowing and aligns incentives between sovereigns and lenders. In a calibrated model, Alfaro and Kanczuk (2009) find that the costs associated with issuing long-term debt outweigh its benefits, leading governments to prefer shorter maturities.

Recent sovereign-debt models that embed Eaton and Gersovitz (1981)–style default decisions examine how maturity, indexation, and currency denomination can jointly balance incentives and insurance. Arellano and Ramanarayanan (2012), for instance, find that an optimal mix combines short-term debt (which disciplines borrowers by tightening the refinancing horizon) with long-term debt (which provides insurance by locking in funding). The timing of issuance also matters. Governments optimally issue debt in favorable market conditions and hold back during turbulent periods (Cuadra, Sanchez, and Sapriza, 2010).

Tirole (2003) offers a contract-theoretic explanation for seemingly inefficient borrowing practices in emerging markets, such as short-term or foreign-currency debt. He shows that these choices reflect institutional and contractual limitations rather than suboptimal macroeconomic policies. Sovereign borrowing inefficiencies arise from agency problems and governance gaps, necessitating not just domestic reform but also stronger international mechanisms for coordination and oversight.

The choice between fixed- and floating-rate debt influences who bears interest rate risk. Emerging markets, particularly those with volatile inflation histories, often rely on floating or indexed debt. Brazil, for example, continues to issue a substantial portion of its debt with floating rates. Aguiar, Amador, and Monteiro (2023) propose a model in which a floating-rate long-term bond indexed to default risk can outperform traditional fixed-coupon bonds in welfare terms. These bonds combine the discipline of short-term debt with reduced rollover risk.

Most of the recent literature on debt composition focuses on currency choice. Until the early 2000s, emerging markets seeking to attract foreign investors had to issue foreign-currency debt under foreign jurisdiction. The fact that their inability to issue local-currency debt to foreign investors was driven more by global and historical factors than by domestic fundamentals (Eichengreen, Hausmann, and Panizza, 2005) led to this phenomenon being labeled "original sin." Over the past two decades, some emerging market economies have managed to overcome aspects of original sin by issuing local-currency debt to foreign investors (Shin and von Peter, 2022; Onen, Shin, and von Peter, 2025). This progress has been underpinned by improved macroeconomic frameworks and stronger legal institutions.[4]

[4]See Burger and F. Warnock (2006), Burger, F. Warnock, and V. Warnock (2012), Burger and F. Warnock (2007), and Doornik et al. (2024). Political preferences also matter: Ballard-Rosa, Mosley, and Wellhausen (2022) find that right-leaning governments tend to prefer foreign-currency borrowing to minimize risk premia, while left-leaning governments favor local-currency debt for its flexibility.

Nonetheless, two important caveats remain. First, issuing in local currency does not eliminate vulnerability. When foreign investors hold local-currency bonds, a sharp depreciation can lead to capital losses for those investors, prompting sudden capital outflows and destabilizing local markets (Carsten and Shin, 2019; Bertaut, Bruno, and Shin, 2025; Hofmann, Patel, and Wu, 2022). Thus, the risk is not eliminated but rather shifted—from solvency risk (a currency mismatch on the sovereign's balance sheet) to market risk (volatile capital flows and bond prices). Emerging markets are therefore not fully insulated, even after localizing their debt. Hofmann, Shim, and Shin (2020) show that foreign holdings of local bonds are procyclical and exacerbate volatility.

Second, this transformation is confined to a relatively small group of large and more advanced emerging markets (Eichengreen, Hausmann, and Panizza, 2023). In many cases, the progress achieved has been driven by favorable global financial conditions—conditions that may not endure. As such, the sustainability of this trend remains uncertain, and the broader challenge of original sin continues to constrain a significant portion of the developing world.

There is also a substantial literature, beginning with Calvo, Leiderman, and Reinhart (1993), documenting the role of global financial conditions in shaping EM capital flows. Abundant global liquidity and low interest rates in advanced economies encourage risk-taking and increase bond issuance by EM governments. Eichengreen and Mody (2000) find that lower U.S. interest rates increase the probability of EM bond issuance. Eichengreen, Hausmann, and Panizza (2023) document that EM local-currency issuance surged during the late 2000s, coinciding with a period of near-zero global interest rates. Onen, Shin, and von Peter (2025) emphasize that overcoming original sin depends on both domestic and global factors. Aizenman et al. (2021) find that EMs issue local-currency bonds when global investors are more tolerant of currency risk, though these bonds tend to be smaller, shorter, and lower-yielding than their foreign-currency counterparts.

Global risk appetite also plays a key role. Presbitero et al. (2016) show that higher global volatility reduces issuance and raises spreads. Commodity booms have a similar effect, particularly in Sub-Saharan Africa, where sovereign issuance increases during periods of high commodity prices (Presbitero et al., 2016). Feyen et al. (2015) document a procyclical maturity pattern: EM maturities shortened sharply during

Their ability to implement such preferences depends on the quality of domestic institutions.

the 2008–09 crisis but extended again when global financial conditions improved. Their findings confirm that global risk aversion and financial volatility significantly influence both the quantity and structure of EM sovereign debt.

In sum, the literature suggests that sovereign borrowing decisions in emerging markets are shaped by a complex interplay of macroeconomic fundamentals, institutional quality, political preferences, and global financial conditions. While progress has been made in developing local debt markets and reducing reliance on foreign-currency borrowing, significant vulnerabilities remain, particularly for smaller EMs and during periods of global financial stress.

3 Data

We assemble a comprehensive issuance event-level dataset tracking central government securities issued by twenty emerging markets in Asia, EMEA, and Latin America (see Table A1). Spanning 2000Q1–2023Q4, the dataset comprises 76,460 issuance events—20,566 inaugural issues and 55,894 reopenings.[5] All local-currency bonds are allocated via competitive auctions, and foreign-currency bonds—though often placed through direct sales—are likewise recorded as issuance observations in our database. We merge official national publications with Bloomberg and Refinitiv DataStream bond-level records. Approximately 82.5% of observations are corroborated by multiple sources; 14.1% appear only in Bloomberg, and 0.92% only in national records.[6]

Each observation in our dataset is linked to a single bond offering through harmonized identifiers (ISINs, CUSIPs, local IDs, etc.) and carries detailed information on coupon structure, maturity, amount issued, auction yields and prices, and reopening sequence. We also collected information on issuer characteristics—such as credit ratings, market segment, outstanding stock—and legal covenants (negative pledges, collective-action clauses, change-of-control provisions, rating triggers).[7] For the empirical analysis, we aggregate bond-level data into annual or quarterly issuance

[5] Although data extend back to 1995Q1 for some countries, we restrict the main sample to 2000Q1 onward due to lower quality and potential entry errors in the earlier period.

[6] We exclude Refinitiv-only observations because, although Refinitiv provides good records in advanced economies, its reopening records and issuer identifiers for EMEs proved inconsistent when not overlapping with Bloomberg or national data.

[7] Full description of sources, variable definitions, and data-processing steps are documented in Section A1 in the Appendix.

Table 1: Summary Statistics

	Obs.	Mean	Median	S.D.	Min	P25	P75	Max
Panel A: All Bonds								
Amount Issued	463	11.82	7.91	16.40	0.04	3.67	13.22	143.33
Amount Matured	431	6.75	3.96	8.78	0.00	1.24	8.79	55.13
Tenor	463	7.06	5.98	4.95	0.38	3.59	9.25	34.81
Yield at Issue	357	7.12	6.54	5.63	-0.13	3.94	8.61	55.18
Panel B: Local Currency denominated								
Amount Issued	456	9.23	6.58	10.21	0.02	2.67	11.86	65.72
Amount Matured	431	6.75	3.96	8.78	0.00	1.24	8.79	55.13
Tenor	456	6.10	5.19	4.54	0.30	2.52	8.16	32.37
Yield at Issue	349	7.50	6.50	6.04	-0.13	4.05	8.84	55.18
Panel C: Foreign Currency denominated								
Amount Issued	307	4.12	1.30	10.01	0.02	0.59	3.38	85.06
Amount Matured	292	2.58	0.65	7.36	0.00	0.26	1.70	68.36
Tenor	307	11.82	10.00	7.59	0.25	7.44	15.22	42.29
Yield at Issue	129	4.66	4.29	2.57	-0.10	3.01	5.85	13.88

Note: Amounts issued and matured are expressed as a percentage of GDP. Tenor (in years) and yield (in percentage points) are reported as weighted means; for reopenings, tenor refers to the remaining time to maturity rather than the original issue tenor. A subset of yield observations has been back-calculated from price data under repayment-structure assumptions and is not employed elsewhere in this paper.

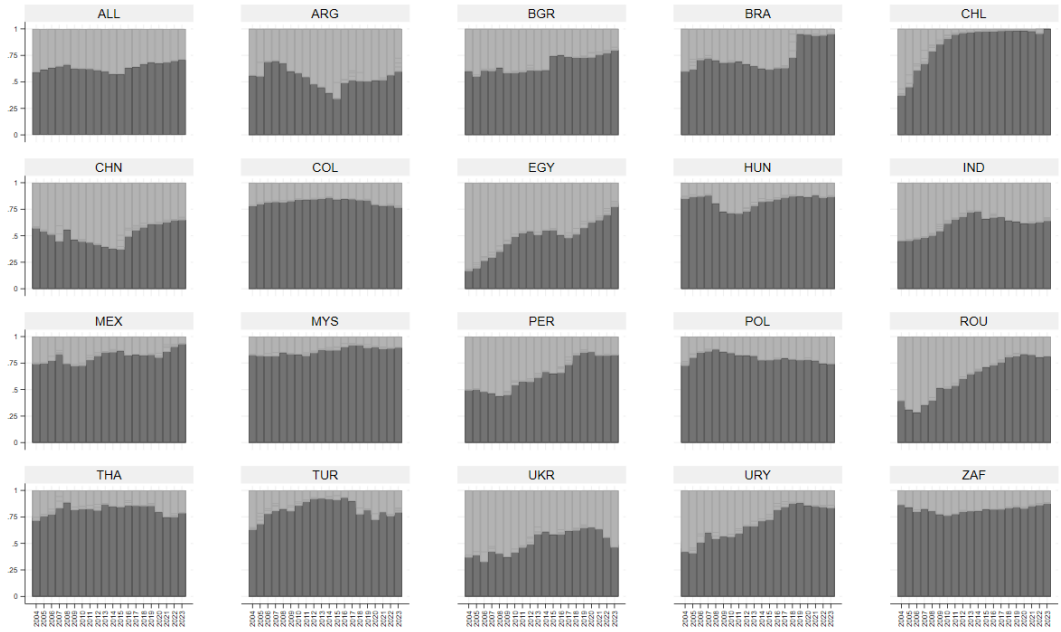
amounts.

Table 1 reports annual summary statistics for the sample on bills and bonds issuance. A fully balanced panel would comprise 24 years for each of the 20 EMEs (480 observations in total); the table, however, only includes non-missing country–year observations. Foreign currency bonds tend to have longer tenor and lower interest rate

Our data focuses on bonded debt and therefore excludes bank loans as well as bilateral and multilateral loans. Nevertheless, it is representative of how countries borrow, as bonded debt accounts for over 70% of total public debt on average in our sample. In most countries, this share exceeds 80% (see Figure 1). The main exceptions are Argentina, China, and Ukraine. In Argentina and Ukraine, the low share of bonded debt reflects significant multilateral borrowing, including from the IMF. In China, it likely results from substantial lending by domestic policy banks.

Figure 1: **Composition of Outstanding Public Debt**

This figure shows the composition of total public debt for 19 of the 20 countries in our sample (data for Vietnam are unavailable), along with the average for the full sample. It distinguishes between the share of bonded (the dark bars) and non-bonded (the light bars) debt.



Before going into the details of our data, an important clarification is in order. While most research on sovereign debt focuses on the level and composition of the stock of public debt, we focus on issuance, which more closely relates to a flow concept. This distinction is important because if the maturity of different instruments (and the average maturity of the debt issued by different countries) varies, there can be large differences between the stock and issuance. To fix ideas, consider a country that in year t has a public debt stock of USD 100 billion, consisting of a USD 50 billion foreign currency bond with a ten-year maturity and a USD 50 billion local currency bond with a one-year maturity. Further assume that the country wants to maintain this debt structure and that, for the next ten years, it will run a balanced budget so that total debt remains at USD 100 billion. The composition of the country's debt stock is constant (50% in foreign currency and 50% in local currency). However, between year $t+1$ and $t+9$, the country will only issue local currency bonds. In other words, while 50% of the debt is in foreign currency, 100% of bond issuance over that period

are in local currency. The same reasoning applies when comparing total issuances to the debt stock across countries. Consider two countries, both with a fixed debt stock of USD 100 billion, as in the previous example. Assume that Country L has debt with an average maturity of five years, equally spread across maturities from one to ten years, while the debt stock of Country S consists entirely of one-year bonds. Then, over the next ten years, Country L will issue USD 20 billion per year, while Country S will issue USD 100 billion per year, even though the two countries have the same level of debt.

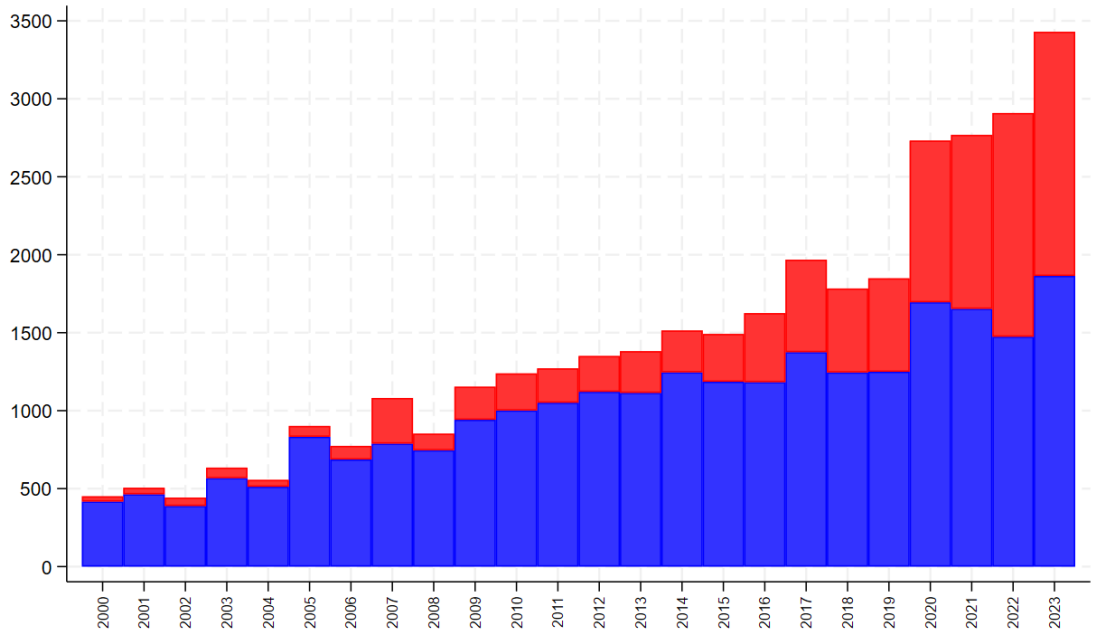
In nominal terms, total bond issuance in our dataset increased from approximately USD 500 billion in 2000 to nearly USD 3.5 trillion in 2023. Most of the recent growth is driven by China (the red bars in Figure 2). In 2005, China accounted for less than 10% of total bond issuance in our sample. In 2023, it issued USD 1.5 trillion—more than 45% of total issuance in our sample. Other large issuers are Egypt (USD 456 billion in 2023, representing 13% of total issuance), India (USD 366 billion, 10% of total issuance), Brazil (265 billion, 8% of total issuance), and Mexico (USD 223 billion, corresponding to 6% of total issuance).

Our dataset reports the *remaining tenor at issuance*, which differs from the bond's original maturity. This distinction is important because several countries in our sample frequently reopen existing bonds—primarily longer-tenor local currency bonds, and occasionally foreign currency bonds. For example, the South African local-currency bond (ISIN ZAG000096603) was reopened over 330 times between 2012Q3 and 2023Q4, resulting in a final outstanding principal more than 500 times its initial auction amount. As a result, the remaining tenor at issuance offers a more accurate measure of the actual maturity profile of each bond at the time of issuance. Tracking these reopenings is a non-trivial task and represents one of the key contributions of our dataset.

The majority of bond issuance in our dataset is in local currency and has a maturity at issuance of five years or less (the blue bars in the top and bottom left panels of Figure 3). Long-term local currency issuance (the green bars in the same panels) was small in the early years of our sample but now represents about 20% of total issuance and more than 30% of local currency issuance. Local currency issuance are especially important in Asia, a region that rarely issues foreign currency debt. Moreover, about 50% of local currency debt issued in Asia is long term. In Emerging Europe and Africa, by contrast, most local currency debt has an initial maturity of less than five

Figure 2: **Total Government Bond Issuance**

This figure plots the evolution of total government bond issuance (in billion USD) over the period 2000-2023. The red bars show Chinese central government bond issuance and the blue bars central government bond issuance by the other 19 countries in our dataset.



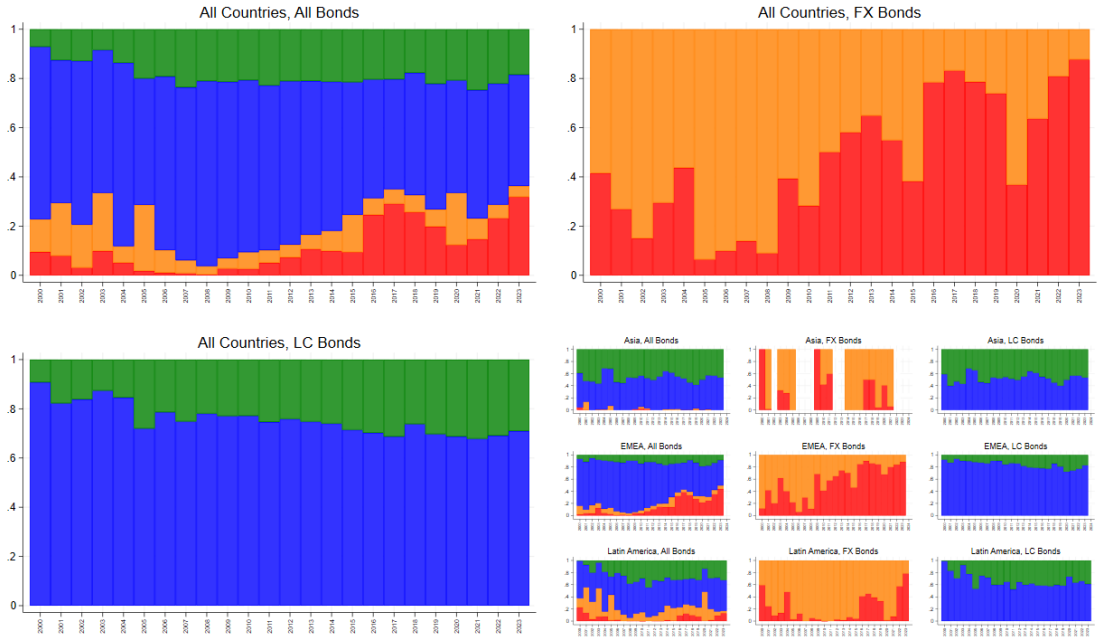
years (see bottom right panels of Figure 3).

Foreign currency debt ranged between 20% and 30% of total issuance in the early years of our sample. After falling below 10% around 2006–2008, it began increasing again in the aftermath of the Global Financial Crisis, returning to 20-30% of total issuance. At the same time, we observe a shift in the type of foreign debt issuance. Until 2010, most foreign bonds had long maturities (the orange bars in Figure 3). In recent years, the majority of foreign bond issuance had a maturity of five years or less (the red bars in Figure 3), primarily due to the rapid increase in short- and medium-term foreign currency bonds issued in EMEA (see bottom right panel). This latter trend is largely driven by Egypt, which issued two-thirds of the foreign currency bonds in 2022 and 2023. We also note that Argentina accounted for a substantial 14% of what we classify as foreign currency bond issuance in 2023, largely through *Bonos Duales* issued in the domestic market. These instruments are peso-denominated but with payout indexed to the higher of inflation (CER) or the official USD/ARS exchange

rate, giving them an FX-exposure profile comparable to that of USD bonds.[8]

Figure 3: **Composition of Bond Issuance**

This figure illustrates the evolution of the composition of central government bond issuance. The top left panel includes all bonds, the top right shows only foreign currency bonds, and the bottom left focuses on local currency bonds. The six panels in the bottom right corner present the same information disaggregated by region. Red bars indicate the share of foreign currency bonds with a maturity of less than 5 years; orange bars represent long-term foreign currency bonds; blue bars show medium-term local currency bonds; and green bars reflect long-term local currency bonds



4 The Drivers of Bond Issuance

To study the drivers of bond issuance, we begin by noting that the treasury of country i at time t faces the following flow constraint:

$$I_{i,t} = M_{i,t} - BAL_{i,t} + \Delta C_{i,t} \tag{1}$$

[8]In the current version of the database, we classify bonos duales as USD bonds due to their equivalent FX-exposure risk. We acknowledge that this treatment is not perfectly accurate, as the nuances of inflation- and FX-indexed instruments are beyond the scope of this paper. We plan to refine this classification in future releases of the database.

where I are new debt (bonds and loans) issuance, M is maturing debt that needs to be refinanced, BAL is the government budget balance, and C are government financial assets. Splitting the debt into bonds (I^b and M^b) and bank loans (I^L and M^L), we can rewrite Equation 1 as:

$$I^b_{i,t} = M^b_{i,t} - BAL_{i,t} - \Delta L_{i,t} + \Delta C_{i,t} \tag{2}$$

where $\Delta L_{i,t} = I^L_{i,t} - M^L_{i,t}$ is the change in the stock of bank loans. Equation 2 clarifies that in any given year, the Treasury can finance the government budget, and its rollover needs by either issuing bonds or by adjusting its stock of bank loans and financial assets.

To explore the links between funding needs and bond issuance, we scale all variables by GDP and estimate the following model:

$$I^b_{i,t} = \alpha + \beta M^b_{i,t} + \gamma BAL_{i,t} + \delta \Delta L_{i,t} + \varepsilon_{i,t} \tag{3}$$

Note that Equation 3 is not an identity. While we expect $\beta > 0$, $\gamma < 0$, and $\delta < 0$, the coefficients would only satisfy $\beta = -\delta = -\gamma = 1$ if the error term ε were uncorrelated with the explanatory variables. However, ε captures more than just measurement error—it also includes cash management activities (ΔC in Equation 2) and may be influenced by valuation effects related to inflation and exchange rate fluctuations (for an early discussion, see Campos, Jaimovich, and Panizza, 2006). There is also a double-counting issue related to zero-coupon bonds for which interest payments are included in both M^b and BAL.

Cash management is particularly important, as it allows debt managers to adjust bond issuance in response to market conditions, either by issuing bonds in advance (when the treasury expects that financial conditions will deteriorate in the future) and accumulating cash, or by postponing issuance and drawing down cash reserves if financial conditions are expected to improve.[9]

[9]There are significant cross-country differences in the capacity to conduct active cash management operations, largely reflecting the institutional autonomy and operational flexibility of national debt management offices. At one end of the spectrum, the Brazilian Treasury benefits from substantial latitude, facilitated by a cooperative central bank that manages Treasury cash balances and remunerates deposits at rates close to those on floating-rate government debt. At the other extreme, some treasuries operate in institutional environments where the central bank either does not remunerate government deposits or, in more constrained cases, refuses to accept them altogether. In such settings, holding cash entails a non-trivial cost of carry; in the most restrictive cases, it may also

Table 2: **Baseline Estimations: Issuance as % of GDP**

This table reports a set of regressions covering the period 2006-2023, where the dependent variable is annual bond issuance as a percentage of GDP. The explanatory variables include the government balance as a percentage of GDP, maturing bonds as a percentage of GDP, and the change in the stock of non-bonded debt. Column 1 presents a pooled OLS model, while Columns 2, 4, and 5 use a random effects model. Column 3 includes country fixed effects. Columns 4 and 5 additionally control for the exchange rate (where an increase indicates depreciation) and inflation (contemporaneous in Column 4 and lagged in Column 5).

	1	2	3	4	5
Budget Balance	-0.245***	-0.245*	-0.237	-0.197	-0.217*
	(-2.75)	(-1.73)	(-0.93)	(-1.36)	(-1.78)
Maturing Securities	1.157***	1.157***	1.096***	1.143***	1.149***
	(19.20)	(68.49)	(52.99)	(94.33)	(59.79)
Δ Non-bonded Debt	-0.213*	-0.213**	-0.240**	-0.191*	-0.215**
	(-1.65)	(-2.12)	(-2.17)	(-1.79)	(-2.12)
Inflation				-0.022	
				(-1.14)	
Δ Nominal XR				0.085**	
				(2.32)	
Inflation_{t-1}					0.050**
					(2.27)
Δ FX_{t-1}					0.013
					(0.33)
Const.	1.663***	1.663***	2.228**	1.561***	1.407***
	(3.61)	(3.42)	(2.49)	(3.23)	(2.82)
N. Obs.	337	337	337	337	337
Model	OLS	RE	FE	RE	RE
R^2	0.93	0.93	0.93	0.94	0.94

t-statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note that we do not have direct data on maturing bonded debt. Therefore, we estimate $M^b_{i,t}$ using information on bond maturities available in our dataset starting in 2006. Since our data begin in 1995, we may underestimate the stock of maturing debt in the earlier years of our sample—particularly if long-dated bonds were issued before 1995. However, this limitation is less likely to affect the estimates for more recent years.

When we estimate Equation 3 using pooled OLS, we find that all coefficients are statistically significant and have the expected signs. However, they are all significantly different from 1 (Column 1, Table 2). The results indicate that, in our sample, bond issuance responds more than one-for-one to maturing debt, and less than one-for-one to the budget balance and the change in non-bonded debt. This suggests that when bonds mature, the Treasury tends to increase its cash balance by issuing more than is needed for immediate refinancing, while budget deficits and maturing non-bonded debt are, on average, financed through temporary adjustments in cash balances. The results are essentially unchanged when we use a random effects model (Column 2) and when we use a fixed effects model (Column 3). In the latter case, the coefficient associated with the budget balance is no longer statistically significant, although the point estimate remains nearly identical. This loss of statistical power is likely due to the well-known fact that fixed effects estimation amplifies measurement error bias. Given that a Hausman test does not reject the null that the random effect model is consistent (Table 3) and that the fixed effects do no have any explanatory power (compare the R^2 of Columns 1 and 2 with that of column 3), we will continue the analysis using a random effect model.

Next, we augment the model by including inflation and the change in the exchange rate (measured as the bilateral exchange rate vis-à-vis the US dollar). These variables are included because, in the presence of foreign currency debt, exchange rate movements can generate substantial valuation effects and amplify credit risk (Eichengreen, Hausmann, and Panizza, 2007, Hausmann, Panizza, and Stein, 2001, Dell'Erba, Hausmann, and Panizza, 2013). Inflation may also be relevant, as it can affect the comparability of variables measured at different points in time.

Consistent with the presence of valuation effects, we find that currency depreciation is associated with higher bond issuance, while inflation is not statistically

expose the sovereign to counterparty risk. These institutional constraints can meaningfully affect the efficiency and cost of debt and cash management operations.

Table 3: **Hausman Test**

	Coefficients (b) (FE)	(B) (RE)	$(b-B)$ Difference	sqrt(diag(V_b-V_B)) S.E.
Budget Balance	-0.237	-0.245	0.008	0.060
Maturing Securities	1.096	1.157	-0.061	0.294
Δ Non-bonded Debt	-0.240	-0.213	-0.026	0.022

Test: Ho: difference in coefficients not systematic. chi2(3) = $(b-B)'[(V_b-V_B)^{(-1)}](b-B) = 5.25$. Prob > chi2 = 0.1541

significant (Column 4 of Table 2). However, when we use the lagged values of these variables, the results are reversed: higher inflation leads to greater bond issuance in the following year, while lagged exchange rate depreciation does not appear to be statistically significant. More generally, the inclusion of these variables has little impact on the coefficients of the three main explanatory variables, and their overall contribution to explanatory power is limited (the regression's R^2 increases only slightly from 0.93 to 0.94).

As a next step, we split maturing securities into local and foreign currency. As excepted, we find that local currency issuances are associated with maturing local currency debt and foreign currency issuances are associated with maturing foreign currency debt. However, the fit is tighter and the point estimate larger than one for local currency debt (see Table 4)

We also study the drivers of bond issuance across different tenors within each currency group. As in Table 2, we control for the budget balance and changes in the stock of non-bonded debt, but we now decompose maturing debt into four categories: local currency securities with original maturity of one year or less (LC Bills); local currency securities with original maturity greater than one year (LC Bonds); short-term foreign currency bonds (FX Bills); and foreign currency securities with maturity greater than one year (FX Bonds).

We begin by examining total issuance of short-term debt and find that it is primarily driven by maturing short-term debt (Column 1, Table 5). When focusing on local currency bills (Column 2), issuance is mainly driven by maturing debt of the same type, but also by maturing short-term foreign currency debt. Issuance of local

Table 4: **Issuance by Currency**

This table reports a set of regressions covering the period 2006-2023, where the dependent variable is annual bond issuance as a percentage of GDP, disaggregated by currency denomination of the bonds. Column 1 includes all securities, Column 2 LC securities and Column 3 FX securities. The explanatory variables include maturing bonds as a percentage of GDP, disaggregated by currency, the government balance as a percentage of GDP, the change in the stock of non-bonded debt, Inflation and the exchange rate

	1 All	2 LC	3 FX
Budget Balance	-0.181	-0.173	-0.013
	(-1.09)	(-1.64)	(-0.14)
Maturing Securities			
of which LC	1.190***	1.101***	0.069
	(14.26)	(30.76)	(1.49)
of which FX	1.073***	-0.011	0.944***
	(12.88)	(-0.42)	(20.10)
Δ Non-Bonded Debt	-0.202*	-0.010	-0.097
	(-1.72)	(-0.15)	(-1.20)
Inflation	-0.023	0.000	-0.002
	(-1.03)	(0.00)	(-0.12)
Δ Nominal XR	0.092**	0.024	0.053***
	(1.96)	(1.63)	(2.81)
Const	1.408***	1.443***	0.073
	(3.57)	(4.47)	(0.34)
Model	RE	RE	RE
N. Obs.	319	319	319
No. of Countries	19	19	19
R^2	0.94	0.95	0.85

t-statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: **Issuance by Maturity**

This table reports a set of regressions covering the period 2006-2023. The dependent variable is annual bond issuance as a percentage of GDP, disaggregated by the original maturity and currency denomination of the bonds. Column 1 includes all securities with an original maturity of one year or less (bills). Column 2 focuses on local currency bills, while Column 3 covers local currency securities with original maturities greater than one year (bonds). Column 4 presents results for short-term bills, and Column 5 reports results for foreign currency bonds . The explanatory variables include maturing bonds as a percentage of GDP, disaggregated by tenor and currency, the government balance as a percentage of GDP, and the change in the stock of non-bonded debt. For conciseness, the coefficients on the last two variables are not reported in the table.

	1	2	3	4	5
Maturing Securities					
of which LC Bills	1.099***	1.031***	0.119***	0.070*	-0.004
	(18.25)	(52.62)	(5.46)	(1.80)	(-0.28)
of which LC Bonds	0.112	0.034	0.837***	0.046	-0.041
	(0.79)	(0.47)	(7.16)	(0.63)	(-1.01)
of which FX Bills	1.175***	0.090***	-0.097***	0.947***	0.004
	(14.50)	(3.72)	(-5.46)	(20.35)	(0.22)
of which FX Bonds	-0.151	-0.133*	-0.014	0.016	0.730***
	(-1.50)	(-1.95)	(-0.17)	(0.39)	(2.99)
N. Obs.	337	337	337	337	337
N. of countries	19	19	19	19	19
Model	RE	RE	RE	RE	RE
R^2	0.96	0.98	0.52	0.94	0.20
Dependent var	All Bills	LC Bills	LC Bonds	FX Bills	FX Bonds

t-statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

currency bonds is influenced not only by maturing debt of the same tenor and currency, but also by maturing local currency bills (Column 3), a result consistent with a maturity lengthening of local currency debt securities.

In contrast, the issuance of foreign currency debt is almost entirely driven by maturing debt of the same tenor and currency (Columns 4 and 5). However, the coefficients are smaller than one, suggesting some degree of substitution from foreign currency to local currency issuance. It is also worth noting that the model fit is considerably weaker for bonds than for bills and this is particularly the case for FX bonds with an R^2 of 0.5 for local currency bonds and just 0.2 for foreign currency bonds, compared to over 0.9 for short-term issuance.

Taken together, these results suggest that short-term issuance is largely mechanical and driven by rollover needs, whereas medium- and long-term issuance reflects more idiosyncratic and possibly tactical considerations.

Figure 4 illustrates the distribution of weighted-average tenor at issuance for both local currency (LC) and foreign currency (FX) bonds, highlighting substantial cross-country heterogeneity. Chile, Colombia, Indonesia, Peru, Thailand, and South Africa exhibit median tenors for LC bonds well above 10 years. In contrast, Argentina, Bulgaria, Brazil, Egypt, Hungary, Mexico, Poland, Romania, Turkey, Ukraine, and Vietnam have median LC bond tenors closer to 5 years. FX bonds generally have longer tenors, with nearly all countries showing median values at or above 10 years.

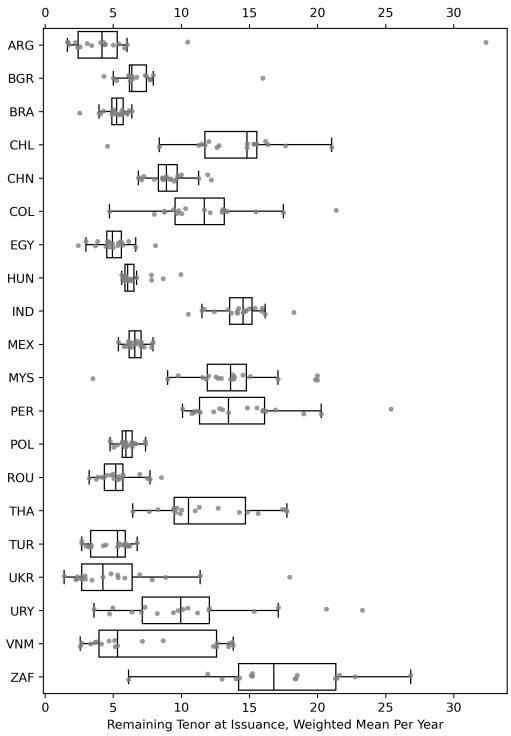
To better understand the drivers of the the tenor at issuance, we regress weighted-average tenor at issuance over a set of country-specific fundamentals and global variables. Since our dependent variable is left-censored at one year, we employ a random-effects panel Tobit model (country-years with no bond issuance are excluded from the estimation).

We find a weak association between bond tenor and fiscal fundamentals, proxied by the budget balance, which is marginally significant for the full sample and for LC bonds. Specifically, a one percentage point improvement in the overall balance relative to GDP is associated with an increase of approximately two months in the weighted-average tenor. Principal payments due are negatively associated with LC bond tenor: a one percentage point increase in the stock of maturing debt is linked to a reduction in tenor of about three months. No other variable, including inflation and the exchange rate, is significantly associated with the tenor of LC bonds. In contrast, several variables are correlated with the tenor of FX bonds. Increases in

Figure 4: **Tenor Distribution of Bonds Issuance**

This figure plots the distribution of tenor at issuance for bonds with remaining tenor > 1 year (bills of one year or less are excluded). The left panel shows local-currency issues; the right panel shows foreign-currency issues. Each dot represents the weighted mean tenor for a given country-year, and the box-and-whisker displays the extremes, median, and quartiles of the distribution.

(a) Local Currency Bonds



(b) Foreign Currency Bonds

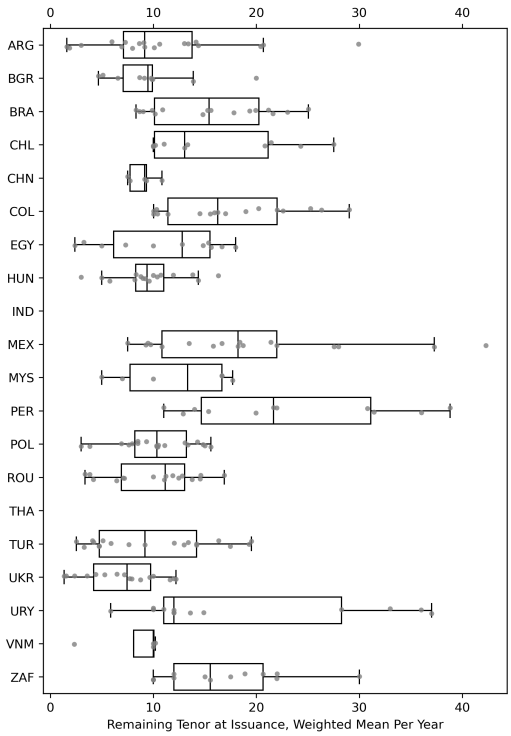


Table 6: **Tenor at Issuance**

This table reports a set of regressions covering the period 2006-2023, where the dependent variable is the weighted average tenor at issuance for all bonds (column 1), LC bonds (column 2) and FX bonds (column 3) and the controls are budget balance over GDP, Maturing bonds over GDP, the change in non-bonded debt over GDP, inflation, exchange rate, import and export commodity prices, lagged participation of foreign investors in the local bonds market, lagged share of FX debt, the lagged yield on 10-year US Treasuries, the lag of the Broad dollar index, and the lag of the VIX

	1 All Bonds	2 LC Bonds	3 FX Bonds
Budget Balance	0.165*	0.161**	0.237
	(1.89)	(2.22)	(1.29)
Maturing Bonds	-0.339**	-0.248*	-0.362
	(-1.97)	(-1.70)	(-1.35)
Δ Non-Bonded Debt	0.052	0.038	0.013
	(0.71)	(0.63)	(0.07)
Inflation	-0.009	0.008	0.005
	(-0.40)	(0.41)	(0.12)
Δ Nominal XR	0.001	-0.004	-0.022
	(0.07)	(-0.24)	(-0.60)
Commodity Import Prices	-0.355	0.179	-3.790**
	(-0.40)	(0.22)	(-2.35)
Commodity Export Prices	0.570	-0.160	2.374**
	(0.64)	(-0.18)	(1.98)
Foreign Part.$_{t-1}$	0.045*	-0.010	0.123**
	(1.65)	(-0.44)	(2.51)
FX Debt Share$_{t-1}$	-0.056**	-0.032	-0.108**
	(-2.02)	(-1.30)	(-2.30)
US10Y Yield$_{t-1}$	-0.159	-0.077	0.182
	(-0.68)	(-0.40)	(0.36)
EM Dollar Index$_{t-1}$	0.233	0.671	-4.272
	(0.09)	(0.32)	(-0.81)
VIX$_{t-1}$	-0.414*	-0.217	-0.405
	(-1.95)	(-1.23)	(-0.92)
Const.	9.470	7.865	36.423
	(0.74)	(0.72)	(1.33)
sigma_u	2.946***	3.597***	2.742***
	(4.92)	(5.15)	(3.85)
sigma_e	3.646***	3.008***	6.224***
	(23.98)	(23.94)	(19.46)
N. Obs.	310	309	206
N. of Countries	18	18	16
Model	Tobit-RE	Tobit-RE	Tobit-RE
Wald test	19.90	12.74	24.39

t-statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

commodity import prices significantly shorten the tenor of FX issuance, while rising commodity export prices are associated with longer FX bond tenors. Higher foreign investor participation is also linked to longer FX tenors, whereas a higher share of debt in FX is associated with shorter tenors at issuance. Finally, the three global variables included in our analysis show no significant effect on tenor at issuance.[10]

We now repeat the analysis focusing on total bond issuance (excluding bills from the sample).[11] We find that the fiscal balance has a weak negative effect on issuance volumes, particularly for local currency (LC) bonds. In contrast, maturing debt shows a strong and positive relationship with issuance amounts for both total and LC issuance (Columns 1 and 2 of Table 7). The only other variable significantly associated with LC issuance is the FX debt share, which, unsurprisingly, is negatively related to LC bond issuance. Currency depreciations are positively associated with FX issuance, possibly due to mechanical valuation effects (Column 3 of Table 7). As expected, the lagged FX debt share is also positively associated with FX bond issuance. Conversely, foreign participation in the local bond market is negatively associated with FX issuance, suggesting that countries able to attract foreign investors into their LC markets face less need to issue in foreign currency. Finally, higher U.S. interest rates and increased global uncertainty (proxied by the VIX) are both associated with lower FX bond issuance, consistent with the notion that emerging market issuers tend to reduce foreign currency borrowing when international financial conditions tighten.

5 Global Drivers of Bond Issuance

The poor fit of our baseline equation for FX bond issuance suggests that factors beyond mechanical financing needs influence the sovereign decision to issue bonds in foreign currency. In this section, we investigate whether global financial conditions help explain not only the decision to issue but also the choice of currency denomination.[12] To do so, we use quarterly panel data and a model specification that

[10] In future work we plan to explore whether these commodity-price correlations reflect deliberate sovereign issuance strategies, adjustments in investor price expectations, or a combination of both.

[11] Appendix Table A4 estimate the same models reported here for all securities and for government bills.

[12] Given that short-term issuance appears largely mechanically determined, we exclude short-term bonds from the remainder of the empirical analysis and focus instead on the drivers of medium- and

Table 7: **Bond Issuance**

This table reports a set of regressions covering the period 2006-2023, where the dependent variable is the amount of bond issuance (the sample excludes bills) for all bonds (column 1), LC bonds (column 2) and FX bonds (column 3) and the controls are budget balance over GDP, Maturing bonds over GDP, the change in non-bonded debt over GDP, inflation, exchange rate, import and export commodity prices, lagged participation of foreign investors in the local bonds market, lagged share of FX debt, the lagged yield on 10-year US Treasuries, the lag of the Broad dollar index, and the lag of the VIX

	1 All Bonds	2 LC Bonds	3 FX Bonds
Budget Balance	-0.312*	-0.152*	-0.102
	(-1.75)	(-1.92)	(-1.50)
Maturing Bonds	1.601***	0.636***	0.119
	(10.92)	(4.95)	(1.56)
Δ Non-Bonded Debt	-0.036	-0.030	-0.041
	(-0.26)	(-0.60)	(-0.75)
Inflation	0.012	0.007	0.001
	(0.45)	(1.16)	(0.07)
Δ Nominal XR	0.033	-0.005	0.041***
	(0.68)	(-0.31)	(3.22)
Commodity Import Prices	-1.511***	-0.038	-0.045
	(-2.98)	(-0.08)	(-0.11)
Commodity Export Prices	0.690*	-0.117	-0.193
	(1.82)	(-0.28)	(-1.10)
Foreign Part.$_{t-1}$	0.005	0.015	-0.012**
	(0.19)	(0.75)	(-2.14)
FX Debt Share$_{t-1}$	-0.032	-0.057***	0.051***
	(-0.91)	(-2.80)	(4.73)
US10Y Yield$_{t-1}$	-0.406	-0.095	-0.266**
	(-0.91)	(-0.39)	(-2.37)
EM Dollar Index $_{t-1}$	-3.020	-0.625	0.077
	(-0.80)	(-0.28)	(0.10)
VIX	-0.045	0.151	-0.197**
	(-0.18)	(1.50)	(-2.09)
Const.	20.821	7.134	0.352
	(1.11)	(0.62)	(0.10)
N. Obs.	310	319	319
Model	RE	RE	RE
R^2	0.37	0.49	0.22

t-statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

allows us to control for all country-time specific shocks. Specifically, we construct a panel with two observations for each country-quarter: one measuring local-currency bond issuance and the other measuring foreign-currency bond issuance, both scaled by GDP. We then estimate whether global factors exert differential effects on the issuance of local- versus foreign-currency bonds.

We start by estimating the following model:

$$\begin{aligned} I_{i,c,q(y)} = FX_{i,c,q(y)} \left(\varphi + \gamma G_{q(y)-1} + \delta_1 MAT^{LC}_{i,q(y)} + \delta_2 MAT^{FX}_{i,q(y)} \right) + \\ \theta_1 MAT^{LC}_{i,q(y)} + \theta_2 MAT^{FX}_{i,q(y)} + \alpha_i + \tau_{q(y)} + \varepsilon_{i,c,q(y)} \end{aligned} \tag{4}$$

where $I_{i,c,q(y)}$ denotes bond issuance by country i, in currency c (with c being either foreign or domestic), in quarter q of year y. The variable FX is a dummy equal to 1 if the issuance is in foreign currency. G represents a measure of global financial conditions. $MAT^{LC}_{i,q(y)}$ and $MAT^{FX}_{i,q(y)}$ are the stocks of maturing debt in local and foreign currency, respectively. Country and time fixed effects are captured by α_i and $\tau_{q(y)}$.

Our key parameter of interest is γ, which captures the difference in the response of foreign currency issuance (relative to domestic currency issuance) to global financial conditions. The response of local currency issuance is implicitly controlled for through the time fixed effects. Note that in a world with limited participation of foreign investors in domestic local currency financial markets, we would expect better global financial conditions to be associated with relatively more foreign currency issuance ($\gamma > 0$). However, if favorable global financial conditions increase the likelihood that foreign investors access local bond markets in emerging economies, we could instead observe that an improvement in global financial conditions is associated with a reduction in the share of foreign currency issuance ($\gamma < 0$).

We use three alternative measures of global financial conditions (for comparability we standardize all three global financial condition measures).

First, we use the Global Financial Cycle (GFiC) Index of Rey (2015) and Miranda-Agrippino and Rey (2020). This index is positively associated with favorable global financial conditions. Second, we use the implied volatility of the S&P 500 (VIX), a standard measure of risk aversion that tends to increase during periods of market

long-term bond issuance.

Table 8: **Summary Statistics: Quarterly Data**

This table reports summary statistics for the main variables used in the quarterly regressions. The three global factors are standardized and have mean=0 and standard deviation =1 by construction

	Mean	Std. dev.	Median	Skew	Min	Max
Issue All	1.14	1.82	0.31	1.92	0.00	14.27
Issue FX	0.31	0.86	0.00	6.33	0.00	12.42
Issue LC	1.97	2.13	1.36	1.91	0.00	14.27
GfiC	0.00	1.00	-0.17	0.10	-3.02	2.17
VIX	0.00	1.00	-0.21	1.91	-1.34	5.26
US10Y	0.00	1.00	-0.17	-0.03	-2.19	2.00
MAT^{LC}	1.34	1.74	0.67	2.29	0.00	13.41
MAT^{FX}	0.15	0.43	0.00	5.33	0.00	5.25

uncertainty or stress. Finally, we use one-year expectations for the U.S. interest rate on 10-year Treasuries (US10Y) from Philadelphia Fed's survey. Since most foreign currency bond issuance by emerging markets are denominated in U.S. dollars and priced at a spread over U.S. Treasuries, higher expected yields can trigger an anticipation effect, leading to front-loaded issuance. We therefore expect $\gamma > 0$ when using US10Y as the measure of global conditions.

On average, the countries in our sample issue bonds equal to 1.1% of GDP each quarter, with quarterly issuance ranging between zero and 14% of GDP. FX bond issuance is substantially smaller than LC bond issuance (0.3% of GDP versus 2% of GDP; see Table 8), but it exhibits much greater variation. The coefficient of variation for LC issuance is close to one, while that for FX issuance is 2.8. Moreover, FX issuance is more skewed than LC issuance: the median is zero and the skewness coefficient is 6.33, compared to 1.9 for LC issuance. By construction, the three measures of global financial conditions have the same mean and standard deviation, but the VIX is highly right-skewed. The characteristics of the distrbution of maturing bonds reflect those of bond issuance.

We find that the FX dummy is always negative and statistically significant, with a point estimate indicating that, in a typical quarter, countries in our sample issue a smaller amount in foreign currency (Table 9). The estimated difference is about 0.4% of GDP, which is smaller than the unconditional difference (1.6% of GDP) reported in Table 8. We also find that $\delta_1 \approx 1$ and $\delta_1 + \theta_1 \approx 0$, indicating that, on average, countries

Table 9: **Bond Issuance and Global Market Conditions: Baseline**

This table reports a set of regressions that use quarterly data covering the period 2000-2023 (default periods are excluded). The dependent variable measures bond issuance scaled by GDP by country and currency type (local currency an foreign currency), the set of explanatory variable includes a dummy that takes value one for foreign currency issuances (FX) and the interaction between FX and the Global Financial Cycle Index (GFiC) of Miranda-Agrippino and Rey (2020), the VIX index (VIX), the forecast of the 10-year US Treasury yield (US10Y), and the amount of maturing debt in both local and foreign currency (MAT^{LC} and MAT^{FC}). The regressions also include the main effects of maturing debt, country fixed effects, and time fixed effects (the main effect of GFiC, VIX, and US10Y is absorbed by the time fixed effects). Global factors (GFiC, VIX, and US10Y) are standardized (mean=0, sd=1) and lagged one quarter.

	1	2	3
FX	-0.400***	-0.404***	-0.404***
	(-8.66)	(-8.66)	(-8.79)
FX×GFiC$_{t-1}$	0.056***		
	(3.21)		
FX×VIX$_{t-1}$		-0.057***	
		(-4.00)	
FX×US10Y$_{t-1}$			0.060***
			(3.38)
FX×MAT^{LC}	-0.996***	-0.995***	-0.996***
	(-30.52)	(-30.52)	(-30.50)
FX×MAT^{FX}	0.517***	0.508***	0.519***
	(4.31)	(4.25)	(4.32)
MAT^{LC}	0.967***	0.967***	0.967***
	(27.32)	(27.32)	(27.32)
MAT^{FX}	0.079	0.083	0.077
	(1.25)	(1.32)	(1.23)
Constant	0.662***	0.662***	0.662***
	(15.25)	(15.14)	(15.31)
N. Obs.	3584	3584	3584
Country FE	✓	✓	✓
Time FE	✓	✓	✓
R^2	0.66	0.66	0.66

t-statistics based on standard errors clustered at the quarter-currency are reported in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

do not issue FX bonds when LC bonds mature. In contrast, $\delta_2 < 1$, suggesting that maturing FX bonds are not fully replaced by new FX issuance.

More interesting for our purposes is that γ is always statistically significant: it is positive in the regressions using GFiC and US10Y, and negative in the regression using the VIX. The coefficients are of similar magnitude. The point estimates suggest that a one standard deviation improvement in global financial conditions leads to an increase of 0.6 percentage points of GDP in foreign currency issuance. This corresponds to about one-sixth of the average difference in issuance volumes when global financial conditions are at their mean level.

Taken together, the estimations in Table 9 suggest that the motivation to tap foreign markets during favorable conditions dominates the potential effect of increased foreign investor participation in local currency markets.

One possible issue with the estimations of Table 9 is that they do not control for time-variant country factors that could affect bond issuance. To address this issue, we estimate a model that includes country-time fixed effects and thus implicitly controls for all possible time-variant country specific factors. Formally, we estimate the following equation:

$$I_{i,c,q(y)} = FX_{i,c,q(y)} \left(\varphi + \gamma G_{q(y)-1} + \delta_1 MAT^{LC}_{i,q(y)} + \delta_2 MAT^{FX}_{i,q(y)} \right) + \alpha_{i,q(y)} + \varepsilon_{i,c,q(y)} \tag{5}$$

Note that with this specification, we cannot control for the main effect of maturing debt because this variable is fully absorbed by the country-time fixed effects. Table 10 shows that the results are essentially identical to those of Table 9.

Note that the estimations in Tables 9 and 10 fully absorb the main effect of global financial conditions through time fixed effects. As a result, they can only tell us how global conditions affect the issuance of foreign currency (FX) debt relative to local currency (LC) debt. While they show that FX issuance increases relative to LC issuance, they do not reveal whether both increase, whether both decrease (with FX decreasing less), or whether one increases while the other decreases.

To explore what happens to the level of issuance in each currency, we also estimate a model without time fixed effects. In this specification, the coefficient on the global conditions variable captures the effect on LC issuance, while the sum of this coefficient and γ captures the effect on FX issuance. Table A5 in the Appendix shows that the

Table 10: **Bond Issuance and Market Conditions: Country-Quarter FE**

This table reports a set of regressions that use quarterly data covering the period 2000-2023 (default periods are excluded). The dependent variable measures bond issuance scaled by GDP by country and currency type (local currency an foreign currency), the set of explanatory variable includes a dummy that takes value one for foreign currency issuances (FX) and the interaction between FX and the Global Financial Cycle Index (GFiC) of Miranda-Agrippino and Rey (2020), the VIX index (VIX), the forecast of the 10-year US Treasury yield (US10Y), and the amount of maturing debt in both local and foreign currency (MAT^{LC} and MAT^{FC}). The main effects of maturing debt, and the main effect of GFiC, VIX, and US10Y are absorbed by country-quarter fixed effects. Global factors (GFiC, VIX, and US10Y) are standardized (mean=0, sd=1) and lagged one quarter.

	1	2	3
FX	-0.400***	-0.404***	-0.404***
	(-8.50)	(-8.43)	(-8.66)
FX×GFC Index$_{t-1}$	0.056**		
	(2.31)		
FX×VIX$_{t-1}$		-0.057***	
		(-2.88)	
FX×US10Y Forecast$_{t-1}$			0.060**
			(2.45)
FX×MAT^{LC}	-0.996***	-0.995***	-0.996***
	(-28.69)	(-28.71)	(-28.65)
FX×MAT^{FX}	0.517***	0.508***	0.519***
	(4.23)	(4.19)	(4.25)
Constant	1.972***	1.972***	1.972***
	(108.95)	(109.45)	(108.80)
N. Obs.	3584	3584	3584
Country-time FE	✓	✓	✓
R^2	0.76	0.76	0.76

t-statistics based on standard errors clustered at the quarter-currency are reported in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

main effect is negative and approximately equal in absolute value to γ. This implies that LC issuance decreases during good times, while FX issuance remains roughly constant. In other words, in favorable global conditions, emerging market countries in our sample increase the share of FX debt relative to LC debt, but they do not appear to engage in a borrowing spree.

We also experiment with a model that interacts the FX dummy with a set of domestic conditions—real GDP growth, international reserves, and foreign investor participation in the domestic market. We find that the only variable significantly associated with FX issuance is GDP growth (Appendix Table A6). More important for our purposes, we consistently find that the interaction between our measure of global conditions (using the VIX) and the foreign currency dummy is negative and statistically significant.

6 Conclusions

This paper provides new evidence on the determinants of sovereign bond issuance in emerging market economies, drawing on a novel and comprehensive dataset covering over 75,000 issuance events and 20,000 securities issued by 20 countries between 2000 and 2023. By capturing both inaugural issuances and reopenings at the auction level, the dataset allows us to trace the timing, volume, currency, and maturity structure of sovereign debt issuance with greater precision than previously possible.

Our analysis highlights a stark contrast between local currency and foreign currency issuance. LC issuance is primarily driven by refinancing needs and shows strong mechanical links to the maturity profile of existing debt, particularly short-term instruments. In contrast, FX issuance appears more strategic and sensitive to global macro-financial conditions. FX maturities shorten during periods of rising commodity import prices and lengthen with favorable export conditions. Additionally, issuance volumes in FX are affected by global risk sentiment, foreign investor participation in domestic markets, and US interest rates.

The evidence also suggests that EME governments differentiate issuance behavior based on market access and risk management objectives. While some countries show signs of substituting FX with LC issuance in the face of external shocks, others continue to rely heavily on FX borrowing, particularly when local markets remain underdeveloped.

Looking ahead, future work could incorporate pricing data to analyze the cost of issuance alongside volume and maturity choices. We also plan to do more work that goes beyond maturity and currency and studies the driver of indexation to both prices and interest rates. Exploring the interaction between domestic institutional features and issuance patterns could shed light on why some EMEs are more successful than others at developing local currency bond markets.

References

Aguiar, Mark and Manuel Amador (2021). *The Economics of Sovereign Debt and Default*. Princeton, NJ: Princeton Universty Press.

Aguiar, Mark, Manuel Amador, Hugo Hopenhayn, et al. (2019). "Take the Short Route: Equilibrium Default and Debt Maturity". In: *Econometrica* 87.2, pp. 423–462.

Aguiar, Mark, Manuel Amador, and Ricardo Alves Monteiro (2023). "Sovereign Debt Crises and Floating-Rate Bonds". In: *Credibility of Emerging Markets, Foreign Investors' Risk Perceptions, and Capital Flows*. Central Bank of Chile, pp. 159–184.

Aizenman, J. et al. (2021). "Good-bye original sin, hello risk on-off, financial fragility, and crises?" In: *Journal of International Money and Finance* 117, p. 102442.

Alfaro, Laura and Fabio Kanczuk (2009). "Debt Maturity: Is Long-Term Debt Optimal?" In: *Review of International Economics* 17.5, pp. 890–905.

Arellano, Cristina and Ananth Ramanarayanan (2012). "Default and the Maturity Structure in Sovereign Bonds". In: *Journal of Political Economy* 120.2, pp. 187–232.

Arias, Eric, Layna Mosely, and Peter Rosendorff (2020). *Financial Statecraft: Government Choice of Debt Instruments*.

Arslanalp, Serkan and Takahiro Tsuda (2014). "Tracking Global Demand for Emerging Market Sovereign Debt". In: *IMF Working Papers* 2014.39. Publisher: International Monetary Fund (IMF), p. 1. ISSN: 1018-5941. DOI: 10.5089/9781484326541.001.

Ballard-Rosa, Cameron, Layna Mosley, and Rachel L. Wellhausen (2022). "Coming to Terms: The Politics of Sovereign Bond Denomination". In: *International Organization* 76.1, pp. 32–69. DOI: 10.1017/S0020818321000357.

Bertaut, Carol, Valentina Bruno, and Hyun Song Shin (May 2025). *Original Sin Redux: Role of Duration Risk*. Working Paper 33816. National Bureau of Economic Research. DOI: 10.3386/w33816.

Bolton, Patrick, Mitu Gulati, and Ugo Panizza (2023). "Sovereign Debt Puzzles". In: *Annual Review of Financial Economics* 15.Volume 15, 2023, pp. 239–263. ISSN: 1941-1375. DOI: https://doi.org/10.1146/annurev-financial-111620-030025.

Broner, Fernando A., Guido Lorenzoni, and Sergio L. Schmukler (2013). "WHY DO EMERGING ECONOMIES BORROW SHORT TERM?" In: *Journal of the European Economic Association* 11.s1, pp. 67–100.

Burger, John and Francis Warnock (2006). "Local Currency Bond Markets". en. In: *IMF Staff Papers* 53.Special Issue.

— (Jan. 2007). "Foreign participation in local currency bond markets". en. In: *Review of Financial Economics*. Exchange Rates and International Financial Assets: A Special Issue in Honor of Stanley W. Black 16.3, pp. 291–304. ISSN: 1058-3300. DOI: 10.1016/j.rfe.2006.09.001.

Burger, John, Francis Warnock, and Veronica Warnock (2012). "Emerging Local Currency Bond Markets". en. In: *Financial Analysts Journal* 68.4.

Calvo, Guillermo A. (1988). "Servicing the Public Debt: The Role of Expectations". In: *The American Economic Review* 78.4, pp. 647–661.

Calvo, Guillermo A., Leonardo Leiderman, and Carmen M. Reinhart (1993). "Capital Inflows and Real Exchange Rate Appreciation in Latin America: The Role of External Factors". In: *IMF Staff Papers* 40.1, pp. 108–151.

Campos, Camila F. S., Dany Jaimovich, and Ugo Panizza (2006). "The unexplained part of public debt". In: *Emerging Markets Review* 7.3, pp. 228–243. DOI: 10.1016/j.ememar.2006.06.001.

Carsten, Augustin and Hyun Song Shin (Mar. 2019). "Emerging markets aren't out of the woods yet". In.

Chatterjee, Satyajit and Burcu Eyigungor (May 2012). "Maturity, Indebtedness, and Default Risk". In: *American Economic Review* 102.6, pp. 2674–99.

Cormier, Ben (2023). "Partisan External Borrowing in Middle-Income Countries". en. In: *British Journal of Political Science* 53.2, pp. 717–727. DOI: 10.1017/S0007123421000697.

Cuadra, Gabriel, Juan M. Sanchez, and Horacio Sapriza (Apr. 2010). "Fiscal policy and default risk in emerging markets". en. In: *Review of Economic Dynamics* 13.2, pp. 452–469. ISSN: 1094-2025. DOI: 10.1016/j.red.2009.07.002.

Dell'Erba, Salvatore, Ricardo Hausmann, and Ugo Panizza (AUTUMN 2013). "Debt levels, debt composition, and sovereign spreads in emerging and advanced economies". In: *Oxford Review of Economic Policy* 29.3, pp. 518–547. DOI: None.

Doornik, Bernardus F Nazar Van et al. (2024). "Towards liquid and resilient government debt markets in EMEs". In: *BIS Quarterly Review* March.

Eaton, Jonathan and Mark Gersovitz (1981). "Debt with Potential Repudiation: Theoretical and Empirical Analysis". In: *The Review of Economic Studies* 48.2, pp. 289–309. ISSN: 0034-6527. DOI: 10.2307/2296886.

Eichengreen, Barry, Ricardo Hausmann, and Ugo Panizza (2005). "The Mystery of Original Sin". In: *Other People's Money: Debt Denomination and Financial Instability in Emerging Market Economies*. Ed. by Barry Eichengreen and Ricardo Hausmann. Chicago: University of Chicago Press, pp. 233–265.

— (July 2007). "Currency Mismatches, Debt Intolerance, and the Original Sin: Why They Are Not the Same and Why It Matters". In: *Capital Controls and Capital Flows in Emerging Economies: Policies, Practices, and Consequences*. NBER Chapters. National Bureau of Economic Research, Inc, pp. 121–170.

— (2023). "Yet it Endures: The Persistence of Original Sin". In: *Open Economies Review* 34.1, pp. 1–42.

Eichengreen, Barry and Ashoka Mody (2000). "What Explains Changing Spreads on Emerging Market Debt?" In: *Capital Flows and the Emerging Economies: Theory, Evidence, and Controversies*. Ed. by Sebastian Edwards. CEPR, pp. 107–136.

Fatás, Antonio et al. (Oct. 2019). "102The Motive to Borrow". In: *Sovereign Debt: A Guide for Economists and Practitioners*. Oxford University Press. ISBN: 9780198850823. DOI: 10.1093/oso/9780198850823.003.0004. eprint: https://academic.oup.com/book/0/chapter/299347788/chapter-pdf/40184077/oso-9780198850823-chapter-4.pdf.

Feyen, Erik H.B. et al. (July 2015). *Global liquidity and external bond issuance in emerging markets and developing economies*. Policy Research Working Paper Series 7363. The World Bank.

Galindo, Arturo J. and Ugo Panizza (None 2018). "The cyclicality of international public sector borrowing in developing countries: Does the lender matter?" In: *World Development* 112.C, pp. 119–135. DOI: 10.1016/j.worlddev.2018.08.007.

Gelpern, Anna and Ugo Panizza (2022). "Enough Potential Repudiation: Economic and Legal Aspects of Sovereign Debt in the Pandemic Era". In: *Annual Review of Economics* 14.Volume 14, 2022, pp. 545–570. ISSN: 1941-1391. DOI: https://doi.org/10.1146/annurev-economics-051420-015731.

Ha, Jongrim, M. Ayhan Kose, and Franziska Ohnsorge (Oct. 2023). "One-stop source: A global database of inflation". In: *Journal of International Money and Finance* 137, p. 102896. ISSN: 0261-5606. DOI: 10.1016/j.jimonfin.2023.102896.

Hale, Galina (2007). "Bonds or Loans? The Effect of Macroeconomic Fundamentals". In: *The Economic Journal* 117.516, pp. 196–215.

Hatchondo, Juan Carlos and Leonardo Martinez (2009). "Long-duration bonds and sovereign defaults". In: *Journal of International Economics* 79.1, pp. 117–125. ISSN: 0022-1996. DOI: https://doi.org/10.1016/j.jinteco.2009.07.002.

Hausmann, Ricardo, Ugo Panizza, and Ernesto Stein (Dec. 2001). "Why do countries float the way they float?" In: *Journal of Development Economics* 66.2, pp. 387–414. DOI: None.

Hofmann, Boris, Nikhil Patel, and Steve Pak Yeung Wu (Feb. 2022). *Original sin redux: a model-based evaluation*. BIS Working Papers 1004. Bank for International Settlements. DOI: None.

Hofmann, Boris, Ilhyock Shim, and Hyun Song Shin (2020). "Original sin redux and policy responses in emerging market economies during the COVID-19 pandemic". In: *COVID-19 in Developing Economies*. Ed. by Simeon Djankov and Ugo Panizza. CEPR, pp. 353–361.

Miranda-Agrippino, Silvia and Hélène Rey (May 2020). "U.S. Monetary Policy and the Global Financial Cycle". In: *The Review of Economic Studies* 87.6, pp. 2754–2776. ISSN: 0034-6527. DOI: 10.1093/restud/rdaa019. eprint: https://academic.oup.com/restud/article-pdf/87/6/2754/36143045/rdaa019.pdf.

Missale, Alessandro and Olivier Jean Blanchard (1994). "The Debt Burden and Debt Maturity". In: *The American Economic Review* 84.1, pp. 309–319. ISSN: 00028282.

Mitchener, Kris James and Christoph Trebesch (June 2023). "Sovereign Debt in the Twenty-first Century". In: *Journal of Economic Literature* 61.2, pp. 565–623. DOI: 10.1257/jel.20211362.

Onen, Mert, Hyun Song Shin, and Goetz von Peter (Mar. 2025). "Overcoming original sin: Shedding new light on uneven progress". In: *Economic Policy* 40.122, pp. 575–620.

Ottonello, Pablo and Diego J. Perez (July 2019). "The Currency Composition of Sovereign Debt". en. In: *American Economic Journal: Macroeconomics* 11.3, pp. 174–208. ISSN: 1945-7707. DOI: 10.1257/mac.20180019.

Panizza, Ugo (2008). *Domestic And External Public Debt In Developing Countries*.

Panizza, Ugo, Federico Sturzenegger, and Jeromin Zettelmeyer (Sept. 2009). "The Economics and Law of Sovereign Debt and Default". In: *Journal of Economic Literature* 47.3, pp. 651–98. DOI: 10.1257/jel.47.3.651.

Presbitero, Andrea F. et al. (2016). "Sovereign bonds in developing countries : drivers of issuance and spreads". In: *Review of Development Finance* 6.1, pp. 1–15.

Rey, Hélène (May 2015). *Dilemma not Trilemma: The global Financial Cycle and Monetary Policy Independence*. NBER Working Paper 21162. Cambridge, MA: National Bureau of Economic Research.

Roch, Francisco (Jan. 2019). "The adjustment to commodity price shocks". In: *Journal of Applied Economics* 22.1, pp. 437–467. ISSN: 1514-0326. DOI: 10.1080/15140326.2019.1665316.

Shin, Hyun Song and Goetz von Peter (2022). In: *Journal of Globalization and Development* 13.2, pp. 411–433. DOI: doi:10.1515/jgd-2021-0055.

Tanaka, Misa (2006). "Bank Loans versus Bond Finance: Implications for Sovereign Debtors". In: *The Economic Journal* 116.510, pp. C149–C171.

Tirole, Jean (Dec. 2003). "Inefficient Foreign Borrowing: A Dual- and Common-Agency Perspective". In: *American Economic Review* 93.5, pp. 1678–1702.

Tomz, Michael and Mark L.J. Wright (2013). "Empirical Research on Sovereign Debt and Default". In: *Annual Review of Economics* 5.Volume 5, 2013, pp. 247–272. ISSN: 1941-1391. DOI: https://doi.org/10.1146/annurev-economics-061109-080443.

A1 EM Bond Database

The EM Bond Database covers central government securities auctions for 20 emerging market economies across four regions (see Table A1). It spans 1995 Q1 to 2023 Q4 and comprises 76,460 issuance events—20,566 inaugural issues and 55,894 reopenings. Of these, 63,062 records are cross-validated in more than one source; 10,813 are unique to Bloomberg; and 702 are unique to national publications.

Table A1: **Emerging Markets by Region**

Asia	**Latin America**	**EMEA–EU**	**EMEA–Non EU**
China	Argentina	Bulgaria	Egypt
India	Brazil	Hungary	South Africa
Malaysia	Chile	Poland	Turkey
Thailand	Colombia	Romania	Ukraine
Vietnam	Mexico		Uruguay
	Peru		

Key Summary Statistics

Table A2 summarizes the breakdown of auction records by data source and the composition of total auctions into inaugural issues and reopenings.

Table A2: **Summary of Auction Records**

	Count	**Share (%)**
Matched across sources	63,062	82.5
Bloomberg only	10,813	14.1
National sources only	702	0.92
Total auctions	76,460	100
New issues	20,566	26.9
Reopenings	55,894	73.1

Data Sources and Harmonization

Auction–level data are drawn from each country's Ministry of Finance, Central Bank or relevant national office(s), and supplemented by bond-level issuance data from

Bloomberg and Refinitiv (DataStream). To ensure consistency, multiple Bloomberg IDs and ISINs corresponding to different tranches (e.g. Reg S vs. 144A or GDNs) are clustered into single bond offerings.

Database Structure

Table A3 lists the main sections and variables contained in the database. Bond–level features capture coupon, maturity, currency, amount and tenor; auction–level features record issue (or reopening) date, price, yield and amount; issuer–level features include ratings, market segment and outstanding stock; and legal covenants document the key clauses.

Table A3: **Database Sections and Key Variables**

Section	**Key Variables**
Identifiers	ISO2, ISO3, Bloomberg ID, ISIN, CUSIP, local IDs
Bond–level features	Coupon type & rate, maturity date, first issue date, currency, total amount (aggregated), tenor, seniority, frequency
Auction–level features	Auction date, issue date, price, yield, amount issued (local & USD), reopening sequence
Issuer–level features	Long-term ratings (LCY & FCY, Fitch/Moody's/S&P), market segment, governing law, exchange rate regime, outstanding (USD), payment frequency
Legal covenants	Flags for negative pledge, change of control, collective action clauses, ratings triggers, etc.

Special Considerations

We treat each reopening as a separate auction—even when a private placement occurs on the same date, in which case both transactions are recorded independently. Some issues (for example, Argentina's 2022+ bonds) are denominated in one currency but settled in another under predefined rules; these settlement conventions are preserved in the database. Local issuance amounts are converted into U.S. dollars using historical BIS exchange rates at the auction date. Finally, when national-source records are incomplete or unavailable, we rely on Bloomberg and Refinitiv to fill gaps—an approach that may slightly understate the true number of reopenings.

A2 Description of Variables Used in the Analysis

Dependent Variables

Using our newly assembled auction-level dataset, we construct two core outcome measures, each constructed at the country–currency–period level (annual or quarterly) and expressed in comparable economic units:

- **Amount issued (% of GDP).** Total amount issued in a given period, aggregated at the country-currency-year and country-year or country-quarter levels. This variable is further disaggregated by maturity segment (short-, medium-, and long-term), allowing us to assess the scale of borrowing activity conditional on issuance characteristics. All issuance amounts are normalized by GDP using national sources or IMF-reported figures to ensure comparability across countries and years.

- **Remaining tenor at issuance.** The tenor variable is issuance-weighted average (in years) of all securities issued in the period. For reopenings, we measure time from auction date to final maturity, and weight each tenor by the corresponding issuance amount so that larger auctions contribute proportionally to the average.

Explanatory Variables

We organize the explanatory variables into two main sets. The first set reflects a parsimonious setup of the government's flow constraint and is used to assess the mechanical nature of debt rollovers. The second set captures external market conditions to test the opportunistic issuance hypothesis. The variables are as following:

Fiscal Variables. Fiscal indicators such as the government overall and primary balance and net interest payments—are sourced directly from respective national authorities, or, when unavailable, from CEIC. Priority is given to national sources to ensure consistency with local reporting standards.

Principal payment due. Principal payment variable is built using information from our auction-level database. As the full underlying version starts on 1995, we

are quite confident, we could pinpoint the expected repayment data and volume for period after 2005.

Change in non-bonded debt (% of GDP). Year-on-year variation in government liabilities other than Tbills and bonds (e.g. loans), sourced from Arslanalp and Tsuda (2014).

Inflation (CPI). Consumer Price Index (CPI) data are obtained from the World Bank's harmonized Global Database of Inflation, developed by Ha, Kose, and Ohnsorge (2023) .[13] For the period after 2023Q2, missing quarterly data are supplemented using the IMF's International Financial Statistics (IFS) dataset.

Market Environment Parameters. To examine the opportunistic issuance hypothesis, we use several market parameters that serve as proxies for the capital market environment and the broader macroeconomic health of the sampled countries. These parameters are detailed as follows:

- **US 10-Year Yield:** Market yield on U.S. Treasury Securities at a 10-year constant maturity, quoted on an investment basis and obtained from the Federal Reserve Bank of St. Louis (FRED). Serves as a proxy for the current cost of long-term financing.
- **US Monetary Policy Expectations:** Expectations about US monetary policy are proxied by the median forecast from the Philadelphia Fed's survey. Specifically, we use the annual-average forecasts for the subsequent year pertaining to the US 10-year Treasury Bond, the US 3-month T-Bill, and the corresponding spread.
- **Emerging Market Economies U.S. Dollar Index:** Retrieved from the Federal Reserve Bank of St. Louis (FRED). This index measures the trade-weighted value of the U.S. dollar against the currencies of major emerging market economies.
- **Commodity Price Shocks:** We construct two composite commodity price indices — `Commodity_px_IM` and `Commodity_px_EX`—to capture country-specific

[13] See data access on: https://www.worldbank.org/en/research/brief/inflation

exposure to import and export price fluctuations, following the methodology of Roch (2019). The indices are calculated as weighted averages of relative international commodity price levels, using annual trade weights derived from UN Comtrade and price data from the World Bank's Commodity Price Data ("The Pink Sheet").

The analysis covers five commodity groups: 1) fuel (HS Chapter 27), 2) beverages (HS Chapters 09 and 18), 3) grains (HS Chapter 10), 4) base metals (HS Chapters 26, 72–80), and 5) precious metals (HS Chapter 71). For each country i, commodity group c, and year t, the trade weight is computed separately for imports and exports as:

$$w^{\text{IM}}_{i,c,t} = \frac{\text{Imports}_{i,c,t}}{\sum_{i=1}^{5} \text{Imports}_{i,c,t}}, \quad w^{\text{EX}}_{i,c,t} = \frac{\text{Exports}_{i,c,t}}{\sum_{i=1}^{5} \text{Exports}_{i,c,t}},$$

The corresponding composite indices are then constructed as:

$$\texttt{Commodity\_px\_IM}_{i,t} = \sum_{i=1}^{5} \left(w^{\text{IM}}_{i,c,t} \times P_{i,t} \right), \quad \texttt{Commodity\_px\_EX}_{i,t} = \sum_{i=1}^{5} \left(w^{\text{EX}}_{i,c,t} \times P_{i,t} \right),$$

where $P_{i,t}$ denotes the international price level of commodity group i in year t. These indices serve as trade-weighted proxies for commodity price shocks on the import and export side, respectively. Their log levels enter the regressions as lagged explanatory variables to capture the macroeconomic impact of global commodity price movements on sovereign issuance behavior.

- **Foreign Ownership and FCY Debt Proportion:** Data on foreign ownership and the share of total debt denominated in foreign currency (FCY) are obtained from the updated dataset of Arslanalp and Tsuda (2014), as provided by the International Monetary Fund (IMF).

- **Global Financial Cycle:** Data on the global financial cycle are sourced from Miranda-Agrippino and Rey (2020).

- **VIX** We incorporate the Chicago Board Options Exchange Volatility Index (VIX) to proxy for global risk appetite. Monthly VIX values are averaged to obtain a trailing 12-month mean for each country-year observation, or averaged

to the quarterly level in our quarterly estimations. Higher VIX values signal heightened global uncertainty.

A3 Additional Tables

Table A4: **Bond and Bill Issuance**

This table reports a set of regressions covering the period 2006-2023, where the dependent variable is the amount of bond and bill issuance for all securities (column 1), LC securities (column 2), FX securities (column 3), for all bills (column 4), LC bills (column 5), and FX bills (column 6) and the controls are budget balance over GDP, Maturing bonds over GDP, the change in non-bonded debt over GDP, inflation, exchange rate, import and export commodity prices, lagged participation of foreign investors in the local bonds market, lagged share of FX debt, the lagged yield on 10-year US Treasuries, the lag of the Broad dollar index, and the lag of the VIX

	1 All	2 LC	3 FX	4 All	5 LC	6 FX
Budget Balance	0.294	-0.060	0.349	-0.312*	-0.152*	-0.102
	(0.47)	(-0.26)	(0.84)	(-1.75)	(-1.92)	(-1.50)
Maturing Bonds	2.016**	0.743***	1.178*	1.601***	0.636***	0.119
	(2.17)	(2.81)	(1.71)	(10.92)	(4.95)	(1.56)
Δ Non-Bonded Debt	-0.162*	0.053	-0.212	-0.036	-0.030	-0.041
	(-1.76)	(0.39)	(-1.49)	(-0.26)	(-0.60)	(-0.75)
Inflation	-0.030	0.032**	-0.062	0.012	0.007	0.001
	(-0.50)	(2.16)	(-1.03)	(0.45)	(1.16)	(0.07)
Δ Nominal XR	0.254*	0.051**	0.205	0.033	-0.005	0.041***
	(1.67)	(2.21)	(1.58)	(0.68)	(-0.31)	(3.22)
Commodity Imp. Prices	6.097	3.049	2.141	-1.511***	-0.038	-0.045
	(1.21)	(1.18)	(1.02)	(-2.98)	(-0.08)	(-0.11)
Commodity Exp. Prices	-8.536	-4.361	-2.844	0.690*	-0.117	-0.193
	(-1.35)	(-1.31)	(-1.26)	(1.82)	(-0.28)	(-1.10)
Foreign Part.$_{t-1}$	0.006	0.032	-0.038	0.005	0.015	-0.012**
	(0.07)	(0.49)	(-1.03)	(0.19)	(0.75)	(-2.14)
FX Debt Share$_{t-1}$	0.034	-0.022	0.060**	-0.032	-0.057***	0.051***
	(0.46)	(-0.38)	(2.09)	(-0.91)	(-2.80)	(4.73)
US10Y Yield$_{t-1}$	-0.470	-0.448	-0.069	-0.406	-0.095	-0.266**
	(-0.85)	(-0.95)	(-0.29)	(-0.91)	(-0.39)	(-2.37)
EM Dollar Index$_{t-1}$	11.598	-1.581	12.975	-3.020	-0.625	0.077
	(0.84)	(-0.32)	(1.14)	(-0.80)	(-0.28)	(0.10)
VIX$_{t-1}$	0.603	0.293**	0.229	-0.045	0.151	-0.197**
	(1.42)	(2.33)	(0.79)	(-0.18)	(1.50)	(-2.09)
Const.	-38.485	19.784	-58.221	20.821	7.134	0.352
	(-0.68)	(0.89)	(-1.12)	(1.11)	(0.62)	(0.10)
Securities	All	All	All	Bills	Bills	Bills
N. Obs.	312	319	319	310	319	319
Model	RE	RE	RE	RE	RE	RE
R^2 overall	0.05	0.04	0.12	0.37	0.49	0.22
R^2 within	0.30	0.18	0.29	0.12	0.10	0.10

t-statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A5: **Bond Issuance and Global Market Conditions**

This table reports a set of regressions that use quarterly data covering the period 2000-2023 (default periods are excluded). The dependent variable measures bond issuance scaled by GDP by country and currency type (local currency an foreign currency), the set of explanatory variable includes a dummy that takes value one for foreign currency issuances (FX) and the interaction between FX and the Global Financial Cycle Index (GFiC) of Miranda-Agrippino and Rey (2020), the VIX index (VIX), the forecast of the 10-year US Treasury yield (US10Y), and the amount of maturing debt in both local and foreign currency (MAT^{LC} and MAT^{FC}). The regressions also include the main effects of maturing debt, and country fixed effects. Global factors (GFiC, VIX, and US10Y) are standardized (mean=0, sd=1) and lagged one quarter.

	1	2	3
FX	-0.400***	-0.404***	-0.404***
	(-8.66)	(-8.54)	(-8.77)
FX×GFiC$_{t-1}$	0.056*		
	(1.66)		
FX×VIX$_{t-1}$		-0.057*	
		(-1.90)	
FX×US10Y$_{t-1}$			0.060*
			(1.79)
FX×MAT^{LC}	-0.996***	-0.995***	-0.996***
	(-30.73)	(-30.66)	(-30.72)
FX×MAT^{FX}	0.517***	0.508***	0.519***
	(4.34)	(4.27)	(4.36)
MAT^{LC}	0.967***	0.970***	0.967***
	(27.85)	(27.93)	(27.73)
MAT^{FX}	0.073	0.086	0.073
	(1.21)	(1.43)	(1.21)
GFiC$_{t-1}$	-0.083***		
	(-3.09)		
VIX$_{t-1}$		0.055**	
		(2.29)	
US10Y$_{t-1}$			-0.068**
			(-2.40)
Constant	0.656***	0.658***	0.663***
	(14.88)	(14.65)	(15.02)
N. Obs.	3584	3584	3584
Country FE	✓	✓	✓
Time FE	✓	✓	✓
R^2	0.66	0.66	0.66
FX×GF+GF	-0.03	0.09	-0.01
p value	0.19	0.90	0.636

t-statistics based on standard errors clustered at the quarter-currency are reported in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A6: **Quarterly Estimation: Domestic and External Drivers**

2000q1–2023q4 at the availability of the underlying data, less the default periods. The dependent variable is the sovereign issuance as % of GDP, separately for LCY and FCY. Zero-issuance observations are retained as meaningful non-issuance events. All maturity and issuance variables are % of GDP and FCY is a latent variable denoting the FCY issue within country–quarter.

	1	2	3
FX	-0.414***	-0.405***	-0.471***
	(-3.52)	(-3.49)	(-3.70)
FX×VIX$_{t-1}$	-0.051**	-0.063***	-0.082***
	(-2.13)	(-3.65)	(-5.95)
FX×GDP Growth	0.071*		
	(1.80)		
FX×Int'l Reserve		-0.044	
		(-1.03)	
FX×Foreign Part.			-0.018
			(-0.41)
FX×MAT^{LC}	-0.990***	-0.993***	-0.985***
	(-26.61)	(-26.80)	(-22.89)
FX×MAT^{FX}	0.522***	0.501***	0.562***
	(3.55)	(3.68)	(3.33)
GDP Growth	-0.078**		
	(-2.74)		
Int'l Reserve		-0.077	
		(-1.58)	
Foreign Part.			-0.040
			(-0.85)
MAT^{LC}	0.929***	0.959***	0.913***
	(14.90)	(15.74)	(13.31)
MAT^{FX}	0.069	0.070	0.053
	(0.81)	(0.85)	(0.57)
Constant	0.725***	0.697***	0.764***
	(6.43)	(6.61)	(6.95)
N. Obs.	3448	3526	2686
Country FE	✓	✓	✓
Year FE	✓	✓	✓
R^2	0.66	0.67	0.68

t-statistics clustered at the country-quarter in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$